

When to bring in the big brains

by Tony Wanless

PROBLEM: In our ferociously competitive environment, it's innovate or die. But sometimes it's not that easy to think outside the box.

SOLUTION: Team university brains with business to tackle problems and create new products and processes.

IN THE 21st CENTURY, all economies must become innovation economies. Competition is ferocious, new ideas flow in from all sides and a competitor is always popping up who can do the job for less. So every company in B.C. must embed a culture of innovation into its operations if it wants to survive.

But it's not easy to innovate. Most companies are struggling to do whatever it is they do, let alone develop processes or products to do it better. To form a real innovation culture, companies have to look to every possible resource, inside or outside their own walls, that can help them create something new and different.

PROBLEM

In the U.S., this demand for innovation has been recognized and answered with brainpower – big companies routinely have swarms of PhDs on staff to help them with their research and development. But in B.C. – and to a larger extent, Canada – the cult of the in-house geek has never really taken off. We're more conservative here, so when it comes to brainy, we tend to stick with engineers: After all, they built the railroads and the communications networks. They get things done without spouting a lot of theory while doing it.

Also, companies here are usually smaller, and thus a little more hardscrabble and pragmatic; there's a rampant belief that this

conceptual innovation stuff is great for the big guys down in Silicon Valley, but not here where concrete results are the only measure that counts. We tend to view such things as university research as irrelevant to everyone but university professors. Meanwhile, isolated in our educational institutions is a collective brain trust that could help industry, if only someone could find the way to bridge the long-standing chasm between hard-nosed business and the ivory tower.

What's worse, this division is a leading contributor to the loss of our best and brightest: There are only so many university professorships open, so any brainiac with a new degree in hand usually ends up moving east or to the U.S. to ply their trade.

SOLUTION

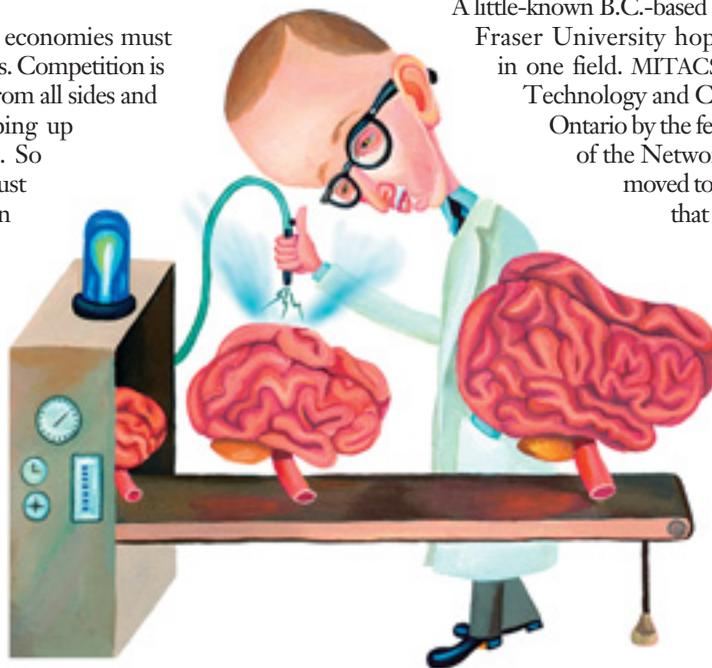
A little-known B.C.-based operation working out of Simon Fraser University hopes to change all this, at least in one field. MITACS (Mathematics of Information Technology and Complex Systems) was created in Ontario by the federal government in 1999 as part of the Network of Centres of Excellence and moved to SFU in 2001, because it reasoned that the innovation climate was better in B.C. MITACS's dream is to create collaboration between industry and academia in one of the most arcane of fields – mathematics.

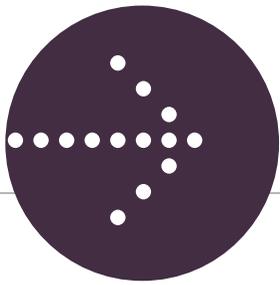
To be generous, mathematicians have never exactly registered high in the B.C. corporate consciousness. Unlike the U.S., where math wonks are currently being turned into heroes by television shows like *Numb3rs*, movies like *A Beautiful Mind* and news profiles of über-geeks such as Microsoft billionaire Bill Gates,

in B.C. we still tend to view them as weird theoreticians who wouldn't know a real-world situation if they tripped over it.

So, MITACS now brings sweaty on-the-ground entrepreneurs together with ivory-tower mathematicians to leverage their skills and create new show-stopping products and processes that can be applied in business.

After its move, MITACS CEO Arvind Gupta, a computer sciences math prof, and COO Jim Brookes, a seasoned industry exec from BC Tel and Telus, built a team and an infrastructure. Their strategy was simple: Rather than lament the 'smallness' of





Canada, use it as an advantage. Canada does have a sweet spot: It's small enough – in terms of the number of mathematicians in academia and companies that might require their services – that a nimble and effective alliance can be created. Yet it's large enough to have some enormous brainpower at its disposal.

When building out, Gupta and Brookes modelled the centre along corporate lines (MITACS is operated by MITACS Inc. instead of the government), and set about creating an agency that would link companies and mathematicians together on specific projects. It focused on the fastest-growing segments of the economy – biotechnology and health, environmental technologies, information processing, risk and finance, communication, networks and security.

Currently, MITACS has 305 scientists, 611 students and 169 partner organizations working on 32 projects involving 48 Canadian universities. It acts as a broker that sources projects and then matches them to university-based scientists. MITACS, the universities, private companies, and sometimes provincial governments, share costs for each project.

In Vancouver, it has lent its brainpower to such diverse businesses as games maker Electronic Arts and fuel cell giant Ballard Power. According to Gupta, MITACS is best employed when a company wants to innovate but can't handle the extensive modelling or testing required for innovation. It's proof-of-concept work that is best done in a lab where equation-building mathematicians can model and test the thousands of factors involved before commercialization begins.

MITACS is also following the social entrepreneurship pattern. It currently receives \$5.4 million annually in federal funding, but supplements that with revenue from industries and projects. In essence, it rents out its highly focused brainpower to industry. Demand for its services is growing and it plans to be self-sufficient within five years.

Last year, MITACS put in another building block to secure its future: It created a student internship program – partially funded (about \$300,000) by the B.C. government, which is now looking at extending the concept to other areas of education – that placed promising math

students directly in industry to work on projects. The purpose of this plan was two-fold: it freed up many of the overworked math professors to merely oversee project research and allowed talented math students to rub shoulders with less theoretical time-and-money-driven business operators.

A typical example involved a project called Facility Location Optimization, overseen by SFU professor Binay Bhattacharya and involving astronomy student Ben Lewis. The project studied the numerous variables that had to be modelled for a software project for several partners, including the courier company Dynamex and North Vancouver's FDM Software, which creates dispatching software for public safety vehicles. The concept involved determining the most efficient ways to locate facilities and dispatch vehicles in a constantly changing setting, which involved the study of thousands of variables. FDM, a 16-year-old, 35-person private company, subsequently hired Lewis to run numbers full time.

"The project gave us the ability to plan out things and leverage the results to software," explains Ed Colin, FDM president. "It was very constructive to put business people together with university people."

LESSONS

- Innovation is about using resources right. Most businesses have enough ideas to keep them busy for years to come. Their problem is determining which ideas can and should be pursued first. That means lining up the right resources.
- Collaboration is about teaming up the right skills, even if they're not in-house. There are many options available now – including outsourcing expertise – for companies that want to pursue one-time projects. Increasingly, high-end resources are 'rentable' for collaborative projects that are too big for one company to handle.
- Self-sustainability is about following the entrepreneurial path. Fundraising is a continuing problem among social service operations, and many are now trying to be more entrepreneurial in order to find other sources of funding. But to do so, they have to go all the way – right down to modelling themselves along business lines. ■

GAME PLAN SUGGESTIONS?
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