



Thank you for downloading the nomination questionnaire for the first stage of the Intelligent Community Awards. Our award program is also a continuing research program that uncovers the success strategies of cities, towns and regions that are prospering in the broadband economy. We thank you for contributing to that research by:

- **Providing you with a free written report that compares your community’s performance to ICF’s global data set** in the areas of broadband infrastructure, the knowledge economy, innovation, digital equality, sustainability and advocacy for positive change.
- **Entering your community into the Intelligent Community Awards program** for consideration as one of the Smart21 Communities of the Year, semi-finalists for the Intelligent Community of the Year.

ICF publishes research at regular intervals based on the data provided by communities around the world. The goal is to provide cities, towns and regions – large and small, urban and rural – with evidence-based guidance on becoming an Intelligent Community and an objective method for measuring their progress. The Index research runs throughout the year and you may complete a questionnaire at any time.

Each year, on or about the 21st of September, ICF closes its nominations for the Intelligent Community Awards, and announces its semi-finalists, the Smart21 Communities of the Year, on or about the 21st of October. Communities submitting their questionnaires after 21 September are considered for next annual cycle of the Awards program.

Awards Schedule	
Nominations close	On or about 21 September
Smart21 Communities announcement	On or about 21 October
Top7 Intelligent Communities announcement	On or about 15 January of the next year
Intelligent Community of the Year announcement	On or about 15 June of the next year

Questionnaire

Name of Community

Winnipeg, Manitoba, Canada

Fill in the fields below. Each field will expand to make room for your complete answer. Save the file to your computer and email it to ICF at awards@intelligentcommunity.org. ICF's Analysts will use only the information on this form in making its evaluation. Do not send additional information or attachments.

The questions are grouped into six sections, each covering one of the Intelligent Community Indicators. In each section below, you will find a mix of multiple-choice and short-answer questions plus one narrative question requiring a more detailed explanation. The multiple-choice and short-answer questions seek to identify the state of progress in your development as an Intelligent Community. The narrative question offers you an opportunity to explain specific projects and initiatives, and to share with us your aspirations for the future. **Before answering the questions, review the description of the Intelligent Community Indicators and Success Factors** beginning on page 21 or visit ICF's Web site at www.intelligentcommunity.org.

You may find that answering the questions requires you to gather information from several different sources within local government and outside it. This collaboration across organizational boundaries is one of the success factors of a community in the 21st Century.

The estimated time to gather information and complete the questionnaire is 2 hours.

Vital Statistics

Population Municipality Metro Area (if applicable)

Area Municipality sq miles km² Metro Area (if applicable)

Indicator #1 Broadband

Broadband is the new essential utility, as vital as good roads, clean water and reliable electric power. Intelligent Communities express a strong vision of their broadband future, develop strategies to encourage deployment and adoption, and may construct infrastructure of their own.

- Which of the following broadband networks are available in your community, and how many network operators are in each category? (This question asks for the number of physical network operators, not the number of services provided via broadband.) *Note: ICF expects the number of systems and providers to vary with population density and analyzes the data on a weighted basis.*

DSL No. of Providers: 2

Fiber optics No. of Providers: 19

Cable modem No. of Providers: 2

Wireless ISP No. of Providers: 13

- Please indicate the availability and adoption of broadband among the following groups. **Availability** means having the opportunity to subscribe to the service ("premises passed") as a percentage of total premises, while **adoption** means actual subscriptions to the service as a percentage of total premises. The availability percentage should be higher than the adoption percentage. *Note: if municipal-level data is not available, please provide county-level or regional data.*

	Availability	Adoption	
Premises:	100 %	88.8 %	<input checked="" type="checkbox"/> Municipal data <input type="checkbox"/> County or regional data

3. Is your community engaged in a project to promote availability or adoption of broadband by citizens and organizations? If so, please:
- Explain what segment of the population is being targeted
 - Explain what problem the project seeks to solve
 - Describe the project
 - Outline its results to date

Project Name	Manitoba Internet Exchange
Target Segment	Manitoban Internet Services Providers (ISPs) and organizations with significant Internet usage
Problem to Solve	Keep data from Manitobans to Manitobans in Manitoba. Prevent long haul data and create lower latency routing to improve customer experience and cost of delivery. Create collaboration and cost savings for ISPs which normally operate as competitors in this market, improve the customer experience for all ISP customers and make local ISPs more effective and stronger.
Description	<p>Data from Manitobans to Manitobans was being routed through other provinces and other countries before returning to their end point just a few blocks or miles away. During that route, data is subject to more failure points, higher latency, different security laws (as within the United States), and high costs of transport during each leg of the long path. A shorter data path results in lower latency which improves customer experience and cost of delivery. Keeping data within our borders keeps data safe on the security front, removing conflicts with security in other countries (important in major sectors of business including law, financial and investment banking, and medical care).</p> <p>A local IXP can solve these concerns. By peering at the core of Manitoba, data can be handed off between ISPs with a fraction of the latency. Latency is no longer dependent on the hundreds of miles of fibre path between major city centres (like Toronto, Chicago, or Minneapolis). Because data is not transferred out of city, long haul routes can be kept for data destined for other major city centres, reducing the cost of delivery to the ISPs in Manitoba.</p> <p>In late 2011 Les Bester(les.net), Jeff Klause(Rainy Day), Jonathan Stewart and Bill Reid started working on the formation of the Manitoba Internet Exchange(MBIX), a non-profit corporation governed by its members. In January, 2012 a public meeting was held to announce the IX. A few months later CIRA expressed interest in supporting the establishment of IXs in every region of Canada. MBIX was the first IX to receive Canadian Internet Registration Authority (CIRA) support.</p> <p>In the summer of 2013, the Manitoba Internet Exchange was operational. The initial MBIX members included Les.Net, Rainy Day, CIRA, Global Service Centre, Akamai International, Hurricane Electric, VOI Networks Inc., Adam Thompson and Packet Clearing House. Hurricane Electric is a wholesale seller of Internet backbone and colocation services. MBIX members are able to directly connect with one another over an unmetered ethernet connection, to exchange local Internet traffic.</p>
Results to Date	<p>Today, the Manitoba Internet Exchange owns and operates the ethernet switching platform used to interconnect member networks. Creating a local IXP where carriers and communications providers directly connect with each other to exchange traffic means that Internet traffic no longer has to travel through major U.S.-based Internet pipelines just to reach the other side of town. That means faster response times for Internet users, and reduced bandwidth costs for service providers.</p> <p>The local IXP provides a neutral exchange point through which ISPs can connect with, and exchange traffic with each other. These links exchange more than just data, with competitors and partners collaborating and making the social connections necessary for a stronger local Internet ecosystem.</p>

For local ISPs providing voice over IP services, video transit or other services requiring low latency connections, the IX offers an important service. ISPs peering at MBIX have access to an Akamai cache, local root DNS servers and a competitive transit provider.

In the last four years, MBIX has grown to over 22 members and has accessible ports in two Winnipeg datacentre locations with a third in progress. The throughput is currently peaking at 1 Gbps and represents a savings of up to 2 Gbps of transit costs to their members. The IX has attracted the global network Hurricane Electric to Winnipeg which offers Internet transit at a fraction of the cost of existing local transit providers. MBIX offers NTP time servers as well as a number of DNS root servers. During the time that MBIX has existed (since it was announced), the number of organizations operating BGP (i.e. ability to peer with multiple transit providers) in Manitoba has nearly tripled.

**Indicator #2
Knowledge
Workforce**

A knowledge workforce is a labor force that creates economic value through its knowledge, skills and ability to use information effectively. Intelligent Communities exhibit the determination and ability to develop a workforce qualified to perform knowledge work from the factory floor to the research lab, and from the construction site to the call center or corporate headquarters.

4. Check the boxes that indicate the technology offerings of public schools (elementary to secondary) in your community. (check all that apply)
- Inclusion of information and communications technology – e.g., smart boards, laptops, tablets, digital textbooks, Web conferencing, social media – in classroom instruction
 - Interactive Web portal for students, teachers and parents
 - One-to-one laptop or handheld device program
 - Distance learning programs
 - Specialized classes in coding, robotics, digital media and related topics
 - Other: As Manitoba's largest culturally diverse dual track high school located in Winnipeg's North End, Sisler High School, recognized as an innovator in technology education, utilizes cutting edge pedagogical delivery systems including inverted classrooms, distance education collaborating with industry experts from across the globe. Sisler, a proof of concept school, provides ubiquitous Wi-Fi, BYOD and HD videoconferencing across academic, cultural, social and digital divides. Sisler is an award winning school including 1st in CyberPatriot International Exhibition, Premiers Award of Innovation, Microsoft Innovative Pathfinder school, Adobe Educators Choice Award, Apple Distinguished Educator Award, with nine staff members winning the Prime Ministers Award for Teaching.
5. How widespread are these technology offerings within the public schools? (check one)
- Pilot projects(s) Schoolwide in selected schools Being deployed to all schools Fully deployed to all schools
6. Check the boxes that describe programs in your community fostering collaboration between secondary, technical/community and undergraduate/graduate institutions and local employers. (check all that apply)
- Work-study programs provided as part of the curriculum by schools in partnership with employers
 - Summer & post-graduate internship programs provided in collaboration between schools and employers
 - Formal apprenticeship programs
 - Formal educational-employer task force, partnership or institute targeting employment issues
 - Career fairs and employer open house events
 - Customized skills training programs developed for local employers by educational institutions

- ☒ Other: Red River College (RRC)'s Technology Management Program developed a program that provides training and experience in knowledge work to its students while simultaneously bringing awareness of the benefits of digital technologies to the construction and manufacturing industries. The program has three components: i) Digital Technology Advisor Support Service – Students are assigned to work directly with companies on an applied research project. The students work with industry mentors and identify solutions to meet the companies' needs. The recommended technologies have varied from hardware solutions such as robotics with cutting edge visioning systems to software solutions to aid in client management and retention; ii) Educational Events for the Sector – These events inform the industry about opportunities to apply and adopt digital technologies within the sector. RRC instructors and local experts make presentations on relevant, leading-edge technologies that improve productivity and efficiency and increase competitiveness; and iii) Digital Technology Adoption Strategy for the Sector – RRC students and instructors consult with the industry associations and/or representatives and identify the needs of and opportunities for the sector and develop a sector strategy for adopting digital technologies. The sector strategy identifies specific actions to move toward greater adoption of digital technology throughout the industry, promoting the transition of the existing workforce into a knowledge workforce. RRC is currently exploring other sources of funding to ensure the sustainability of the program.

7. Indicate the percentage of the population with the following educational attainment. *Note: ICF expects educational attainment to vary with population density and analyzes the results on a weighted basis.*

Technical/Community College Certificate or "Some College"	37.6 %
Undergraduate degree	15.3 %
Graduate degree or higher	5.5 %

8. Indicate the number of higher education institutions located in your community or within reasonable commuting distance (approximately 2 hours travel time). If a single institution operates multiple campuses, count each campus as a separate institution. Your count of institutions within commuting distance **should not** include institutions within the borders of your community but only those beyond its borders. *Note: ICF expects the number of institutions to vary with population density and analyzes the results on a weighed basis.*

	Within your community	Within commuting distance
Technical/Community Colleges	2	2
Undergraduate or Graduate Institutions	2	3

9. Describe your most important program or project, created and operated by local government or a partner organization, that aims to raise the skill level of youth or adults in order to give them access to better economic opportunities, including:

- What segment of the population is being targeted
- What problem the project seeks to solve
- Description of the project
- Its results to date

Project Name	Social Innovation (SI)
Target Segment	Business students at Red River College (RRC) with special focus on immigrants, Indigenous students, women and youth, small and medium-sized enterprises (SMEs) and community leaders.
Problem to Solve	Limitation in social innovation skills reducing access to better economic opportunities and impairing sustainable integration into business operations. Skill gap associated with the inability of business graduates to innovate as entrepreneurs and intrapreneurs. According to the funder of the project, closing the gap would efficiently address a community need by improving integration of new Canadians and other vulnerable groups into the valuable workforce.

Description	<p>The SI project was launched in 2015 as a collaborative Applied Research (AR) effort between National Leasing and RRC in Manitoba. For over 30 years, National Leasing has provided proven financial solutions to businesses across Canada, building a solid reputation for innovative ideas backed by a professional service. Under this project National Leasing was trying to address the need for skilled knowledge workforce that can create economic value and promote SI within the community.</p> <p>As defined by the SI project principal investigator and instructor of Applied Commerce and Management at RRC Tatjana Brkic, SI means simply, "Doing something good for society in an innovative way." Social innovation process involves developing and deploying effective solutions to challenging and often systemic social and environmental issues in support of social progress. Many experts agree that the most difficult and important problems with SI cannot be understood, let alone solved, without involving the nonprofit, public, and private sectors.</p> <p>The focus of the project was to identify innovative business models that can address social challenges while generating profits. The AR project focused on socially innovative SMEs, the driving force of Canadian and many global economies that can change direction the of groups and individuals away from pathways that so often lead to crime and poverty. The SI Project involved over 500 students enrolled in Business Administration and International Business programs at RRC. The students were tasked to research and analyze successful socially innovative business models in over 30 countries across six continents, share their findings with SME leaders in the local community, perform a series of interviews with local socially innovative business leaders and explore opportunities to develop new business solutions based on the research results. This three-year project involved sharing research results and presenting best projects in an annual social innovation competition that was open to all stakeholders and project participants. The project design challenged students to find and explore local companies which are helping build a closer and more responsible human climate through their actions. The project has an international perspective that was reflected through the exchange of research findings among local and global business innovators whose ideas were analyzed by students. Brkic describes the project phases as examining the social innovative concept first from a global perspective, then by finding examples from a local perspective, and finally, stimulating students to develop their own business ideas that can be implemented as entrepreneurial or intrapreneurial solutions to local social challenges.</p> <p>The main goals of the project were to: 1) foster experience based applied learning through team work and a hands-on engagement with global and local businesses and community; 2) enhance business curriculum to empower RRC graduates to become innovation leaders in entrepreneurship and SI; and 3) develop partnerships with businesses and community organizations to improve visibility, brand recognition and employability of RRC students.</p> <p>This experience based learning process, involves following AR activities: 1) secondary research of socially innovative business practices, trends and ideas from different countries; and 2) primary research interviews and knowledge exchange with students and selected socially innovative business leaders in Manitoba.</p> <p>The AR component was complemented with business planning and knowledge communications activities. Students got facilitation to participate in the project, working in groups of four or five. The top four teams were selected to present the research of selected local companies to a panel of judges in the annual SI competition. The panel of judges for the competition award included key figures from both the academic and business sectors. Each group outlined how the different companies integrated the principles of social innovation and made recommendations for nurturing social innovation.</p>
Results to Date	<p>The multidisciplinary, multiethnic student teams have successfully identified, researched and analyzed over 60 business models that address social challenges globally and locally; they have developed their own socially innovative entrepreneurial ideas and presented their (AR) findings at annual competitions in 2015 and 2016.</p>

Project highlights include: 1) curriculum development such as enhancement of teaching and evaluation materials for four key areas namely global innovation in business, technology and services, social innovation and social responsibility and business, academia and public sector, AR methods and tools, business planning; 2) formation of a social innovation club (<https://www.facebook.com/SocialInnovativeCommunityRRC>); 3) About 500 business administration and international business students have successfully participated in the SI Applied Business Research Project over three years between 2015 and 2017; 4) the students researched and analyzed socially innovative business practices and profiled business leaders in 20 different countries including the USA, China, India, Pakistan, Philippines, Bhutan, Japan, Sweden, Poland, United Kingdom, Germany, Brazil, Columbia, Ecuador, Argentina, Peru, Kenya, Guinea, Nigeria and Ghana; 5) students teams conducted interviews, exchanged knowledge, analyzed and profiled a large number of local organizations or institutions; 6) students gained research and communications skills, business development abilities and entrepreneurial experience; and 7) research results were shared nationally and internationally on various platforms that have included TEDx Winnipeg 2017, (Colleges and Institutes Canada) CICan Annual Conference 2017 in Ottawa and Global Business Conference 2017 in Tignes, France.

**Indicator #3
Innovation**

Innovation is the creation of a new process, technology or method, as well as the discovery of new sources of supply, that have commercial value. It has become essential to the interconnected economy of the 21st Century. Intelligent

Communities pursue innovation through the Innovation Triangle or “Triple Helix” – relationships between business, government and such institutions as universities and hospitals, which help keep the economic benefits of innovation local, and create an innovation ecosystem that can engage the entire community in positive change. Investments in innovative technology by government contribute to that culture and improve service to citizens while reducing operating costs.

10. Does local government have policies in place to promote business, institutional and/or government innovation? If so, what is the status of those policies? (check one)

- No policies Administrative guidance only Under discussion/ review by Council Approved by Council Published as public policy document

11. Which of the following innovation programs is available in your community? (check all that apply)

- Hackathons, mashups, apps contests and related innovation events
- Entrepreneurship training and mentoring
- Business incubator for start-ups
- Business accelerator for young companies
- Matchmaking between new and established businesses
- Angel investment
- Financing from the public sector or institutions (local, county, state, national)
- Venture capital investment
- Technology demonstration site for local businesses
- Maker space
- Other: Winnipeg has an exceptionally strong research infrastructure and programs that feeds the development of new, high technology ventures in the local innovation ecosystem. Winnipeg is home to a number of major public research and development facilities including: Canadian Science Centre for Human and Animal Health, National Research Council Medical Devices, Agriculture and Agri-food Canada's Cereal Research Centre, Canadian International Grains Institute, Canadian Malting Barley

Technical Centre, National Centre for Agri-Food Research in Medicine, and St. Boniface General Hospital Research Centre.

Located at North Forge Technology Exchange is Red River College's ACE Project Space. This is an interactive work space where students, industry leaders, entrepreneurs, and/or community organizations come together to bring unique ideas to life using cutting-edge technology. Students work hand-in-hand with private industry on real-world projects in real time. Students are provided with leading-edge, hands-on training and experience, while providing start-ups with much-needed technical support.

The Research Partnerships & Innovation Program offered at the Red River College has helped make RRC a Canadian college leader in applied research and commercialization. Applied research is the engine that drives this capacity for innovation by matching industry problems and needs with College expertise, resources, capabilities, and facilities. This coordinated effort delivers practical solutions and innovation to industry, while enriching the experiences of student, faculty, and staff. With industry support, Red River College has established a number of applied world-class research centres: 1) Advanced Transportation and Energy Centre; 2) Centre for Applied Research in Sustainable Infrastructure; 3) Centre for Aerospace Technology and Training; 4) Electric Vehicle Technology & Education Centre; and 5) Paterson GlobalFoods Institute.

12. Which of the following online services is offered by local government or public agencies to improve quality of life? (check all that apply)

- Open data sets
- Web portal providing citizens with interactive services and transactions
- Mobile apps providing citizens with interactive services and transactions
- Online services specifically supporting sectors of the business community: Sectors _____
- Intelligent transportation management systems
- Smart meter systems for utilities
- Intelligent emergency management systems
- Other: Telehealth - Manitoba's telehealth system uses medical grade videoconferencing and digital diagnostic tools to connect health care providers from Winnipeg with patients in remote rural and northern areas in Manitoba. As well, diagnostic images or high quality photos taken of the patient are viewed and interpreted by specialists in Winnipeg, eliminating the need for patient travel. There are 280 points of service across the province and approximately 20,000 telehealth events per year. The telehealth system is also used to support the continuing education of doctors and other health care providers.

13. Below are sets of two statements describing your community, representing opposite ends of a spectrum of situations. Between the statements are five check boxes. For each set of statements, check the one box that best describes where your community falls on that spectrum.

	Strongly Agree ←	Agree ←	Neutral	Agree →	Strongly Agree →	
Government						
Local government generally leaves business and institutions alone to carry out their missions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Local government works to raise the innovation rate of businesses and connect them with institutions and services that can help.
Business						
Businesses generally operate independently in pursuit of innovation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Businesses actively collaborate with each other as well as institutions and

government to spur innovation.

Education/health/culture institutions

Universities, technical/community colleges and other higher education institutions operate independently to educate students.

Schools, universities and other institutions work with business and government to drive innovation, prepare students for local careers and contribute to community quality of life.

14. Please describe an example of an innovative development in your community that involves business, institutions (universities, hospitals, museums, etc.) and government. The innovation may generate new companies, address social or infrastructure challenges, or add to quality of life.
- What segment of the population or business community is being targeted
 - What problem the project seeks to solve
 - Description of the project
 - Its results to date

Project Name	North Forge Technology Exchange
Target Segment	Entrepreneurs in technology-based businesses throughout Manitoba, including youth and students. The North Forge's Fabrication Lab focuses on small business entrepreneurs wishing to develop prototypes to ignite their business, small to large businesses wishing to use fabrication lab equipment to assist their business operations by working smarter or to create new products, students wishing to work on their own projects or requiring access to equipment beyond that provided by their normal lab environment, artists requiring access to advanced equipment to assist developing their unique works, architects developing scale models of projects, makers assisting non-member businesses with prototype or experimental projects, and hobbyists focused on developing personal projects with potential for personal revenue or commercialization.
Problem to Solve	Accessibility - need to provide better access to specialized prototyping equipment to a greater population of Manitobans. Affordability - need to reduce and remove barriers for new entrepreneurs who would not otherwise be able to use specialized digital manufacturing equipment for the research and development needed to produce new prototypes. Product Development - need to enhance the transitioning from rough prototype development to the ability to create finished products. Collaboration - members need to strengthen their connections with the innovation community. Makers, developers, designers, and marketers need to work closer to create new businesses.
Description	North Forge Technology Exchange (www.northforge.ca) is an innovation-based economic development agency and a powerhouse community to fuel Manitoba's innovation economy providing entrepreneurs with award-winning mentors, subject matter experts and a two-stage start-up program that has helped over 60 companies access over \$180 million in financings and create hundreds of jobs. Armed with Canada's largest non-profit fabrication lab, the Exchange operates out of 27,000 square feet across Innovation Drive and Innovation Alley in Winnipeg, Canada. North Forge is a collaborative innovation network conceived by the teams behind The Eureka Project, AssentWorks, Ramp Up Manitoba and the Startup Winnipeg program. Startup Winnipeg is a member of the Startup Canada Communities Program. Startup Canada is social enterprise supporting and giving a voice to entrepreneurs through online programs, national awards, flagship events, partnerships with private sector and government to foster a community for entrepreneurs, startup and small business success across the country.

Working together has enabled the Exchange to grow, providing more mentorship, training and support for entrepreneurs across Manitoba.

North Forge Technology Exchange is Canada's largest non-profit fabrication workshop with hands-on access to digital fabrication and prototyping equipment with 24-hour access and training and support from the entrepreneurial and innovation communities. A network of services is offered to accelerate innovation and commercialization in Manitoba. Services include mentorship, training and grant writing support as well as access to start-up desks, office space, meeting rooms and a Fabrication Lab.

The Startup Program takes entrepreneurs from idea to market success, building sustainable, investor-ready companies with go-to-market and scale up plans.

North Forge's Fabrication Lab has the equipment and educational services to produce prototypes. The lab's electronics room offers the ability to create printed circuit boards to support and connect components in a new design. The lab's 3D printing room makes it possible to affordably produce, tweak and test prototypes.

North Forge's services include: 1) Cloud Hosting – for development servers, web servers, file servers and production environments, for example, as a backend for an app; 2) The UX Lab – offers assistance with user and usability testing, user and stakeholder interviews and surveys. Clients could have a functional prototype, minimal viable product or launched product for testing. Clients could also be at the idea stage and need assistance with market validation; 3) The Advanced ICT Lab – a digital makerspace that provides the tools for developers to develop their tech for commercialization. Users can develop, test and build VR experiences at workstations equipped with Unity software and HTC Vive, Microsoft HoloLens and other devices; 4) Market Intelligence – a subscription market intelligence platform with focused reporting on the ICT technology sector in 10 areas, from enterprise mobility management, software infrastructure and cloud services to information management and enterprise security. Sixty-seven sub-segments are also included; 5) Investor Intelligence – access to private market data, venture capital, private equity and M&A deals, investors and funds. This subscription-only database also provides commentary and analysis of current events, trends and issues affecting technology and innovation-based companies; 6) Events and Training – provides opportunities for collaboration and education via events including Lunch & Learns, Ramp Up Weekends and Meetups, as well as orientation, hands-on and video training for us of the Fabrication Lab; and 7) Grant Assistance – provides assistance to those enrolled in the Start-up Program to ensure companies are eligible, their rationale for receiving the grant is watertight, their research is relevant and the project plan is realistic.

Results to Date

North Forge Fabrication Lab outcomes to date (Sept 2016) include 2550 plus developed prototypes, 75 plus new business started, 75 plus new jobs created and \$175 million plus new revenue generated.

Some of the businesses developed out of North Forge are:

Funding Change Inc. disrupted traditional paper raffles and draws while radically increasing the reach for not-for-profit fundraising. Their business developed a gaming platform to harness the power of social sharing to increase donations and exposure for a cause. Funding Change is a Manitoba company fueled by the experience and mentorship offered through North Forge.

Solara Remote Data Delivery Inc. provide businesses with military grade, off-the-grid communication tools. Out of the North Forge Fabrication Lab's electronics room, they built self-contained portable satellite-based GPS tracking and communication devices. In 2016, Solara won the Winnipeg Chamber of Commerce "Spirit of Winnipeg Award" and have already become a global leader in wireless data communications solutions.

FarmTrack Tech is creating innovative digital tools to help 21st century farmers produce more with fewer resources. North Forge has been a constant presence in their

entrepreneurial journey, starting with co-working space. The company has since moved and has also taken advantage of North Forge's grant assistance. "As an entrepreneur, it is important to leverage as many government grants and opportunities as you can, and North Forge was great for helping us out with that," said co-founder, Chris Karasewich. Mentorship from North Forge President, Jeff Ryzner, helped guide them through the IRAP (Industrial Research Assistance Program) and CSB (Commercialization Support for Business) applications necessary for developing their technology.

Scam Skate is a successful company manufacturing custom longboards and the Scam Skate branded apparel line. They are still active members of North Forge's Fabrication Lab. "The equipment at the Fabrication Lab allowed us to increase our production speeds and quality to an industrial level. When we outgrew the garage, we just couldn't keep up to the demand with our conventional tools." Joel Baker, one of the co-founders explained. Joel added that the Fabrication Lab is an excellent resource for stepping up your game as a business. "Whether you want to do production runs of your products, or prototype something from scratch, the Fabrication Lab has you covered. The way North Forge is structured is ideal – 24 / 7 access lets me pull those crucial all-nighters in the early stages of business, and the knowledgeable community of makers is always happy to share their ideas."

Pricearazzi built an app and a company that simply takes a picture of a receipt and searches for a better price. North Forge has been instrumental in helping guide the company to where it is now. Co-founder Declan McDonald says: "When I was first introduced to North Forge president, Jeff Ryzner, he understood the idea and knew what we needed to get there. In one year we built a staff, team of developers and launched the app in Canada and the U.S. Jeff gave us direction that I wouldn't have figured out myself, said McDonald. In addition to the mentorship and strategic planning, North Forge provided access to critical talent for the startup. Pricearazzi has also benefitted from North Forge resources. A move from SmartPark space at the University of Manitoba brought Pricearazzi to their offices in Innovation Alley. With other tech start-ups just down the hall, the atmosphere creates a competitive environment with valuable networking opportunities. "We moved from the table in the dining room to an office, which allowed us to hire people. No one wanted to come to work at my house," McDonald joked. "The second part was the ongoing support from Jeff as a mentor and now North Forge, as a whole." In April 2016, the app launched in the U.S. and the company participated in the Collision Conference in New Orleans, where they made it to the semi-finals and finished in the top 20 of all competing businesses.

Indicator #4
Digital
Equality

As broadband deploys widely through a community, there is serious risk that it will worsen the exclusion of people who already play a peripheral role in the economy and society, whether due to poverty, lack of skills, prejudice or geography. Intelligent Communities promote digital equality by creating policies and programs that provide offline citizens with access to computers and broadband, by providing skills training and by promoting a compelling vision of the benefits that the broadband economy can bring to their lives.

15. What facilities and services does your community offer to **citizens** who do not have their own online access? (check all that apply)

- Free Wi-Fi hotspots
- Free access to computers with broadband connections (for example, at public libraries)
- Free ad hoc technical support for users
- Free or low-cost formal classes in digital skills for users
- Technology fairs, competitions or similar one-off/annual events
- Outreach and training in more than one language
- Programs to create community champions among excluded segments of the population
- Computer donation or subsidy program for households without a computer
- Subsidies or discount programs for broadband access

- Other: Free cellphones to Winnipeg's homeless community - In light of the recent tragedies surrounding Winnipeg's homeless community, a Winnipeg business and schools donated working cellphones to the Main Street Project and Siloam Mission. These agencies assist vulnerable people in Winnipeg and have provided the homeless people the ability to call for help by dialing 911 in a wireless coverage area.

16. What facilities and services does your community offer to **organizations** (businesses, nonprofits, others) to promote digital adoption? (check all that apply)

- Evaluation checklist to assess an organization's digital readiness and training needs
- General classes in digital skills and applications for organizations
- Customized digital training programs for organizations
- Technology demonstration center to educate on digital opportunities
- Outreach and training in more than one language
- Other: To promote the deployment of, access to, and use of broadband in our community is the Manitoba Regional Advanced Network (MRnet). This Network is an incorporated not-for-profit consortium of organizations dedicated to the development and advancement of research and education (R&E) based on high-speed networking and network applications.

17. Describe the best example of a program in your community that aims to increase digital equality.

- What segment of the population or business community is being targeted
- What problem the project seeks to solve
- Description of the project
- Its results to date

Project Name	Winnipeg Public Library
Target Segment	Serving the needs of a diverse citizenry is a major focus of the library. Services targeted to support the Indigenous community, people with disabilities, people facing literacy challenges, and those learning English as a second language.
Problem to Solve	Through the Winnipeg Public Library, the City of Winnipeg seeks to ensure that everyone has ready access to digital technologies and learning opportunities. The city has high capacity networks at its disposal, and it has developed partnerships with other organizations to share networks and leverage these infrastructure investments. For example, the city contracts with Shaw Communications, a regional telecom carrier, to provide free Wi-Fi service in all Winnipeg Public Library locations.
Description	<p>Winnipeg is leveraging a community resource, its public library system, to deliver digital inclusion services to the people who need them. Winnipeg Public Library (WPL) is constantly seeking new ways to improve service offerings and further the library's digital inclusion efforts.</p> <p>Innovative technology is throughout the library system to gain efficiencies, enhance services and ensure that it remains relevant for all Winnipeggers in the digital age. For example, the West End Library branch was the first library in Canada to install smartlockers in Canada. These smartlockers allow the public to pick up and check out their requested items outside of library hours from an automated kiosk of lockers. The Charleswood Library branch opened with the province's first ATM style self-check in technology that processes and sorts the material. All 20 branches have self-checkout technology and an online information service that tracks questions and answers for future reference by staff. Selected content from this service is available for public reference to answer frequently asked questions, 24/7 from the library's website. A mobile app (WPL to Go) allow users to search the catalogue, place holds, browse library programs, find their nearest branch and link to other library functions. In response to customer feedback, the Library upgraded its online catalogue to make it more user friendly. These changes have resulted in efficiency improvements that allow staff to focus more closely on customer needs.</p>

Universal access is a primary goal for Winnipeg Public Library, and it offers programs that meet a wide variety of needs within the community. The public library provides free access to over 350 public computers that the public can use to access the Internet, and use MS Word, Excel, Publisher and PowerPoint. Library staff have created online resource guides on topics such as employment, health, Indigenous resources, learning a language, consumer information and more to help the public access both the library's 40+ online learning databases and recommended websites (<http://guides.wpl.winnipeg.ca/>). Many homeless people and new Canadians use the computers and report feeling comfortable at the library because they see it as a neutral location.

Free computer workshops ranging from basic email and Internet search training to more advanced courses on using Microsoft Office software is available. In addition the library subscribes to the online learning site Lynda Library that offers thousands of courses on software for business, technology and creative arts.

All of the online learning and eMedia content on the "eLibrary" is available for free to use with a library card (<http://guides.wpl.winnipeg.ca/az.php>).

Technological supports are provided for people with visual impairment. Select staff are trained in how to download library material to devices used by the visually impaired so that they can better serve this clientele. Free access to Zoom Text technology, talking terminals and online materials are provided for the visually impaired through the library's membership in CELA (Centre for Equitable Library Access) and NNELS (National Network for Equitable Library Services).

Digital databases are available to help newcomers and other learners learn English, improve literacy, learn about navigating the Canadian job market, and prepare for Canadian citizenship (<http://wpl.winnipeg.ca/library/libraryservices/newcomers.asp>).

Indigenous language classes, dedicated programming spaces, and collections are provided for learning about and celebrating Indigenous communities (<http://wpl.winnipeg.ca/library/ourservices/IndigenousServices.asp>).

New content and new digital information sharing platforms are expanding the ways that customers access library materials, including: 1) a digital information portal that provides old postcard images of Winnipeg and other local history material for public use; 2) a full range of eMedia digital resources including RBDigital (downloadable e-magazines), Overdrive (downloadable eBooks and audio books), Naxos Jazz (streaming music) and Hoopla (streaming movies, music and audio books); 3) DAISY books (digital talking books) for readers who have a visual, physical or learning disability; and 4) access to numerous online learning databases including research topics such as genealogy, sciences, adult learning, homework help (encyclopedias, journals), access to hundreds of newspapers from around the world.

A makerspace will be added to the downtown Millennium Library branch in 2018. The makerspace will provide access to 3D printer technology, green screens, computers, robotic workshops, and sound booth technology that will allow the public to participate in collaborative and creative technologies.

Library staff regularly promote the library's digital offerings to the community during street festivals, classroom visits, pop-up library events, teacher conferences, in adult learning programs, and through special outreach initiatives such as the Book Bike. Library staff offer presentations in the community on using the print and digital resources of the library. Digital resources are also promoted through the library's significant social media presence, including the library's Facebook, Instagram and Twitter accounts.

Results to Date

There were over 16.3 million visits to the library website and over 618,000 eLibrary (eBooks, audio books, e-magazines) downloads during 2016. The free Wi-Fi access has been highly subscribed with over 495,000 wireless connections made per year. All 20 branches offer free computer access. Those computers were booked 438,244 times in 2016, and over 940 people participated in computer workshops at the library. There is a computer training lab at

the main Millennium Library branch, which is also available to rent, and a mobile lab (using laptops) that travels to branches for the library's computer workshops and for use by the library's Youth Advisory Councils.

The Library is committed to including everyone in its digital development. The fundamental goal is to build capacity and equip people from all backgrounds to participate in the economy and society. This requires universal digital literacy. The Library works collaboratively with a wide variety of community groups and ensures that the appropriate programs and supports are in place so that all citizens have access to the equipment and training they need to use information and communication technologies.

**Indicator #5
Sustainability**

Environmental sustainability projects improve local quality of life, from cleaner air and water to improved public transportation and greater livability. Communities that use fewer resources to create products and provide services are also more efficient and productive, which is key to continued improvements in their standard of living. Communities that make environmental sustainability a

shared goal typically engage organizations, community groups and neighborhoods in advocating for sustainability programs and activities. These contribute to civic pride, local identity and shared goals.

18. Does local government track the following sustainability measures, based either on its own research or reporting from other organizations? (check all that apply)

- Greenhouse gas emissions of the community? (not state, provincial or national) Yes
- Residential and commercial indoor water use? Yes
- Percentage of municipal waste that is recycled, composted or incinerated rather than going to landfill? Yes
- Percentage of all trips in the municipality that take place *without* an automobile? Yes

19. What support does sustainability receive from the local government? (check all that apply)

- Statement of intent from elected officials Yes
- Department/staff resources dedicated to sustainability Yes
- Formal sustainability guidelines, framework or charter approved by Council Yes
- By-Laws approved by Council Yes

20. Describe the best example of a sustainability program or project that contributes to quality of life, engages citizens in positive change and/or reduces operating costs for your community.

Project Name	The Forks Target Zero
Problem to Solve	<p>The Forks is a meeting place and green space in Downtown Winnipeg located at the confluence of the Red River and Assiniboine rivers. The Forks was designated a National Historic Site of Canada in 1974 due to its status as a cultural landscape that had borne witness to 6,000 years of human activity. The site's 5.5-hectare (14-acre; 0.021 sq. mi) grounds are open year-round. The Forks contains public space for celebrations and recreation, an interpretive park, revitalized historic and new buildings containing shops and restaurants, as well as a skateboard park and historic port. The Forks attracts over four million visitors each year.</p> <p>According to The Forks North Portage Partnership (FNPP), the Forks produces 5,610 tonnes of carbon dioxide a year, which amounts to a lot of garbage, a lot of toilets being flushed, a lot of exhaust from cars and a lot of expensive power to heat and cool buildings. This is a lot of money going up the chimney, out the window, down the drain and into the</p>



	<p>garbage. The FNPP came up with TARGET ZERO as a way to be good to the environment while saving money.</p>
<p>Description</p>	<p>The Target Zero project began following the discovery that The Forks' operating costs were increasing exponentially faster than its revenue stream. The Corporation revealed that 80 per cent of the waste being produced was compostable—and that a bio-compost initiative would significantly cut down on waste removal costs. Soon after, an in-vessel compressor built by Nioex Systems Inc. called BIOvator™ was installed, which is essentially a mechanical digestive system for organic matter that boasts the necessary conditions to break down trillions of microbes and bacteria into nutrient-rich compost used in the top soil in The Forks' gardens. By switching to this bio-compost system, garbage waste costs were slashed in excess of \$70,000 per year. The ambitious goal of zero garbage no longer seems like an impossible feat.</p> <p>In addition to the bio-composter system, The Forks is home to one of North America's most innovative geothermal heat-pump systems. This unique system is The Forks' biggest project to date. It helps cool several commercial refrigerators and provides the heating and cooling systems for a range of restaurants, offices, retail shops and public spaces at the site. Expected to reduce carbon emissions at The Forks Market by up to one kilotonne per year, the system is paving the way toward a greener future for The Forks—as well as other institutions in Winnipeg and abroad that routinely make inquiries at The Forks to learn valuable tips and tricks for adopting such a system themselves. Greenhouse gas emissions are being reduced by 42 per cent (448 tonnes of CO2e) and heating costs by 14 per cent. Further efficiencies are expected as the system is fine-tuned.</p> <p>As part of the Target Zero initiative, The Forks made concerted efforts to reduce water consumption by installing low-flow toilets and waterless urinals. And it has erected two large rainwater tanks on site, which maintain the various ice-skating surfaces in the winter months. These changes alone have resulted in the conservation of more than 10 million litres of water to date. The equivalent of three Olympic-sized pools is expected to be saved each year.</p> <p>The Forks also operates equipment using wasted vegetable oil collected from its many restaurants. The Zamboni responsible for clearing one of the world's largest skating paths is just one example of how this technique has been successfully applied. The Forks is home to the one and only ice resurfer in the world powered by French fries and perogies. This innovative replacement for diesel fuel saves The Forks more than \$34,000 annually.</p> <p>The Target Zero Eco Kids Tour presented by Multi-Material Stewardship Manitoba is an innovative and interactive walking tour that teaches kids how to minimize their carbon footprint by showcasing what has been done at The Forks. The tours, created and executed in conjunction with Green Kids Inc., offers a 60 minute interactive walking experience for school aged children. Led by two actors, the tour stops at Target Zero hot spots like the BIOvator™, the geothermal loops, the rain water collectors and finishes with a personal message the kids can do at home, reducing, reusing and recycling.</p> <p>Because Target Zero is ongoing, the FNPP is constantly looking for more ways to change their impact on the environment. These include composting for visitors where The Fork's visitors can minimize their environmental impact while enjoying the restaurants and attractions. Plans include composting bins accompanying all recycling and trash bins, and getting the vendors on board with 100 per cent compostable plates, cutlery and napkins.</p> <p>Part of the FNPP commitment to lessening The Fork's carbon footprint includes increasing accessibility and opportunities for alternative transit to and from the site. The FNPP has been expanding their bike paths and are looking into further expansion to these connections.</p> <p>Research in wind turbines to power The Fork's buildings using wind "turbies" (smaller single-purpose turbines) is being conducted as well as photo voltaic solar and solar heat energy for geothermal collection.</p>

	<p>As part of The Forks' Target Zero initiative, a new urban garden and orchard will be planted with fruit and nut trees. Produce will be sold to local restaurants and guests at the hotel will be treated to eating ingredients grown mere steps away. The Forks partnered with Winnipeg Community Orchards for Resources and Education (CORE) on the project.</p> <p>Clearly, industry leaders are applauding The Forks' laudable efforts, as evidenced by the multiple awards this signature attraction has earned so far. Looking ahead, even greater efficiencies are projected to become a reality as these systems are fine-tuned.</p>
Results to Date	<p>The Forks continues to work towards its Target Zero initiatives: zero garbage, zero water consumption, and zero carbon emissions. In 2016, the organization realized both environmental and monetary benefits associated with the program: 1) Energy costs – the need for natural gas for heating has been entirely eliminated, saving over \$200,000 annually; 2) Waste reduction – compared to 2005, waste costs have been reduced by \$35,800 and revenues have increased from waste collection by \$29,750; 3) Waste oil conversion – saved \$12,088 in diesel fuel costs by replacing it with waste vegetable oil. Using average current gas prices this has saved \$46,528 in fuel costs since 2011; 4) Water – since The Forks began its water conservation/matching use program, 10.5 million litres of water has been conserved in The Forks Market; and 5) Green House Gas (GHG) – an 80 per cent reduction since 2005 in GHGs and FNP assists others in reducing theirs by processing their organic waste.</p> <p>With success of the program, additional projects under the Target Zero initiative are being implemented. These included The Forks Urban Garden, the Public Orchard program and the expansion of a pedicab program. As a further extension to the health of the orchard, a partner came forward bringing bees to the site. Bee Project Apiaries increased the bee population on the site, created Forks honey, educated the public on the importance of bees and will help create better harvests for the orchard.</p> <p>As a way to increase active living and bike access The Forks completed the second phase of a cycle track. Added to the South Main Dedicated Bike Lane, from Main Street to The Forks Market, was a multi-use lane that welcomes cars, pedestrians and bikes. This phase highlighted the ability to create pathways that are interesting and unexpected and showed that there is more than one way to approach bike traffic. Phase Three will build on this idea. As accessibility for bikes has increased, so have the amenities to accompany them. The Forks partnered with WRENCH during the summer months to provide both free bike repair education and the sale of rehabilitated bikes. This complemented the Bike Service Station, allowing visitors the ability to do basic bike repairs for free. Biking initiatives this year have contributed to increased bike traffic specifically 62 per cent over the same period in 2015.</p>

**Indicator #6
Advocacy**

It is a natural tendency to resist change. A community's leaders and citizens can be a barrier to progress or can become its most powerful advocates for a better future. Intelligent Communities work to engage leaders, citizens and organizations as champions of change. They are also effective marketers of their advantages, shaped by their digital policies and cultural strengths, for economic development.

21. In what ways does local government seek to educate and involve citizens and leaders in building a better future for the community? (check all that apply)

- Citizen surveys on civic, planning and related issues
- Open government meetings on civil, planning and related issues
- Online engagement through email broadcast and/or access to streaming media
- Online interaction through social media (Facebook, Twitter, LinkedIn, etc.) and/or specialized collaboration systems
- Development and publication of formal strategies or charters through government-organization-citizen collaboration

- Creation of a government-citizen-organizational task force responsible for future planning and implementation
- Progress reporting to the public on the result of formal strategies or charters
- Other: Peg is a community indicator system that has been developed for Winnipeg by Winnipeggers, led by a community-wide consortium of partners spearheaded by IISD and United Way of Winnipeg. Peg presents data on key indicators of Winnipeg's well-being, along with stories from the community about how the issues underlying the indicators are reflected in the lives of Winnipeggers. Individuals, community groups and organizations in all sectors use this information to guide decision-making and collective action to achieve progress that reflects their values and aspirations. This community indicator system enhances collaboration to address public issues, provides tools to encourage progress, informs decision-making, improves research and increases public knowledge about Winnipeg's key economic, environmental, social and cultural issues.

22. How do you communicate your economic and community development story to the outside world? (check all that apply)

- Online marketing including a Web site and email broadcasting
- Social media interaction (Facebook, Twitter, LinkedIn, Intstagram, etc.)
- Print and/or digital advertising in site selection and other publications
- Public relations targeting site selection and other publications
- Participation in trade shows and conventions of target industries
- Participation in state, provincial, national or multinational development projects
- Trade missions to other cities and countries
- Other: Familiarization Tours - Site Selection; Video productions; Participation in Site Selection and International City Surveys and Competitions; Participate as a board member on strategic international organizations; Participate as a speaker / panel member at non-local conferences.

23. Describe a project or program that educates citizens and leaders about issues critical to the community's future and engages them in creating needed change.

Project Name	DisruptED Conference
Problem to Solve	<p>The education system is based on a model developed in the 1800s. Technology is constantly evolving. With the rapid pace of changing technology, the necessary skill sets of graduates and the expectations of employers have shifted dramatically. The sometimes overlapping and often complimentary programming in post-secondary education could create fertile ground for a different approach to how people are trained for ICT careers (as well as reduce redundancies in education programs across the board).</p> <p>It is clear that the traditional systems cannot compete with the demands of the new economy. The time to re-invent ICT education models is upon us. A more iterative approach that uses integrated resources from the industry in collaboration with education (both high school and post-secondary) presents an opportunity that could revolutionize learning delivery and accreditation. There is a growing awareness in Winnipeg that educational institutions need to adapt to a different way of learning facilitated by and for technology.</p> <p>This growing awareness that educational institutions need to adapt different ways of learning facilitated by and for technology led to conversations between members of the Information and Communication Technology Association of Manitoba (ICTAM) and officials at Red River College, the University of Manitoba and the Manitoba Institute of Trades and Technology.</p> <p>Kathy Knight, CEO of ICTAM, said as the discussions took place, there was a realization the issue is more complex than merely laying on more programming courses. "We should be supporting the teachers, but what is the role industry has to play in all that?" she asked. "Our thinking was we should be sitting down as a community — education, industry and government."</p>

	<p>What evolved was the idea to organize a two-day conference called DisruptED to get more people talking and thinking about the challenges and opportunities ahead.</p>
<p>Description</p>	<p>DisruptED was a first of its kind conference in Manitoba. They called it an intersection of a mashing together of technology and education that shed new light on a vibrant, emerging industry. The theme of the conference was to look at ways to connect old systems of education to the new digital reality and the goal was to come together as a community to build a blueprint for a Science, Technology, Engineering and Math (STEM) education strategy for Manitoba. For the tech industries, this was an opportunity for the community to shape the future high tech talent workforce in Winnipeg. It will also encourage continuity and consistency in STEM curriculum across all School Divisions – meaning every student interested in STEM careers will have access to an education that prepares them for success.</p> <p>The conference took place at the RBC Convention Centre Winnipeg on November 24 and 25, 2016. At DisruptEd, educators, industry leaders, government and students joined forces and explored the ways technology can enhance the future of education. The conference brought together prominent names and up-and comers on all sides of the intersection of tech and education, government, students, educators, software developers and IT professionals.</p> <p>Hosted by tech evangelist Marc Saltzman, an industry reporter since 1996 and freelance journalist, author, lecturer, consultant and media personality, the event featured speakers from sectors ranging from post-secondary education to private enterprise to philanthropy. Notable names included Sidneyeve Matrix of the Queen’s School of Business Executive Education Program; Michael Furdyk, co-founder and Director of Technology at TakingITGlobal; tech prodigy Tanmay Bakshi and more.</p> <p>Discussions on each day of the two-day conference spanned a variety of media and formats. A mix of lectures, panel discussions, interactive activities and debate meant attendees – and lecturers – each had an opportunity to learn in their own way. DisruptED covered a number of topics including barriers in Indigenous education, challenges/opportunities for incorporating technology into the classroom, tech trends impacting students and educators, preparing youth for a volatile, uncertain, complex and ambiguous world, etc.</p> <p>Included at DisruptED was the unique and unstructured “Unconference” portion. Here group breakout sessions were structured to facilitate chat and creative problem solving. Subjects included questions on attracting women in IT work, on adapting education systems to be more practical and relevant, understanding the importance of soft skills in tech education and IT work, tech outreach to northern communities, and youth consultation across all facets of technology and education.</p>
<p>Results to Date</p>	<p>The overall results of DisruptED were: 1) Gained a better understanding of what will drive future employees; 2) Influenced how STEM education is delivered and supported throughout the entire province; 3) Hearing about best practices for attracting and retaining GenX and millennial candidates; 4) The future is the development of a workforce pipeline that will help businesses compete globally; and 5) It is critical that the ICT industry lead the development of this current and future tech savvy workforce.</p> <p>The focus of DisruptED was to create the conditions to set in motion new approaches to STEM education through collaborative effort resulting in a province-wide STEM education strategy. DisruptED 2016 brought together 190 participants from industry/government, education and students from Manitoba; it is important to keep the conversation going and focus on making DisruptED a conference people from across Canada attend.</p> <p>Participation at DisruptED 2016 from industry, government and the education community was overwhelmingly positive; they were successful in starting the conversation on how to work together to enhance Manitoba curriculum and educational opportunities for students interested in STEM (Science, Technology, Engineering & Math).</p>

Building on the success of the first conference, stakeholders have expressed they would like to hold the conference in the new fiscal year. Currently, ICTAM is coordinating meetings to expand participation in planning DisruptED that will contribute to a deeper dive into defining the program for the next conference. The plan is to add program advisory groups from K-12, post-secondary and industry to define content. In addition, the steering committee will guide events/activities over the course of 2017/18 based on the recommendations from the 2016 conference. DisruptED 2017/18 will include a more robust student stream and an expanded Interactive Playground/ED Tech component.

Key Contacts

24. Please provide contact information for a key public-sector, private-sector and nonprofit leader involved in your community's Intelligent Community programs.

Public-Sector Official

Name: Michael Legary
Title: Chief Innovation Officer
Organization: City of Winnipeg
Telephone: 204-986-2379 Email: MLegary@winnipeg.ca
Contribution to the Community: Michael Legary is the City of Winnipeg's first Chief Innovation Officer who is responsible for technology and innovation at the City of Winnipeg, and administration of the Open Data Portal. Over the past 20 years, he has founded, led and sold several information technology, security and defence research companies. He acted as the Chairman of Innovation Alley, now North Forge Technology Exchange, a non-profit focused on removing barriers to innovation and entrepreneurial start-ups across Canada. Michael is always open to discuss new opportunities and enjoys connecting executives with peers regarding enterprise security and business innovation. Michael Legary was the winner of the 2010 Ernst & Young Entrepreneur of the Year award for the Prairie region in the Technology category.

Private-Sector Executive

Name: Reg Anderson
Title: National Account Director
Organization: Cisco Systems Canada
Telephone: (204) 336-6618 Email: reanders@cisco.com
Contribution to the Community: Reg has been connecting with people for many years within Winnipeg's IT network. His peers highly respect him. Reg has helped the Cisco team build long-term consultative relationships with many corporate and general business clients throughout Manitoba and Canada. By understanding the business drivers for managed IT services, infrastructure solutions and related networking needs, he develops new clients, enjoys the challenge of the hunt and the rewards of closing new managed services business, contingent IT projects and IT product sales. Making Winnipeg a smart community is a passion of Reg's. He participates on the Winnipeg Smart City Caucus and sub-committees to help promote Winnipeg as an intelligent city. Reg is success-driven, fast-paced, and works well in a diverse

	team and enjoys a dynamic and changing environment.
Nonprofit Executive	<p>Name: Dayna Spiring Title: President & Chief Executive Officer Organization: Economic Development Winnipeg Telephone: (204) 954-1988 Email: dayna@edwinnipeg.com Contribution to the Community: Economic Development Winnipeg Inc. (EDW) is the lead economic development agency for Winnipeg, encompassing EDW, YES! Winnipeg and Tourism Winnipeg. Dayna directs all aspects of the corporation's activities. She provides leadership and strategic direction, collaborates with key stakeholders and is a driving force behind making Winnipeg a compelling choice for business and tourism. She also participates on the boards of directors for Manitoba Hydro and Winpak Ltd. In addition to Dayna's extensive professional experience, she is a passionate Winnipegger with a drive to volunteer. Currently the vice-chair of the Winnipeg Football Club's board of directors and the first woman in over 25 years to serve on the Canadian Football League's board of governors, she previously led the team that brought the Gold Medal Plates competition to Winnipeg.</p>

25. Please provide the name and contact information for the person to be contacted by ICF in connection with this application.

Name: Edward Suzuki
Title: Director, Market Intelligence
Organization: Economic Development Winnipeg
Telephone: 204-954-1986 Fax:
Email: edward@edwinnipeg.com

26. Please provide from your own press list up to 10 local and regional media (print, broadcast or online), including the publication's name, the name and title of an editor or reporter, and an email address.

Publication	Editor/Reporter	Email Address
Winnipeg Free Press	Martin Cash	martin.cash@freepress.mb.ca
Winnipeg Free Press	Murray McNeill	murray.mcneill@freepress.mb.ca
Winnipeg Sun	David Larkins	david.larkins@sunmedia.ca
CBC News Manitoba	Bartley Kives	bartley.kives@cbc.ca
680 CJOB	Richard Cloutier	richard.cloutier@corusent.com
Metro Winnipeg	Braeden Jones	braeden.jones@metronews.ca
CTV News Winnipeg	Karen Mitchell	karen.mitchell@bellmedia.ca
Global News Winnipeg	Mitch Rosset	Mitch.Rosset@globalnews.ca
MyToba	Kevin Klein	kevin@mytoba.ca
103.1 Virgin Radio	Ace Burpee	ace@virginradio.ca

Ownership of Information

By submitting this information, the above-named community attests and acknowledges that:

- All information provided is accurate and fairly represents the past and current condition of the community to the best knowledge of the individual submitting the information.
- All information submitted to the ICF in connection with its international awards program becomes the property of the Intelligent Community Forum and will be used for the purposes of research, analysis and publication in pursuit of its global mission.

Intelligent Community Indicators

For a complete description of the Intelligent Community Indicators, visit www.intelligentcommunity.org and select "IC Indicators" on the Intelligent Communities menu.

1. **Broadband Connectivity.** Broadband is the next essential utility, as vital to economic growth as clean water and good roads. Whatever the speed, the power of broadband is simple enough to express. It connects your computer, laptop or mobile device to billions of devices and users around the world, creating a digital overlay to our physical world that is revolutionizing how we work, play, live, educate and entertain ourselves, govern our citizens and relate to the world.
2. **Knowledge Workforce.** Today, all desirable jobs in industrialized economies – and increasingly in developing economies as well – require a higher component of knowledge than they did in the past. It is by applying knowledge and specialized skills that employees add enough value to what they do to justify the cost of employing them. In the future, any employee whose "value-added" does not exceed his or her salary cost can expect to be replaced, sooner or later, by software or hardware. A continuous improvement in an evolving range of skills is the only route to personal prosperity.
3. **Innovation.** Innovation is essential to the interconnected economy of the 21st Century. Intelligent Communities pursue innovation through a relationship between business, government and such institutions as universities and hospitals. The Innovation Triangle or "Triple Helix" helps keep the economic benefits of innovation local, and creates an innovation ecosystem that engages the entire community in positive change. Investments in innovative technology by government contribute to that culture and improve service to citizens while reducing operating costs.
4. **Digital Equity.** Digital equality is a simple principle: that everyone in the community deserves access to broadband technologies and the skills to use them. Like most principles, it is easier to understand than it is to live. The explosive advance of the broadband economy has worsened the exclusion of people who already play a peripheral role in the economy and society, whether due to poverty, lack of education, prejudice, age, disability, or simply where they live. It has disrupted industries from manufacturing to retail services, enlarging the number of people for whom the digital revolution is a burden rather than a blessing.
5. **Sustainability.** Improving current living standards, while maintaining the ability of future generations to do the same, is at the core of sustainability. Throughout human history, economic growth has always involved the consumption of more resources and the production of more waste. As humanity begins to push up against the limits of the ecosystem to provide resources and absorb waste, we need to find ways to continue growth – with all of its positive impacts on the community – while reducing the environmental impact of that growth.

6. **Advocacy.** It is all too common for a community's leaders or groups of citizens to set themselves against changes that would ultimately benefit the community. The willingness to embrace change and the determination to help shape it, however, are core competencies of the Intelligent Community. Few places naturally possess those competencies. They must be cultivated, often over years, through advocacy.

Success Factors

In evaluating nominations, ICF looks for trends that characterize successful Intelligent Communities. We suggest that, where appropriate, your nomination refer to the following success factors in describing your strategy and results.

Collaboration. The development of an Intelligent Community typically requires intense collaboration among government, businesses, universities and institutions. Few organizations have enough resources, political capital or public backing to drive a community-wide transformation. But collaboration is challenging. It demands vision, flexibility, and a high degree of trust among the partners. Intelligent Communities develop the vision, find the flexibility and create trusting relationships among key constituencies. Effective collaboration is typically the result of the working environment created by effective leaders.

Leadership. It is fair to say that no Intelligent Community has succeeded without strong leadership. Effective leaders identify challenges, set priorities, communicate a compelling vision and foster a sense of urgency in achieving it. They establish a collaborative environment that encourages risk-taking and creates win-win relationships with partners in government, businesses and institutions. It matters little where leadership comes from. In the Intelligent Communities that ICF has studied, leadership has emerged from elected officials, government employees, business executives, universities and nonprofit organizations. What matters is the character, motivation and talents of the individuals who commit themselves to improving the economic and social wellbeing of the community.