



The *Innovation* Skills Challenge

Profiles from Atlantic Canada



Atlantic Canada
Opportunities
Agency

Agence de
promotion économique
du Canada atlantique



Making Innovation Happen in Atlantic Canada

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A Commitment to Sustainable Development

At ACOA, we believe that a healthy environment is essential to the development of a strong, growing and sustainable economy. We are committed to protecting the environment of this region by promoting sustainable businesses and communities in Atlantic Canada and by setting an example in the environmental management of ACOA's own operations.

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Canada

Minister's Message

The Honourable Gerry Byrne

Small and medium-sized enterprises (SMEs) drive the economies of the four Atlantic provinces. Private businesses are the engines of job creation.

In 2000, the Government of Canada launched the Atlantic Investment Partnership (AIP), a \$700-million initiative designed to strengthen the capacity of Atlantic Canadians to innovate and to compete in the global, knowledge-based economy. A key element of the AIP is the Innovation Skills Development Initiative, which is designed to help SMEs improve their innovation and technology management capabilities, increase the region's pool of technology expertise, and encourage our young science and technology graduates to explore and secure promising employment opportunities in the region.

The federal government's Innovation Strategy, launched in February 2002 builds on these foundations and works to ensure that Canada becomes one of the most innovative countries in the world by 2010.

In the end, though, what drives innovation is people. As you will read in this brochure, innovation is happening in this region. Business owners who encourage continuous skills development for their managers and staff are finding that there is, indeed, a pay-back on the investment — where it matters most, on the bottom line. I salute their ingenuity!

The Honourable Gerry Byrne
Minister of State
Atlantic Canada Opportunities Agency



At a glance

Atlantic Canada's economy has undergone dramatic changes in the past few years, from an economy based on natural resources to one increasingly driven by knowledge. The rapid development of information and communication technologies, in the latter half of the 1990s, spawned a multitude of new economy companies in such emerging sectors as information technology and telecommunications, geomatics, biotechnology and environmental technology. At the same time, traditional resource-based firms in forestry, fishing, mining and agriculture have had to modernize — to adopt new technologies, value-added processes and innovative management strategies — in order to compete in the global environment.

The definition of competitive advantage has changed.

As a recent report by the Moncton-based Canadian Institute for Research on Regional Development notes: *“Healthy management, technological competence and innovation — these, more than a ready supply of natural resources, now constitute the necessary conditions for competitiveness.”*¹

Small and medium-sized enterprises drive the economy in Atlantic Canada. They are significant generators of jobs and economic growth. In the past decade, SMEs in the region have become more productive, more export-oriented, and more global.

What's driving successful SMEs is the power of innovation.

In this brochure, you will meet some highly innovative Atlantic Canadian firms, small and medium-sized companies that, despite their size are, nonetheless, players in the global economy. People working in aggressive, innovative companies in manufacturing, services, tourism and resource-based industries are “going off the beaten path,” adopting new and innovative technologies, inventing, producing and successfully exporting new products in both goods and services.

As you read these nine company profiles, you will realize that these firms have a number of things in common. All have realized that innovation depends on investing in people; that, in fact, innovation requires creating an “innovation culture” within the firm, where ongoing skill development is essential, and where employees are rewarded on an individual basis for adding value to the company. All nine companies have been successful, not only at developing unique and innovative products, but also getting those products into the global marketplace. They also realize that innovation is a complex and ongoing process, that you can't be innovative one day and then “ride it to retirement,” as one company owner says.

We also present an interview with Dr. Alan Cornford. He recently carried out a major study for the Atlantic Canada Opportunities Agency (ACOA) on innovation in Atlantic Canada, and has some ideas about what needs to be done to build the innovation economy in the region.

And finally, we present some information on ACOA's innovation programs.

¹ Maurice Beaudin and Sébastien Breau, *Employment, Skills and the Knowledge Economy in Atlantic Canada*, The Canadian Institute for Research on Regional Development, 2001.

General Overview

Today more than ever, it's important for SMEs in all sectors, not just those in high technology, to meet rapidly-changing market needs quickly and efficiently through the application of new technology. The capacity to assimilate and apply new knowledge in order to improve productivity and create new products relies on scientific ingenuity, entrepreneurial flair, and a firm's ability to attract and retain the right people.

The challenge is to establish and maintain a “culture of innovation” within an organization, keeping creative people excited, involved and searching for new ideas. The challenge is to tap the creative brainpower of all employees, not just those in research and development (R&D) or marketing who are expected to be creative.

A focus on human resource development is a distinguishing feature of faster-growing firms. In fact, in today's business environment, some consider a human resource strategy to be the *innovation strategy* of the firm.

Because it is people, ultimately, who make innovation happen!

What is innovation?

The Conference Board of Canada defines innovation as: “*a process through which economic value is extracted from knowledge through the generation, development and implementation of ideas to produce new or significantly improved products or processes.*”

Innovation is applied creativity — making connections between seemingly dissimilar concepts or things that normally don't go together — to come up with ideas for new products, processes, technologies or services.

The innovation process is multidimensional, and can involve many players and partners — entrepreneurs, companies, researchers, investors, patent agents and government. Successful innovation takes place over extended periods of time.

Innovative companies are able to:

- Identify new opportunities and find ways to commercialize research;
- Deal with technical details of developing a product to meet market needs;
- Manage and use advanced computer technologies;
- Manage new product/process development;
- Attract and retain highly-skilled workers;
- Integrate technical, marketing and other expertise in functional teams; and
- Develop partnerships and build alliances to commercialize new technology.

Highly innovative companies have significant and sustained growth rates. Developing an “innovation capacity” will be increasingly critical to the success of small and medium-sized businesses in Atlantic Canada.

What do we mean by innovation skills?

How does a firm develop an “innovation capacity”? By investing in its human resources.

In a knowledge-based economy, a firm's competitiveness and ultimate success will increasingly depend on its ability to find highly-skilled people. Education, today, is the critical input. As one report notes: “*In the 1950s, when three in five workers had no training or particular professional expertise, education was considered superfluous; today, the one worker in five who does not have an education is at a serious disadvantage compared with those who do.*”²

New and emerging technologies are rapidly changing skill requirements for many jobs. Highly-skilled workers are increasingly in demand—not only at the high end of the labour force and in high-tech industries, but also in all sectors including resource-based industries—and there is pressure to continually update skills. “Lifelong learning” has become part of our vocabulary.

² Ibid, Beaudin and Breau.

Firms today require a diverse set of skills to manage the overall innovation process and to carry out innovative activities. The following are a few examples:

- New Product Development/Commercialization Skills (i.e., idea generation, prototype development);
- Research and Development Skills (core science and technology capabilities, identification of commercialization opportunities);
- Productivity Improvement Skills (adoption of new and/or leading-edge technology; process improvement);
- Innovation Partnering Skills (building SME-university linkages for R&D; locating venture capital funding);
- Technology Management Skills (using information and communications technologies for technical processes; ability to develop new products based on market demand); and
- Innovation Human Resources Development Skills (recruiting and retaining highly-qualified innovation personnel; training and skills development for technology managers and workers).

Visualizing the innovation process

Innovation is a complex process. Here's one way to visualize the key components of innovation (See Figure 1) where the innovative firm is the nucleus, surrounded by key elements that make innovation happen.

Figure 1: The Key Components of Innovation³



And finally... are innovative companies profitable?

Skills development is costly, no doubt about it. SMEs in Atlantic Canada often don't invest in training because of a lack of money to do so. Yet research shows that investment in human resources pays off.

In Statistics Canada's *Survey of Innovation 1999*, close to 60 per cent of manufacturers, including resource-based manufacturers, reported that innovation increased the profitability of the firm. Another study found a high rate of failure of companies in the service industry, and reported: "*Firms that do not innovate are frequently replaced by new ones that have new or improved products or employ more efficient methods of production and delivery.*"⁴

A more important question to ask might be this: Will companies survive in today's global economy if they're *not* innovative; if they're *not* willing to invest in human resources?

In the following pages, we profile nine Atlantic Canadian companies, all of which are very successful. As you will read, their *raison d'être* is innovation. In all nine companies, it's what they *do*. It's their reason for existing. If they didn't innovate on a regular and ongoing basis, they would cease to exist. A key element in all these companies is a willingness, indeed an urgency, to invest in their people to maintain state-of-the-art knowledge and skills within the company. Because experience has proven that it *is* worth it!

Is innovation profitable? Read on.

³ National Research Council Canada

⁴ Statistics Canada, *Business Demographics as Indicators of Innovation Activity*, 1997.

Garrison Guitars

St. John's, Newfoundland and Labrador

Chris Griffiths was 12 years old when he first picked up a guitar at his family's home in Newfoundland. A "tinkerer" at heart, Griffiths was more fascinated with the mechanics of how the guitar worked, than with hearing himself play. From the beginning, he was obsessed with the thought of "building a better mousetrap."

Fast forward to 2002. Griffiths, now 28, is the founder and president of Griffiths Guitars International Ltd., one of the largest acoustic guitar companies in Canada, with 55 employees and a 20,000 square foot state-of-the-art manufacturing plant in St. John's. In less than a year, the company has sold 16,000 of its custom-built Garrison guitars throughout Australia, the United Kingdom, the Netherlands and North America.

Getting there was no easy task. After high-school, Griffiths apprenticed at the Gallop Guitar Hospital in Big Rapids, Michigan, then spent years running a one-man guitar repair shop while developing a revolutionary method of guitar construction. The system replaced the 30 pieces of individually-machined wood traditionally installed in guitar bracing systems, with a single glass fibre component that enhances structural stability, improves resonance, and cuts production time from several hours to 45 seconds. The result a better guitar for less money.

After years of prototype development, testing and retesting, the Griffiths Active Bracing System™ was patented internationally. "The concept was quite simple," says Griffiths. "Making it work was the hard part."

The innovative thinking required to *make it work* wasn't a one-shot deal. Griffiths invented a new guitar but also the processes, tools and equipment required to produce it. Since production began in the summer of 2001, employees have struggled to streamline production and to increase capacity and efficiency. In eight months, one department was retooled four times.

What drives employees—engineers, designers, production people—is an innovative management approach to sharing the fruits of their labor. The company has implemented a pay system tied to production efficiencies, a profit-sharing plan and gives employees a chance to become shareholders.

"I want them to think of money wasted on glue as being their own money," says Griffiths, "because it is." Griffiths credits much of his business savvy to his involvement with the Genesis Centre in St. John's, a start-up incubator partially funded by the Atlantic Canada

opportunities Agency (ACOA) that offered peer counseling and mentoring.



Griffiths considers innovation to be a better way of doing things that applies not only to inventing a new product. The approach to rewarding employees is only one example. His approach to marketing is another. Traditionally, guitar manufacturers have dozens of distribution centres throughout the country. He asked: "why does it have to be done like that?" So far, the company's entire production has been sold worldwide by one salesperson.

In 2001, Griffiths won the Canadian Manufacturers and Exporters' "Canadian Innovation Award for Process Efficiency in Lean Manufacturing."

"Innovation means having a mindset of wanting to continuously improve, not just your product but every aspect of your company," says Griffiths. "But you don't get to be innovative one day and ride that to retirement. You have to be innovative every day."

"You don't get to be innovative one day and ride that to retirement. You have to be innovative every day."

Chris Griffiths, President
Griffiths Guitars International Ltd.,

International Spinners and Mini-Mills Ltd.

Belfast, Prince Edward Island

Larry Sutherland's journey has been an unconventional one, from a sheep ranch in British Columbia to textile manufacturing mini-mills in Belfast, Prince Edward Island (P.E.I.).

The owner of International Spinners and Mini-Mills Ltd., Sutherland and his family have gone from spinning wool themselves to designing and making small-scale equipment that does the job. In the process, they've opened doors to economic development in regions around the world.

“Innovation can be tough going. It's easier to do something that people already understand. But it does pay off.”

Larry Sutherland
International Spinners and Mini-Mills Ltd.

At the heart of what they have done is innovation. “The idea of any micro-industry is to take a readily available resource or an unsatisfied local need, and do a better job than the big commercial players do,” he says.

“With the sheep ranch, we needed to get our wool processed, but it wasn't easy. Traditionally, textile equipment is large, cumbersome and expensive. So we started making basic machines. We eventually realized that what was needed was complete, affordable and user-friendly mills.”

In the past 10 years, the company has designed and developed the technology for 15 different machines – from pickers, carders and dehairing machines, to multi-spindle spinners and feltmakers – and has installed them in countries around the globe. Now, with a modest investment, anyone can afford to produce commercial quality yarns.

These “mini-mills” are helping communities develop cottage industries in parts of the world

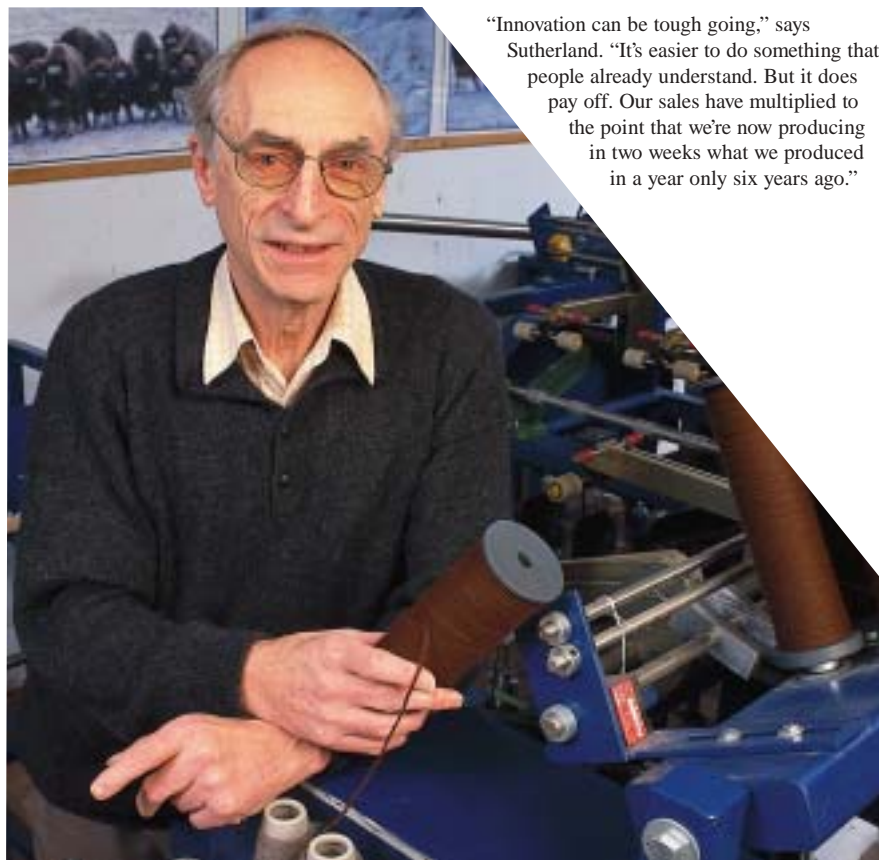
where exotic fibres are abundant, whether they are alpaca and llama wool in Bolivia or muskox hair in Nunavut.

The company spent two years in intensive research and development (R&D), designing, testing and producing sophisticated machines using Computer Assisted Design software. “The challenge,” says Sutherland, “is that you're marketing a product that no one has offered before. We're continually prototyping and

mini-mill high in the Andes Mountains, in Bolivia, 13,000 feet above sea level. They have also recently put a mill in a lighthouse on a remote Scottish island where there are 2,500 sheep and only 67 residents.

“There's enormous potential for this equipment in all parts of the world, wherever people are dealing with exotic fibres. This is particularly apparent in remote places, and we hope to have wind-power generation running our mills where this may be a benefit.”

“Innovation can be tough going,” says Sutherland. “It's easier to do something that people already understand. But it does pay off. Our sales have multiplied to the point that we're now producing in two weeks what we produced in a year only six years ago.”



developing new machines.” One-third of the company's finances are continuously re-invested in R&D.

Obviously, training is on going because product development never stops. The staff of 25 includes “fibre artists,” weavers and spinners as well as welders, machinists and electronics experts. “When you're doing something completely different,” Sutherland says, “there's a lot of educating to do in all directions.”

The company also trains its customers to operate the machines, both at a demonstration site in P.E.I. and at the customer's location. Company personnel have already installed a

Diversified Metal Engineering Ltd.

Charlottetown, Prince Edward Island

In 10 short years, Diversified Metal Engineering Ltd. (DME) of Charlottetown, has grown into an international business with annual revenues of \$5 to \$8 million, 60 employees and sales offices around the world.

Launched in 1991, the company got in on the ground floor of the micro-brewing industry, designing and developing custom-built equipment that allowed small brewers to perform like the “big guys” but at an affordable price. DME expanded into the bio-pharmaceutical industry, and is currently in the process of designing and developing value-priced pressure filters for small to medium-sized pharmaceutical companies.

More recently still, DME has partnered in the development of the Marine Exhaust Systems Eco-Silencer, a unique product that installs in an engine exhaust stack, and uses seawater to remove soot, reduce airborne noise, and greatly reduce harmful emissions. The result of three years of research and development (R&D) work, including sea trials aboard the Canadian Coast Guard icebreaker, the Louis St. Laurent, the product is being marketed to the cruise ship and mega yacht industry around the world.

specialists with people in marketing, purchasing, production and at least one end-user. DME has implemented a comprehensive project management process that includes an extensive quality control program and supports on-going staff training. It forms strategic alliances with companies that offer complementary products and services to the existing customer base.

An element that nourishes the innovation culture within the company is a profit-sharing plan for all employees plus other reward systems (such as royalties or commissions on eventual sales of a new product) for key contributors of ideas. “Such systems have provided strong motivation,” says Toombs. “People commit themselves to resolving their design ideas into something that will sell.”

That, for Toombs, is key. “The biggest challenge in innovation is not coming up with ideas,” he says, “it’s funneling those ideas into ones that will work, being sure that there is a market, and finally—perhaps the greatest challenge—facilitating a process to bring the product to ultimate commercialization.”

DME has installed equipment around the world, in countries as diverse as the United States, England, Ireland, Bermuda, China and Japan. The company has sales offices in Australia, the United States, Denmark and Japan.

Toombs, a professional engineer, won the Ernst and Young “Young Entrepreneur of the Year” award for Atlantic Canada in 1997.

“The biggest challenge in innovation is not coming up with ideas, it’s funneling those ideas into ones that will work, being sure that there is a market”

Peter Toombs P. Eng., President
Diversified Metal Engineering Ltd.

His advice to other companies? “Any idea can be developed,” he says. “The question is, at what cost? The important thing is to have a practical understanding of whether the idea can be sold, in what market, at what margin, and how many. That really dictates whether a development process should begin.”



The key to company growth has been innovation. “We’re designing unique, high-value items that have a typical lifespan of 15 to 50 years,” says president Peter Toombs. “If we don’t continue to develop new products and new markets, growth will just not happen.”

DME’s innovation strategy includes a number of critical elements. Integrated design teams involve engineers and R&D

Unique Patterns Design Limited

Dartmouth, Nova Scotia

Unique Patterns Design Limited is a classic example of necessity being the mother of invention.

The Nova Scotia company was born in 1994 when owner Tanya Shaw Weeks, who had been running her own dressmaking shop since the age of 19, noticed that fabric stores were increasingly asking her to adjust patterns to

she hooked up with engineers and software developers. The rest, as they say, is history.

The team developed a revolutionary software program that allows a woman to go on the company Web site, input her measurements, and choose from any number of patterns that will be made to measure, specifically for her.

“We set out to solve a problem, to respond to an identified market need,” says Weeks. “That’s what innovation is primarily about.”

The company has recently signed an agreement with The McCall Pattern Company, the major pattern maker in New York, where big city shoppers now order custom-made patterns directly from Weeks’ Dartmouth operation.

A sister company, Virtually Yours Inc., has since been launched and three more innovative products developed, based on the concept of letting women see how they look in various styles, colours and fabrics before buying a pattern and material, using an interactive online program. The user can actually send in a digitized photograph, and view a photo-realistic image of herself online, right down to her smiling face.

The company now has 24 employees, including a number of pattern drafters who work from home. An important part of the firm’s development has been staff training, namely an in-house six-week training program for pattern drafters to teach them to use the software.

“People are so much more confident and effective if they’re properly trained,” says Weeks.

The firm also has an employee stock option program. “It’s definitely a good incentive,” she says. “People are working towards a future career where they are actually owners in the business so it has a major impact on their performance.”

“People are so much more confident and effective if they’re properly trained”

Tanya Shaw Weeks, President and Chief Executive Officer
Unique Patterns Design Limited

One of the challenges of working in an innovative environment, says Weeks, is staying focused on developing the business side of things. Software development has to ultimately lead to revenue and profits.

A graduate of Dalhousie University’s Costume Studies program, Weeks won the Business Development Bank of Canada’s “Young Entrepreneur of the Year” in 1994 and Ernst and Young’s “Young Entrepreneur of the Year” in 2000.

For Weeks, the critical link is between innovation and market demand. From a business perspective, the company only commercializes innovative products or processes that respond to an identified need.

Her advice to other companies? “Look at every situation with an open mind, and think about how a problem can best be solved. Dream big, then pare it back to what you think you can accomplish.”

their customers’ measurements. Traditional patterns didn’t fit women’s bodies.

Weeks, now 30, shopped around for software that would allow her to automate the process, but without success.

Next stop — what was then the Technical University of Nova Scotia (now called Faculty of Engineering of Dalhousie University) — where



Spielo Gaming International

Dieppe, New Brunswick

An extensive research and development (R&D) program has generated a succession of innovative products and made Spielo Gaming International of Dieppe, a leader in the gaming industry worldwide.

Spielo is, in fact, one of the top R&D spenders in Atlantic Canada — \$8.5 million in 2001 alone. “We really believe that R&D is what fuels our growth,” says Spielo founder and Chief Executive Officer (CEO) Jon Manship. “The economic cycle that brings new money into Atlantic Canada really comes from new product development.”

New product development is at the heart of Spielo. Established in 1990, the company has designed and developed a full line of gaming products including central, online, Internet and video gaming systems and components. It was the first in the world to develop touch-screen technology for lottery terminals. The company recently landed a \$60 million-plus contract with Loto-Québec to supply more than 6,000 units of its most recent and most innovative product, the PowerStation 5™ video lottery terminal.

Spielo now has more than 275 employees with manufacturing plants in Moncton, New Brunswick

For Manship, innovation is a creative process that, by definition, involves the end user. “When we develop new products,” he says, “some ideas originate internally but we also develop prototypes, go out and show potential clients our concepts for the next generation, and get their feedback. It makes an enormous difference.”

To remain innovative and competitive, the company also believes in the importance of training and upgrading. “Developments move very quickly in the technology industry and we need to stay on top of them,” states Manship. “We have very skilled and talented employees, but constant learning is necessary if you want to stay up to speed.”

The company has implemented profit sharing for all employees, and also offers project and team incentives when certain quality and productivity targets are met. “I think it brings focus,” says Manship.

In 1997, Spielo Gaming International won the “Excellence Award for Innovation” given by the Greater Moncton Chamber of Commerce and Greater Moncton Economic Commission.

One of the challenges in a company where product development does not stop is replicating success. “That’s why you need to have processes in place. You need a culture where quality and on-time delivery is important,” says Manship, “but you also need flexibility. You have to allow people to dream a bit.”

Perhaps the greatest challenge is timing — bringing a product to market when the market is ready for it. “You do that by detective work,” says Manship. “Physically talking to customers,

benchmarking your competitors, and managing your development internally.”

The company’s competitors are major American companies, the majority of which are publicly traded. “How do we compete against these giants?” Manship asks rhetorically. “By being innovative. At the end of the day, we have a better product and we provide better service.”



“We have very skilled and talented employees, but constant learning is necessary if you want to stay up to speed.”

Jon Manship, Chief Executive Officer
Spielo Gaming International

and Sainte-Anne-des-Monts, Quebec; the latter the first facility of its kind in North America to achieve a quality assurance registration under the new ISO 9001-2000 standard. The company also has a sales office in the United States.

C.L. Decor Ltd.

Saint-François-de-Madawaska, New Brunswick

Camille Landry was an innovative thinker almost before the term was coined.

In 1983, he started a company, C. L. Decor Ltd. in Saint-François-de-Madawaska in northwestern New Brunswick, to add value to “waste” wood from lumber mills by manufacturing rolling pins and cutting boards.

Computer technology was an integral part of the operation from the start.

So too, was an attitude of continually upgrading the skills of the people working for him so that they could use the technology to produce a superior product. “Quality was always number one,” he says.

The company, with 18 employees, now exports its unique line of maple hardwood rolling pins, serving trays, boards, chopping blocks, breadboxes and other kitchen items into the United States, Mexico and European markets. A big client is Martha Stewart.

The company made a major expansion in 2001, adding eight employees and a state-of-



the-art cutting machine that more than quadrupled the rate of production. “Technology is very important,” says Landry. “With the machines that we have now, we know exactly how many pieces we can make and we build our production schedule around that. We have a reputation for delivering our product on time and in the right quantities.”

With updated technology comes the need for training, of course, which can be expensive. The firm recently spent \$4,000 to train one operator on one machine. “It’s worthwhile,” says Landry. “Training that person has increased the number of pieces rolling off the line by 25 to 35 per cent.” Landry has no fear that money invested in people will be wasted. “If you treat employees the way you would like to be treated, they stay with you,” he says.

Landry believes that employees will be happier and more productive if they continually learn new skills, and are able to share in the results of their work. That’s why the company implemented a profit-sharing plan to reward employees at the end of the year.

Landry also believes in surrounding himself with smart people, such as his general manager Alphée Martin who has generated many ideas for new products. The most recent of these is a serving tray now being marketed to restaurants and hotels throughout the United States and Mexico. “We have to continually come up with new products and new designs and find new markets,” says Landry.

The firm has also formed strategic alliances, amazingly enough, with five of its

“Training that person has increased the number of pieces rolling off the line by 25 to 35 per cent.”

Camille Landry, President
C.L. Decor Ltd.

competitors, in both Canada and the United States. When a store such as Wal-Mart advertises a product, Landry explains, it damages their credibility if it’s not on the shelves. C.L. Decor has come to the rescue of its competitors more than once, producing products for them using their designs and logos. It’s a clever approach that has generated significant work for the company.

“In the 1970s, cutting boards were round or square,” says Landry. “With our technology, and our people trained to use it, we can make angles. We can make grooves. We can change the look. That’s what innovation is all about.”

IES Technologies Inc.

South River, Newfoundland and Labrador

IES Technologies Inc. of South River, Newfoundland and Labrador was ahead of its time—in more ways than one—when it developed a video game to teach young children to manage asthma in the mid-1990s.

The company used emerging technologies to turn learning about health into a game, at a time when few in the field were doing so. It also combined its technical know-how with an innovative approach to partnerships and alliances in order to solve a problem faced by many small companies in Atlantic Canada — getting the product to market.

“We knew that design and development weren’t the challenge,” says president Kim Crosbie. “Selling it afterwards was. How do you reach the marketplace when you live in Newfoundland?”

Twenty-four years old at the time, Crosbie enticed a pharmaceutical company into the design stage. Before development was complete, she had an agreement to purchase. Sales of the software led to an even more important alliance — with John Hopkins University in Baltimore, Maryland — a world leader in medical research.

IES Technologies eventually signed a formal agreement with John Hopkins to develop a new software program called “Backpack Adventures in Asthma,” under which a good portion of development and testing costs were absorbed by the university’s research program. An American distributor was secured before the software was



off the

drawing board.

This innovative approach to marketing has freed Crosbie’s four staff to do what they do best — design and develop software. Continual learning is key.

“Lifelong learning is critical in IT (Information Technology) companies,” says Crosbie. “I ask the team, ‘What do you need,’ and I try to provide it for them. The ability and motivation of staff to self-learn is also critical.”

While the company doesn’t have a formal training program, it does have an incentive system to reward staff for performance and meeting deadlines. “It’s been a strong motivator,” she says, “and has also fostered teamwork.”

The company changed its name recently (it was originally called IES Health Technologies), and has moved into development of a broad range of “edu-tainment” programs—both proprietary and through third-party development—most recently using wireless technology. It continues to partner with groups, such as the National Association of School Nurses in the United States, which deliver the health product to end users.

Crosbie sees innovation as something that, by definition, must penetrate all levels of a company, from the president through to the “creative” design team to the receptionist. “Innovation has to be a facet of everything you do,” she says. Being innovative means taking an idea, a product or a process, and molding it to make a new and different product or process, which has more value.

“Innovation is a lot of work,” she says, “but you

can’t stop. If you stop, if you get comfortable with where you are, that’s when you’ll see the end of your company.”

“Lifelong learning is critical in IT companies. The ability and motivation of staff to self-learn is also critical.”

Kim Crosbie, President
IES Technologies Inc.

Les Entreprises Samson Enterprises Ltd.

Arichat, Cape Breton, Nova Scotia

Innovative product development has been at the centre of what Samson Enterprises Ltd. is all about since the Arichat company was established in 1986.

Fibreglass boat building wasn't uncommon in Nova Scotia at the time, but what was uncommon was the fact that the firm took the traditional styles, hooked up with a research institute in Halifax, and modified them to produce a more stable and seaworthy vessel.

Samson Enterprises has continued to work with the Technical University of Nova Scotia (today called Faculty of Engineering of Dalhousie University) ever since, developing and testing prototypes in a test tank on campus before spending money on producing moulds.

Now with 27 employees and 10,000 square feet of manufacturing space, the company is exporting vessels to the United States and the Caribbean, and also exploring the Chinese market.

"Innovation has been very important," says president Herman Samson. "It's what's kept us on the edge compared to everyone else."

Samson has also worked with the Nova Scotia Boat Builders Association on an ongoing basis to make sure that his employees keep their skills up to speed. Training is very important to being innovative, he says. "The boat building industry is really spread out in rural areas of Nova Scotia

Samson believes that it's very important that the company continue to design and develop new and innovative products. The biggest challenge is knowing when the market will be ready for them. "There are different levels of innovation. You can be 10 years ahead of the market, two to three years ahead, or somewhere in between. You want to stay ahead of your competition," he says, "but not so far ahead that the market isn't ready for you, and your company won't make money."



"Innovation has been very important. It's what's kept us on the edge compared to everyone else."

Herman Samson, President
Samson Enterprises Ltd.

so there's a need for in-house training. The Association puts on sessions on quality and other issues, or we send people off on seminars. There are always things we need to learn."

The company is in the process of implementing a bonus system for employees, based on performance. "It's helped them find more innovative ways to move the company forward," says Samson.

Over the years, the firm has also built up a special relationship with First Nations communities throughout Cape Breton and into New Brunswick, training Aboriginals to build boats as well as mentoring ones who want to learn to fish. Samson Enterprises actually fishes the quotas of some bands. "It's a whole fisheries package that we've put together to help Aboriginals become a part of the fishery," he says.

Samson Enterprises engages in on going consultation and follow up with customers for feedback on products, what they like, and what they need. "Innovation is an on going thing that must be assessed constantly," he says. "You can't sit still. If you sit still, someone else is going to pass you by, and you won't even notice. Change is the only constant."

His advice to other companies? "You have to listen to your customers and have a bit of vision. You have to understand the industry you're in. Staying ahead of your market is what innovation is all about!"

Jacques Whitford Group

Dartmouth, Nova Scotia

Adynamic and innovative human resource (HR) strategy has made the Jacques Whitford Group what it is today — an environmental, geotechnical and risk management consulting firm with 900 employees and 30 offices throughout Canada, the United States and around the world.

From the time it was established in Halifax in 1972, co-founder Hector Jacques had a vision:

In a firm where the average professional employee has eight years of post-secondary education, the emphasis is on “soft skills” such as communications. “We had a young chap out west, extremely bright but a little shy,” says Jacques. “We said, ‘We’re going to support him, put him through a Dale Carnegie course to help him build his self-confidence.’ Lifelong learning has never been more important than it is today.”

Another vital element has been a reward system, which includes profit sharing and a chance to become a

Innovation is extremely important in the offshore and environmental industries where technology is changing rapidly. “If we look at the Jacques Whitford progression over the past 30 years,” says Jacques, “50 per cent of what we’re doing today we weren’t doing five years ago.” And growth is essential, if a company hopes to hang on to its dynamic and empowered workforce. “If someone is gifted, with a great deal of skill, they won’t be content to be in a routine job. They’ll need continual challenges.”

It has never been more obvious than it is today, says Jacques, that innovation starts with an innovative human resources policy. The company’s goal has always been to be the employer of choice in Atlantic Canada. “We want to say to all the winning lights out there, ‘We are your safe harbour, where you should bring in your ship.’”



“It’s the people in any organization who innovate. And you can’t have innovative people if you have a 19th-century human resources policy.”

From the start, the emphasis was on hiring the brightest and the best because of their vision and creativity, not because there were jobs to fill. “And then you empower them,” Jacques says, “and let them do their job. You give them the tools to do their job, you support them and the ideas and concepts they come up with, and you let them make mistakes.”

A critical element of the HR strategy has been training. The company sends people out on a regular basis to take courses and to attend conferences. It also has its own in-house training institute where newcomers undergo a rigorous program to learn the company culture.

shareholder. “The reward system has to be designed to reward the behaviour that you’re looking for,” Jacques cautions. “This means rewarding people because they’re innovative, not necessarily because they’ve stuck with the company for 30 years.”

From its origins as a geotechnical-based engineering firm, Jacques Whitford is now an employee-owned, multidisciplinary engineering firm that has been a key player in developing the oil and gas industry in Atlantic Canada as well as internationally. In 1997, Hector Jacques won Ernst and Young’s “Entrepreneur of the Year” award for Atlantic Canada and in 2001, he was inducted into the Nova Scotia Business Hall of Fame. He has also received three honorary university degrees because of the firm’s accomplishments.

“It’s the people in any organization who innovate. And you can’t have innovative people if you have a 19th-century human resources policy.”

Hector Jacques, Chairman and Chief Executive Officer
Jacques Whitford Group

Interview

with Dr. Alan Cornford

Dr. Alan Cornford has served as Assistant Deputy Minister for Science and Technology in British Columbia, Director of Simon Fraser University's Technology Transfer Office, and President and Chief Executive Officer of SF Univentures Corporation. In the past 12 years, he has worked in the private sector, building technology companies in the innovation economy. He recently carried out a major study for the Atlantic Canada Opportunities Agency (ACOA) on innovation entitled *Innovation and Commercialization in Atlantic Canada*. The report is available electronically on the web site.

Q Is it possible to learn to be innovative?

I think it is. All of us, in fact, have the capacity to be innovative because we all have the capacity to learn. We all have new ideas, better ways of doing things. There's no question in my mind that anybody and everybody can learn to be innovative.

“For firms to be innovative, they have to want to be the best. They have to want to grow. They have to believe that there's nothing that they can't do in their own knowledge and skill area.

Dr. Alan Cornford

Q Do Atlantic Canada's small and medium-sized enterprises (SMEs) face particular challenges when it comes to being innovative?

In Atlantic Canada, there's not a long history of creating new knowledge-based



companies leveraging value-added from natural resources that have traditionally been the economic mainstay. So there hasn't been a climate or a culture for innovation. There are also not a lot of large, cosmopolitan centres, which tend to attract the young, bright innovators from this region.

So in Atlantic Canada, adequate wage scales are important so that employees can travel, network and interface with colleagues in larger centres. They need this exchange because, in the knowledge economy, ideas and businesses are maturing quite rapidly. We also need the experience and mentorship of folks who've succeeded. We need to find those ideas and concepts that fit with the needs and aspirations of the local community — that build on our existing strengths — then evolve them into other areas that traditionally weren't there 10 or 20 years ago.

Q How important is management in terms of building an innovative culture in a company?

Absolutely essential! I think it comes right back to the basics of building any enterprise, whether it's in a

traditional area like the fishery or whether it's in biotechnology or information technology. The basic skill sets of company building are the same. In the innovation economy, we find that traditional skill sets have to be quicker and nimbler, and more attuned to building companies in three to seven years as opposed to traditional companies that take five to 15 years. Venture capitalists place 70 per cent of investment emphasis on management. To succeed, the key is management skills, no question about it.

Q How important are employee training programs in terms of building an innovative culture in a company?

Again, they're essential. An innovative culture is built upon knowledge. The knowledge base is changing rapidly, especially with the introduction of the Internet, which allows for a quick and inexpensive transfer of information. Employees in a value-added or a knowledge economy need to keep their skills state-of-the-art. It's no longer a question of going back for refresher courses. We're into continuous lifelong learning.

Q How important are employee reward systems in terms of building an innovative culture in a company?

Again, it's very important. We're finding that almost all new companies these days tend to have employee share option plans, where each employee has a small stake in the company. This is becoming the norm, at least in the high-tech industry. Employees are being rewarded essentially as the developers of the assets and value of the company.

Q Some Atlantic Canadian SMEs have resisted training their staff, either because of limited resources within the company or a fear that employees will then just pick up and go elsewhere. Are these fears justified?

Small companies don't have a lot of money to train their staff. When they do, they may find that their best people may see other opportunities for which they have the skill set, and can perhaps make more money elsewhere. So it's a bit of a double-edged sword. In Atlantic Canada, they may not have the chance to continue to work locally. So they tend to move out of the region. Your previous question regarding reward systems is important here. Companies with good reward systems keep the brightest since they own part of the company and are less likely to leave, even for higher salaries elsewhere.

I think the message is that you have to invest in your employees in order to be innovative and stay competitive, especially if you want to be in the world market. As you grow a more and more innovative economy in Atlantic Canada, one would hope that you'd have communities of companies so that if employees leave one company, they'll still remain within the region. So you'll build up your whole innovative base. One strength of Atlantic Canada is the very strong family bonds. Most young people would rather work in close proximity to the family. The challenge is to make sure those jobs are available within the community.

Q How important is it for Atlantic Canadian SMEs to build linkages with universities and research institutes and how can a firm do that?

It's absolutely essential. As a society, we have made fairly substantial investments in our research institutions. Atlantic Canada's universities have very strong assets. The biggest challenge is to blend the two cultures—the university culture and the community culture. There has to be free access and transparency so that the community and graduate students and even the small companies that are not university-based can easily go and chat on campus. Looking at some of the statistics, small

companies in Atlantic Canada do actually interface with the universities — but there is considerable room for more. Existing and new companies only have to partner with the university for a particular skill set, at a particular time when they need it. So they don't have to carry the financing of that asset.

Q What are the most important things firms need to do to be innovative?

For firms to be innovative, they have to want to be the best. They have to want to grow. They have to believe that there's nothing that they can't do in their own knowledge and skill area. They have to reach out and look for market opportunities, and believe that they can compete with anyone in the world by being better and faster and that they can, in a more cost effective, more innovative way, deliver services and products to the world. In the traditional resource-based economy, you have to maintain those resources, make sure they're sustainable. The nice thing about the innovation economy is that there's no limit on how far you can go because you're working with new ideas and value-added processes and products. In the innovation economy, there are no bounds!

Q Does being innovative improve the bottom line?

Absolutely. Those companies that fail to innovate will become obsolete and lose price competitiveness and market share rapidly in an innovative global economy. Those that do not innovate will soon have no bottom line at all.

“You have to invest in your employees in order to be innovative and stay competitive, especially if you want to be in the world market.”

Dr. Alan Cornford

Innovation

The key to economic growth

The Government of Canada recognizes that the knowledge-based economy of the 21st century can only take hold in countries and regions that innovate, improve productivity, develop and implement the latest technology, invest in skills for their citizens, and seek out new opportunities around the world.

To find out more about Canada's Innovation Strategy, visit www.Innovation.gc.ca

How can the Atlantic Canada Opportunities Agency (ACOA) help?

Atlantic Innovation Fund

The Atlantic Innovation Fund is an initiative through which the Government of Canada is making strategic investments aimed at increasing Atlantic Canada's innovation capacity.

The Fund is a key component of the Atlantic Investment Partnership.

The Atlantic Innovation Fund is focused on:

- Projects in the areas of natural and applied sciences, as well as social sciences and humanities where these are explicitly linked to the development of technology-based products, processes or services.
- Research and development activity that is linked to economic development and commercialization of technologies, particularly in areas that support the growth of strategic sectors and clusters.
- Projects that demonstrate pan-Atlantic collaboration and research beyond a single locale or province.

Business Development Program

The Business Development Program is designed to help individuals set up, expand or modernize a business. Focusing on small and medium-sized enterprises, the program offers access to capital in the form of interest-free, unsecured loans and provisionally repayable loans.

Developing your Innovative Ideas:

The Business Development Program can provide an interest-free, provisionally repayable loan of up to 75 per cent of the eligible costs of developing new or improved products, services and processes.

Innovation Skills Development Initiative (ISDI)

The Innovation and Skills Development Initiative is designed to improve the innovation management and technical competencies of small and medium-sized enterprises in Atlantic Canada.

All technology-oriented small and medium-sized enterprises in Atlantic Canada, demonstrating a commitment to, and plans for, enhancing their innovation and skills capabilities could qualify for contributions of up to 75 per cent of approved costs per project.

The assistance will be in the form of a non-repayable contribution and shall be less than \$100,000.

Contact your local ACOA office.

Understanding how innovation and technology skills can broaden your business opportunities is as easy as getting in touch with us.

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Canada Business Service Centre

To help you get a handle on your options, just call the Canada Business Service Centre network, the first point of contact for business information and assistance programs in Atlantic Canada.

You can contact your nearest Canada Business Service Centre: 1-800-668-1010 or www.cbasc.org