

ACCESS Manitoba

The business of developing business

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The old model of government driving economic development through policy decisions and incentives is being replaced with a more collaborative process. In Manitoba, this new model involves the private sector, universities, and all levels of government working together to identify projects that move Manitoba into the knowledge-based economy.

A knowledge-based economy is one that effectively creates partnerships among industry, academic communities, and government. There is evidence that the growth of these communities occurs most effectively in clusters. A cluster is defined as a geographic concentration of competing and cooperating companies, suppliers, service providers, and associated institutions. Clusters are often built around or near a university campus since it can provide both research input and a source of new talent.



135 Innovation Drive is home to TRILabs, Profitmaster, and Incubat.

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However, in order to be effective, clusters need to be part of an overall strategy that will improve competitiveness on a regional and national level.

Western Economic Diversification's (WD) approach to cluster development is to help create the partnerships that respond to the needs of cluster members. By helping to develop and support specific industry sector clusters that bring together the private sector, government, and universities, WD improves the cluster's overall competitiveness and strengthens our overall economic base.

The simplest way to plan clusters is through research and technology parks. Throughout the world, these parks are recognized as key catalysts in the creation of clusters and innovative ventures due to the attraction of major high-tech firms and research establishments.

Until a few years ago, Manitoba was the only province in Canada without a park mechanism for transferring technology to the private sector and developing knowledge-based companies. While the University of Manitoba is well known for its research and



Smartpark is developing a world-class research and technology

technological capabilities, the limited commercialization of associated research and technology has hampered growth in Manitoba's technology sectors.

Recognizing the need for a technology park, the University of Manitoba (U of M) approached Western Economic Diversification Canada (WD) for support. In 1999, WD contributed \$3 million under the Canada-Manitoba Economic Partnership Agreement (EPA) and the Western Diversification Program (WDP) for the engineering, landscape, and architectural design of a park. These funds also supported the costs of installing roads, sewers, and other infrastructure necessary before building could commence on what is now known as Smartpark.

Today, Smartpark is a world-class research and technology park located at the U of M's Fort Garry Campus. The park encourages collaboration between the university and private industry, which has accelerated new technologies in the areas of advanced materials, manufacturing, pharmaceutical and agriculture biotechnology, resource-based products and processing, and information and communications technology.

Creating foundations for technology commercialization

The Engineering Faculty at the U of M has enjoyed an excellent working relationship with the business community. This relationship has been enhanced with \$1.065 million in support from WDP for three new labs: a Nano-Systems Fabrication Facility (micro-manufacturing), a Thermofluids

Laboratory (ice spray wind tunnel), and the Applied Electromagnetics Simulation Facility (antenna and microwave labs).

These labs have enabled scientists and engineers to build upon their ideas and create new innovative products, which are then further developed, prototyped, and commercialized at Smartpark. An additional \$1.24 million from the EPA for the Nano-Systems Fabrication Facility has created new opportunities for innovation and commercial collaboration.

Dr. Cyrus Shafai and Dr. Doug Thomson of the U of M Electrical Engineering Faculty are working with Dr. Arvind Shaah of the Civil Engineering Faculty and IDERS Engineering Inc. at Smartpark to develop micro sensors for buildings. "We are using the Nano-Systems Fabrication Laboratory to build the sensors and IDERS is helping to design the electronics and optical sensor readouts," said Dr. Shafai. "The sensors will be embedded into the concrete of buildings to sense vibrations and will communicate via fibre optics to a central computer to advise on any structural damage, fatigue, or cracks. This will make structures more cost effective to construct, operate, and maintain."

Dr. Thomson has also worked with IDERS on a capacitance sensor, which measures the ability of two adjacent conductors to store electric charge. "We began research in the nanofabrication lab for a sensor that would allow manufacturers of integrated circuits to figure out what they have actually made," laughed Dr. Thomson. "The circuits, or microchips as they are also known, are 1 cm² (slightly smaller than a fingernail) or smaller and contain millions of

interconnected devices. So there is an enormous effort in verification and validation. These sensors will make that job easier."

The Richardson Centre for Functional Foods and Nutraceuticals is one of the newest additions to the functional food science and development cluster in Manitoba. Other key partners working on this initiative include the Cereal Research Centre, the National Centre for Agri-food Research in Medicine and the Food Development Centre in Portage La Prairie.

The Richardson Centre received \$10 million through WD programs. The Centre will focus on the research and development of food supplements extracted from crops grown in the



park at the University of Manitoba's Fort Garry Campus

prairie region: from identifying useful compounds in plants and enhancing these compounds, to developing ways to process and incorporate them into food products that consumers will accept.

Dr. Peter Jones, a leader in the field of functional foods, was recruited from McGill University to take on the role of Director for the new Centre. "Western Economic Diversification funding has been very important for the successful launch of the Richardson Centre," said Dr. Jones. "With WD's support, we've been busy developing the lab and plant facilities. They will be outstanding and unmatched in Canada."

Although the Richardson Centre is still in the process of hiring key people, Dr. Jones and his team of technicians

and graduate students are already hard at work. "We are involved in a number of great projects," noted Jones with enthusiasm. "We are researching Becel™ margarine for Unilever, plant sterols in yogurt for Danon, and hoping to make breakfast cereals healthier in the future. We are also working with Merck Frosst, a pharmaceutical company, on agents that will act against obesity."

Incubating startups

Under WDP, WD provided \$1.2 million to develop an incubator program called Incubat. Incubator programs assist inexperienced entrepreneurs to establish their business and commercialize their ideas. Incubat, an alliance among the University of Manitoba, e-Stage Capital and Genesys Venture Corporation, provides experienced early-stage management, business and financial counselling services to startup companies in the information and communications technology, and biotech sectors.

"Over the past decade, the University of Manitoba has launched approximately 15 startup ventures," said Garold Breit, Executive Director of Incubat. "Through these experiences, the University and the community have come to recognize the unique role of a campus-based business incubator."

"In the recent past, Incubat has been the home to approximately ten startup [companies]," noted Breit. "Some of those companies have already graduated to larger facilities in the community. And in early 2006, the University of Manitoba Technology Transfer Office announced the formation of a new venture. We expect the new company may locate in Incubat."

TRLabs, a WD-supported information and communications technology research consortium, is one of the three anchor tenants and provides technology transfer and project development assistance to incubator tenants.

"The University of Manitoba's Smartpark is an ideal location for TRILabs," said Jeff Rohne, Director of Manitoba Operations. "We are in an environment where creative and motivated individuals share their enthusiasm for their respective fields. The synergy created here is a result of the location. And to be close to both the university, where we draw our staff from, and industry is the best blend of all to have."

Technology Commercialization

Under the WDP and EPA programs, WD has contributed \$4.5 million



Aerial photo of Smartpark.

1. Richardson Centre for Nutraceuticals and Functional Foods
2. Cangene Corporation
3. 137 Innovation Drive
4. 135 Innovation Drive
5. 1 Research Road
6. Innovative Magnetic Resonance Imaging Systems Inc.
7. Industrial Technology Centre

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This facility at 137 Innovation Drive is home to IDERS Inc., TDS Technologies Inc. and Transgrid Solutions Inc.

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towards the Composites Innovation Centre (CIC). CIC supports innovative research, development, and application of composite materials and technologies for manufacturing industries. Composites are fibre reinforcements (fibreglass or carbon) held together by resin or glue. They replace heavier materials such as metals, making products lighter and reducing assembly costs.

CIC shares space with the Industrial Technology Centre (ITC) in Smartpark. "The relationship with ITC is a good fit in terms of what we are doing," says Sean McKay, Executive Director. "We have several projects on the go at the moment and ITC provides advanced testing and analytical services that enable us to provide more comprehensive support to our industry customers."

Some of the projects CIC is working on include developing composite technologies for Boeing's 787 aircraft, developing a capability to process high temperature materials for military applications with Magellan Aerospace, using a resin-infusion technology to redesign a composite product for Motor Coach Industries, and incorporating hemp fibres and polyurethane resin materials in composite desktops for Avanti Polymers.

"Together with the Manitoba Rural Adaptation Council and other funding agencies, we are supporting a project with the University of Manitoba to develop polymer resins from canola oil," said McKay. "To strengthen ties with the university, we are also working closely with them to implement a joint CIC-University research and technology

lab in composite materials to be located at Smartpark. This will allow us to co-locate CIC and university staff, which will open the door for more interaction and collaboration."

The important role of research institutions as drivers of cluster developments has also been emphasized in places like Silicon Valley in the U.S. and Cambridge in the U.K.

A tangible benefit occurs when like-minded people are encouraged to associate, and the University of Manitoba's Smartpark is ideally suited to link the private sector, academia, and the global high-tech community. ■