

Kick start your R&D

by Suzana Krpan

Alberta collaborates with the private and academic sectors to build a knowledge-based economy

HIGH OIL AND GAS revenues may be fueling the Alberta powerhouse today, but the Alberta government is not sitting back and idling; it is expanding its economy by using innovation to build on natural resource strengths. Alberta is strengthening the province's research system by facilitating research and development collaborations between governments, publicly-funded institutions and industry. These innovative research and development collaborations are helping Alberta to establish a competitive knowledge-based economy.

In January 2006, three memoranda of understanding (MOU) were signed between the Alberta government and Hewlett-Packard (HP) to set the stage for the development of joint research projects. Proposed projects include a new facility at the University of Calgary for work on advanced data centre operations, joint research with the National Institute for Nanotechnology on tiny sensors to improve medical and environmental diagnostics, and an initiative with the University of Alberta to advance videoconferencing technology. These research collaborations extend the ongoing relationships between HP and Alberta.

Data centre research under consideration includes developing tools to automate the operation of computer facilities, testing advanced computer programs for industry applications such as oil and gas exploration, and simplifying user access to computing resources. Data centre researchers would also work with various other groups needing computer resources for leading-edge simulation and modeling. Additional expected benefits of this work could include more rapid general science discoveries and product developments.

The nanoscale research effort, with the National Institute for Nanotechnology, at the University of Alberta would focus on the development of tiny sensors that could provide significant benefits in medical and

environmental diagnostics. Nanoscale sensors could aid in diagnosing diseases such as cancer while the patient is still in the doctor's office, instead of having to wait for results from a lab, decreasing time-to-treatment and increasing cost-effectiveness. Nanoscale sensors could also be useful in environmental diagnostics by aiding in the analysis of ground water and air quality. The proposed nano-sensor research also includes the integration of nanomaterials into microsystems which could lead to more efficient nanoscale sensors in terms of time, energy and cost.

The proposed videoconferencing initiative with the University of Alberta combines the virtual reality research conducted by Dr. Pierre Boulanger, iCORE industrial research chair at the university, with research on desktop immersive videoconferencing underway at HP Labs in Palo Alto, California. This combined effort promises to give conference participants a virtual 3-D presence in video, and the perception of a more natural and realistic interaction from remote locations.

Exciting proposed projects such as these bring benefit to all of the involved parties. The Alberta government, facilitating this research collaboration, helps diversify the economy by building the province's research and development capability. The universities and researchers receive either a straight donation of equipment or equipment at a cost saving. The industry partner is given the opportunity to have their equipment and technology tested by researchers performing actual research. The researchers are connected to top industry organizations and have the chance to collaborate with some of the best minds in the world. This cooperative relationship heightens the level of knowledge at the university and provides graduate students with an unbeatable research experience.

"Alberta is committed to building research and development collaborations where all partners can succeed as they

share knowledge, costs and risks," said Victor Doerksen, minister of Alberta Innovation and Science. "This type of relationship creates opportunities for stronger research programs and improved technology development."

Since 1999, Alberta Innovation and Science has been leading technology missions and successfully building research and development collaborations. Through these efforts they have established best practices and guidelines for developing these research relationships.

1. Explore different regions and companies with similar research and development interests.

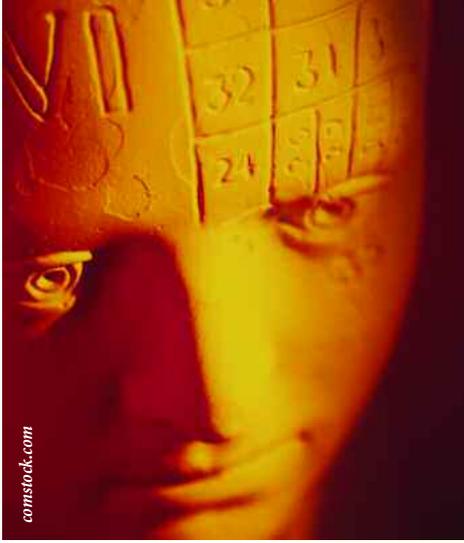
The Alberta government has been active in the United States, marketing Alberta-based science, research and technology opportunities and establishing relationships for the mutual benefit of Alberta and the US. Alberta chose the US as a target area since this country has the highest concentration of high tech companies in the world.

HP is a natural match since it is a major information and communications technology (ICT) company that has independent research labs all around the world. It also has research and development interests that align with Alberta's strategic research priorities in ICT. The province's other strategic research priorities are energy and the life sciences.

2. Meet with companies and discuss areas of opportunity and what your organization can offer.

Approaching HP, the Alberta government knew that the province's strengths include a strong research expertise, a well developed research infrastructure and a business-friendly environment.

The first potential area of opportunity that they chose to concentrate on was high performance computing. Alberta is home to WestGrid, one of the most successful



computer grids in Canada, which provides high performance computing, networking and collaboration tools to seven research and academic institutions in Western Canada. This sparked HP's interest since they were looking for research groups with large operational grid experience.

Through further discussion and consultation, research areas can lead to other areas of opportunity. For instance, the most recently proposed projects highlight Alberta's strengths in high performance computing, nanotechnology and advanced videoconferencing technology.

3. Develop specific proposals for areas of mutual interest.

Once the Alberta government found areas of opportunity for collaboration with HP, it went through a process of matching the interests of Alberta researchers with those of HP, which aided in the development of specific project proposals. Throughout the matching process, the government kept in mind that a successful research and development collaboration requires that both parties benefit from the relationship.

4. Develop and sign a memorandum of understanding or an agreement.

Alberta and HP's successful collaboration began in 2004, in the area of high performance computing, with a multi-year commitment to support the Grid Computing Research Centre opening at the University of Calgary.

A year later, Alberta and HP signed a research framework agreement that set the stage for long-term collaboration between HP Labs and a number of publicly funded institutions. In January 2006, three memoranda of understanding were signed

between the Alberta government and HP for the development of joint research projects on advanced computing and data centre management, nanotechnology and advanced videoconferencing technology.

A memorandum of understanding was the legal instrument of choice since it served to expedite the process. It helped build momentum and advanced the relationship to the next stage.

An MOU outlines the commitment from the involved parties and can include information regarding:

- a donation of research equipment from the company or discounted procurement;
- access to facilities;
- personnel/researchers exchanges; and
- project length and a financial summary of contributors.

Since an MOU is typically not legally binding, the next step after signing an MOU is to generate a legal agreement and have the involved parties engage more formally.

Following the signing of the agreement, parties proceed with the project rollout plan. Usually the collaborative research takes place at an Alberta institution. Commercial products or technologies resulting from this research are typically governed by the publicly-funded institution's intellectual property policies. Any licensing royalties generated go to the publicly-funded institution, and these agreements have a strong potential for spin-off company creation in Alberta. Once the project is completed, an evaluation should be performed. If parties are satisfied with the results, they might consider continuing with a second phase.

Building a thriving knowledge-based economy is the key to competing in global markets. Bringing together top university research talent and industry players can generate synergies to open up new possibilities. Government can play a lead role by facilitating these innovative research and development collaborations.

"You cannot be everything to everyone. First, focus on your strengths and concentrate on areas that have the greatest market potential," said Doerksen. "Then, find the best in the world and work with them. I think this is one secret to success in a global economy." *MM*

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