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2009 **TECHNOLOGY** SPOTLIGHT

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Digital technology will transform economy

MATHEW McCARTHY, RECORD STAFF

Cameron Hay, president of Unitron Hearing, holds one of the company's Moxi digital hearing aids (page 8).



MATHEW McCARTHY, RECORD STAFF

Tyler Weichel is the chief executive officer of Motek Mobile, a Waterloo company that provides content for mobile devices, including the BlackBerry (page 39).



Tech sector barely missed a beat

By Ron DeRuyter

his year's Technology Spotlight comes out as economic recovery from a debilitating recession gains momentum.

But recovery is hardly a word that applies to this area's technology sector. While other sectors of the economy, notably manufacturing, and particularly the auto industry, have been devastated by the global slowdown, the local technology community has barely missed a beat.

There are parts of the tech sector that are struggling, and certainly individual companies face challenges, but the story for much of the local high-tech industry continues to be one of creating new products, capturing new markets and adding jobs.

The industry's success in these difficult times reinforces some key notions – that innovation drives success; that the knowledge-based economy really does have value; and that diversity is a wonderful trait.

On that latter point, although Research In Motion dominates headlines, here and around the world, it is becoming increasingly apparent that this area's tech sector is about much more than smartphones. Our strength in the fields of software, hardware, digital, wireless, biotechnology and advanced manufacturing is remarkable.

Efforts to turn this area into a digital media powerhouse will build on that diversity and position Canada to be at the forefront of the digital revolution. The drive to foster the creation of new digital technologies and companies is one of the exciting developments you will read about in this year's Technology Spotlight.

One other observation is worth noting. You will notice that quite a few of the startups profiled in these pages were launched by former employees of Research In Motion. RIM has generated incredible wealth, not to mention some 8,000 jobs in Waterloo, but it also is playing a key role in business creation. RIM owes a lot of its success to the University of Waterloo; now, like UW, it is spinning out new businesses.

I suppose success inspires success. But all of this spinoff activity also is a sign of the maturity and vibrancy of the area's tech sector. And that should give everyone plenty of reason to believe we will be in good shape when the next recession rolls around.

Ron DeRuyter is The Record's business editor. He can be reached at rderuyter@thecord.com

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PHILIP WALKER, RECORD STAFF

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WATERLOO REGION

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2) Rob Shields, (left to right),
Donal Byrne and Bob Millar of
Hippopost
3) Ginny Dybenko (right), dean
of the Laurier School of
Business & Economics, and
student Aghogho Okotie
4) Rick Endrulat, president and
chief executive of Virtual
Causeway
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Ta ala ala any Ora atliadat ia
Technology Spotlight IS
published by Grand River Media,
a ulvision on metrolanu meula Group I ta
Fditorial and sales office
160 King St. F.
Kitchener, ON N2G 4E5
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Most Waterloo Region **Technology Deals**

The Right People. Right Here.

Postcards with a high-tech twist

By Greg Mercer, Special to The Record

onal Byrne was lying on his back in his basement at 4 a.m., his Blackberry set on vibrate, catching a few winks while he waited for the email.

Bob Millar was on the other end, tweaking the latest bit of software that would power their creation, Hippopost.com, a 21st century take on that old idea, the postcard. The coming months would offer more of these sleepless nights: flying home on some red-eye flight from the west coast, trying to get back in time for work that morning, juggling multiple laptops and sealing deals on the fly.

These are the things you do when you're trying to launch a new company on your own time – all while holding down day jobs at Research In Motion and raising a young family.

Maybe now the pair of marketers can finally get some rest. Don't bet on it, though. In August, the co-founders handed in their resignations to RIM and began focusing exclusively on Hippopost. Their creation, which allows consumers to send postcards from anywhere to anyone via the internet or through their handheld device, is no longer just an evening and weekend thing.

"I feel like I've been pregnant for two years and I've finally given birth," says Byrne, Hippopost's chief executive officer.

Hippopost, located in downtown Kitchener, is built around the neweconomy concept of free. The consumer, who doesn't pay anything, can upload a photo, write a short message and fill out an address. The postage and the printing of the card are paid for by the card's sponsor, an advertiser who gets their name put on someone else's mail.

By August, after two years of operations, the company figured it had sent between 80,000 and 90,000 of these postcards. That's just a small slice of the estimated two billion post cards that are sent in the U.S. each year. Still, some big brands – from Coke and Expedia to Mitsubishi and TD Bank – have already jumped on the concept and are coming back for new marketing campaigns.

"We're slaying some elephants," as Byrne likes to say. "And we're just getting started."

In some Hippopost formats, such as those for Facebook or MySpace, the sender is asked to choose the advertiser they think the recipient would like the most. In that sense, it's a marketer's dream. Their postcards are essentially endorsed by someone the receiver knows, and can wind up on someone's fridge or in a family scrapbook.

Millar, Hippopost's chief of operations, likes to think it's re-introducing the Facebook generation to their grandparent's instant messenger, the postcard. "It's cleverly disguising direct marketing as personal correspondence," he says.



Rob Shields (left), president of Hippopost, and company co-founders Donal Byrne and Bob Millar have put a "new economy" spin on direct marketing using "old world" postcards.

FACTS

Hippopost website: hippopost.com Founders: Donal Byrne and Bob Millar

Employees: 5

How it works: Consumers get a free, personalized postcard, sent wherever they like.
Postcards sent: Almost 90,000 in two years.

In other formats, Hippopost does the behind the scenes work and offers customized postcards through another company as part of a promotional campaign. One client, Mitsubishi, uses the firm's software to send a postcard to all recent buyers showing a photo of them with their new car.

The software behind Hippopost can work for international ad campaigns and hyper-local ones, too. Using postal code databases, the postcards can run an ad from sponsors within an hour of the receiver's home, such as a pizza shop. The company says its expansion plans mean that the cards will eventually be printed and mailed as close to the recipient as possible, cutting down its carbon footprint, though for now, the cards are printed in either Aurora or Washington, D.C.

Handheld applications mean consumers can use Hippopost soft-

ware through their mobile phone, from anywhere in the world. Essentially, you could take a photo of yourself on a beach in Mexico, instantly turn it into a postcard and have it mailed to a friend – all for free, and all without leaving the beach. They key is in the database software the creators spent all those sleepless nights perfecting.

"There's a lot of secret sauce that's gone into making this work and look easy," Millar says.

When they started out two years ago, Byrne says, would-be clients were often hesitant to give their brand image over to a consumer who chose what photo to print and what message to send. But websites like Facebook have helped ease companies into the idea of consumer-generated content, he says, and companies are starting to recognize the power of personal endorsements offered by products like Hippopost.

There are some filters, of course. Each and every photo uploaded to Hippopost is scanned by an employee looking for offensive images. And software programs check the postcard's messages for inappropriate content. They can even be adjusted to the specific advertiser, so a sender couldn't talk about how much they love Pepsi on a postcard sponsored by Coca-Cola, for instance.

Hippopost has five employees, including president Rob Shields, but

the pair seeing it growing to 20 and 30 staff. Until now, it had been a quasivirtual company – it borrowed office space from corporate friends when it needed to hold a meeting, and much of its construction had taken place out of sight, in basements.

After nominally being based in Guelph, where Millar lives — Byrne notes that Hippopost's genesis goes back to a meeting he and Millar had in a parking lot after the Guelph Jazz Festival – the company recently set up shop in an old house in downtown Kitchener. "It was a great opportunity here for leasing this," says Byrne. "It just kind of happened."

Although Hippopost could have stayed in Guelph, he notes that there are benefits to having an address in technology rich Waterloo Region. "Being located in the heart of Canada's technology triangle, we might as well take advantage of that."

Byrne and Millar won't talk revenues or say what the postcards cost the advertisers – only that it's more expensive than direct mail. Their margins are healthy, they say, and growth has been strong enough they could afford to leave the security of RIM and its healthy salaries and strike out on their own.

Leaving RIM was a bit of a leap of faith, the pair says. But it's been fun, too. "It's a scary proposition," admits Millar. "But, at the same time, we're just over the moon."

The world is watching Waterloo's tech sector

T's been an exciting year for Waterloo Region's technology community. We've grown to more than 550 firms, employing more than 28,000 people — a number that is increasing at a rate of seven per cent a year — and contributing \$15 billion-plus to national gross domestic product. And we're still growing.

Waterloo Region tech is in the news constantly, with funding announcements, visits from government heavy hitters as well as tech icons. Steve "The Woz" Wozniak, co-founder of Apple Computer, made a stop in Waterloo to 'talk tech' in August. Agfa HealthCare received \$29.6 million from Ontario's Next Generation of Jobs Fund to support job creation and R&D in Waterloo and Toronto, And Fortune magazine's 2009 Top 100 Fastest Growing Companies list includes two homegrown Waterloo Region success stories in the top 20. Research In Motion has the No.1 spot, and Open Text is No. 15.

We've also been the subject of much attention from other tech clusters and government partners, who are eager to find out just what convergence of factors is contributing to the momentum of our tech sector. We're being asked to show other communities "how we do what we do" and offer a blueprint for success – engaging with communities from Windsor to Ottawa, and from Atlanta to Denver.

We gladly share our "secret sauce" with other tech clusters. But it's not always easy to replicate.

One thing we do well here is mentor the next generation of entrepreneurs. Waterloo Region's tech ecosystem has supported more than 200 startups through business coaching and providing access to funding – both private and public.

A second key ingredient is culture. Every year we attract more than 4,000 people to Entrepreneur Week in Waterloo Region – encouraging innovation and entrepreneurial spirit by offering tools for success, and connecting founders to strategic partners and sources of capital. We celebrate our entrepreneurial history through the Waterloo Region Entrepreneur Hall of Fame.



COMMUNITECH

The energet-
ic mash-up of
individualsIain Klugman is
president and chief
executive officer of
Communitech.from allCommunitech.

economy helps raise the profile of the region as the best place on earth to start a company. This year, we'll celebrate Entrepreneur Week from Nov. 16-22.

Finally, we're successful in building a strong tech cluster because we keep an eve on the future. In January, Communitech and its partners in the Canadian Digital Media Network received funding of \$10.7 million from the federal government to link together Canada's digital media clusters. We're focused on digital media as the future of Canada's information and communication technologies industry. We'll bring together world-class researchers from the private, public and academic sectors to work with funders, entrepreneurs and large corporations to move digital media technologies forward-and to capture the economic benefits for Canada.

So what's our secret?

As a community, we are focused on accomplishment, on building capacity, on succeeding together. We're weathering the economic downturn, maintaining and even hiring while other tech clusters feel the pinch. Our character is brilliantly contradictory, but it works for us. We're pragmatic and visionary. We're collaborative and entrepreneurial. We're singleminded and flexible. And we, as Canada's tech sector to watch, are showing the nation how it's done.

Biotechnology will grow Ontario manufacturing

Notario's manufacturing sector grew to be a powerful beast by adopting new technologies. Despite being the third most important manufacturing region in North America (after California and Texas, each of which has a much larger population), and representing half of Canadian manufacturing output, the recent slowing of demand is causing doubts to creep into a sector that once had a winning attitude.

Other regions of the world have adopted the same technologies that grew Ontario's manufacturing sector and some compete with other advantages, such as labour costs and scale.

How do we respond?

Our region has tremendous assets in manufacturing. I don't just mean punch presses, lathes and dies.

We have, above all, very skilled and experienced people who know how to make things, buy raw materials, hire and develop people, manage money, use information technology to work smarter, sell stuff and move products to market. These assets took decades to build. They are still here, but if we don't act soon we will lose them.

Biotechnology could be the very thing we are looking for, the very technology that will keep Ontario at the front of the race.

When we see the world's largest auto foam manufacturer using soybeans to replace petroleumbased resins, and the world's largest fibre manufacturer using materials from starchy plants to make carpet that is better than Nylon, the potential of biotechnology starts to become apparent.

For many people, biotechnology means creating new pills to treat disease and better crops that fight insects without the need for pesticides. But the latest action and investment in the field of biotechnology is in materials and "green" technologies.

Replacing petroleum-based materials with materials derived

from plants not only reduces reliance on a single, volatile feedstock, the plant-based materials can be lighter, cheaper, stronger and more resilient. As an added benefit, they can

carbon out of



RECORD NEWS SERVICES FILE

more resilient. As an added benefit, they can actually take

the air, rather than adding to the excess we already have.

Biomaterials are being used in furniture, car parts, appliances, construction materials, adhesives, coatings and even electronics. How about a "green" BlackBerry case made from Ontario crops? That would give new meaning to the slogan: Buy local, buy fresh.

Biotechnology and the bioeconomy mean actually making stuff that you can hold in your hands. That's what Ontario is skilled at doing so let's keep doing it, with new materials and for new markets. Let's not lose the people, the leadership, the skills, the investment in plants and equipment, the trusted relationships, and all that day-to-day expertise that keeps the wheels turning smoothly.

Every business that works in manufacturing owes it to itself to get out there and see what's happening in the new bioeconomy. The federal and Ontario governments have generous funding and tax credit programs to help with development costs and market development.

Maybe your tools and processes will work with these new materials. Maybe not. But our manufacturers achieved success by using technology.

So what is the next technology that could make you successful? It might be biotechnology.

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Unitron Hearing goes high tech in small way

By Rose Simone, Record staff

he small earpiece comes in an array of stylish colours from sleek black and polished silver to sapphire blue and deep purple.

It looks like a device young professionals might wear in order to wirelessly listen to their MP3 player or cellphone. This device does, in fact, serve that purpose.

But first and foremost, it is a hearing aid.

It is latest product from Unitron Hearing. It comes with wireless control so that a person with hearing loss can adjust the settings discreetly, in order to hear better in a restaurant, for example. It can also be connected via Bluetooth technology to take a cellphone call or listen to an MP3 player.

The product illustrates how Unitron, a hearing aid manufacturer that began in Kitchener 45 years ago, has evolved into a high-tech company that uses Waterloo Region's software engineering talent to bring the wonders of digital signal processing to the human ear.

"The product life cycle in our industry right now is around 18 months, so it is a lot like the smartphone," says Unitron's president, Cameron Hay. In fact, just like smartphone manufacturers, Unitron has several projects on the go at the same time; it works on the next evolution of the technology even as it releases its latest product.

Unitron was started in 1964 by Fred Stork and two partners. According to family lore, Stork was in the business of repairing televisions when someone came in with a hearing aid that needed to be fixed. He found the technology interesting and the Unitron hearing aid business was begun.

Early hearing aids were really just amplifiers. They would amplify noise along with the conversations, so people with hearing loss generally hated using them. Users complained that while the devices might work in a quiet setting with someone speaking directly to them, they weren't practical in social settings like a restaurant or a granddaughter's



Cameron Hay, president of Unitron Hearing, holds one of the company's Moxi digital hearing aids.

IN QUOTES I CAMERON HAY UNITRON'S PRESIDENT

"That product was really a leap forward in terms of the capabilities of hearing aids. It has provided users with the ability to hear in a variety of situations better than any other product on the market."

wedding. The early hearing aids were also uncomfortable to wear and didn't work well when the user answered the telephone.

All of that began to change with the advent of powerful, tiny computer chips and software algorithms that can detect human speech in real time and extract that speech from background noise.

In 2001, after hearing aids made the technological leap into digital signal processing, Unitron was sold to the Swiss-based Phonak Group. It was maintained as a distinct company with a base in Kitchener, where it employs 190 people who do research and development, including prototyping and early stage manufacturing, as well as product branding and marketing.

Unitron, which employs 700 people in offices around the world, sells hearing aid products in about 70 countries. Despite the global recession, it has done well because of its advanced technology, Hay says, adding that there is enormous growth potential in emerging markets like India and China.

In many ways, Unitron was the anchor tenant in what became Canada's hearing aid hub. A number of other hearing technology companies also found a home in Waterloo Region over the years. Siemens, part of the German electronics giant, Siemens AG, opened Siemens Hearing Instruments in Cambridge in 1991. Bernafon Canada, owned by Swiss parent Bernafon AG, bought Dahlberg Electronics in Kitchener, the Canadian office of a U.S.-based hearing aid company launched by a former Unitron employee. Unitron was also the parent company of a spinoff, Dspfactory Ltd. in Waterloo, which became a medical chip design centre for Arizona-based ON Semiconductor Corp.

Having that development base in Waterloo Region gives Unitron an enormous advantage, Hay says. "It really goes to our sweet spot of being able to develop great innovative technology. Our products are software-oriented and very technologyoriented and we have great skills that we can access here. Some of the best people in our industry are right here."

> Unitron continued on page 9

Bringing new light to telecommunications across Ontario.



'A smarter, better and smaller hearing aid'

► Unitron continued from page 8

Those skills are the reason Unitron received a 2009 Premier's Catalyst award for being the company with the best innovation. The provincial Ministry of Research and Innovation honoured the company for its Yuu hearing system, which took hearing aid technology to a new level due to state-of-the art digital processing and the amount of control it put into user's hands.

A person who has a slight difficulty hearing in a restaurant, for example, can now discreetly pull out a small remote control that fits in the palm of the hand. With an easy-to-use scroll wheel, he or she can make small adjustments to the hearing aid that allows them to hear the conversation better in a particular environment.

The system is able to "learn" what settings a person prefers, so the next time the person is in that environment, the hearing aid will automatically adjust itself to his or her preferences. "That product was really a leap forward in terms of the capabilities of hearing aids," Hay says. "It has provided users with the ability to hear in a variety of situations better than any other product on the market."

The flexibility and user control also makes it easier for hearing aid

professionals to fit the hearing aids. "They don't have to second guess what that person would like," Hay says.

Since the Yuu was developed in 2007, the company has added new features. The latest version, called Passport, is "a smarter, better and smaller hearing aid," that also includes the ability to connect to devices such as smartphones or MP3 players, Hay says.

Ara Talaslian, Unitron's vicepresident of research and development, describes today's hearing aids as "a digital sound system driven by two little computers on the ears."

There are layers of software, including basic programming running the chip and digital sound processing that does things like noise reduction, as well as fitting software that allows the audiologist to tailor the hearing aid to a specific individual.

All of this technology has to work with a tiny battery that can drive this acoustical power, and it needs to sound good and prevent problems like feedback when using a telephone.

Finally, comfort is a prime consideration. "People will not adopt an instrument unless it is comfortable and discreet," Talaslian says, adding that venting for the ear and keeping hearing aids "as open as possible" so people don't feel like they are wearing earplugs are extremely important. The company does field trials with the patients of hearing aid professionals. "We do months of patient validation before we say it is complete," Talaslian says.

The industry is fast moving so Unitron is under pressure to come out with new products virtually every six months. "We have two, or usually three, big projects on the go and even while we are delivering one product, we are testing another one," Talaslian says.

Although the hearing aid is a medical device, lifestyle is the focus of much of Unitron's marketing.

Savvy, image-conscious baby boomers expect hearing aids to look and feel good, as well work properly. "Eyeglasses have become a fashion statement and the same thing should happen with hearing aids," Hay says, adding that Unitron's huge selection of styles has helped the company compete in the marketplace.

Hay notes that hearing loss is more difficult to address than correcting poor eyesight because it involves damage to the tiny hair cells that send electrical signals to the auditory nerve fibres. Those cells can't be replaced, "so we can't claim to allow you to hear like a 20-year-old again, but we can help people live full lives without having to withdraw from social situations."

Haring aids will continue to become smarter and more sophisticated, Hay says. They will continue to become smaller and "they will be able to sample the environment in much more powerful ways and extract even more of the target signal away from the background noise."

Baby boomers increasingly will want to use their hearing aids to connect to smartphones, MP3 players and other digital devices. But Hay doesn't envision a day when people will buy hearing aids along with their cellphones at mobile phone stores or electronics shops.

"People with hearing loss will still need the support of a hearing healthcare professional because as hearing loss becomes more severe, it might cause them more harm if they don't have that support," he says.

Nevertheless, the greater control and flexibility in the way hearing aids are used will make these devices a more integral part of people's lifestyles in the future.

"The baby boomers have high demands for both their work and their social lives," Hay says. "A lot of people are working longer and don't want to retire or become reclusive. So if they have a hearing loss, then a hearing aid just makes a lot of sense."

rsimone@therecord.com

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It Begins With Service

Accelerator Centre offers fuel to startups



Tom Corr (left), chief executive officer of the Accelerator Centre, and Tim Ellis, director of operations, draw on their experience to help tech startups grow.

By Chuck Howitt, Record staff

rarely have a lot of money and Miovision was no exception. In the early days, the four employees worked out of each other's houses. Fresh out of the University of Waterloo's engineering program, they couldn't afford an office. Working conditions were far from ideal. They were scattered across the region.

At the same time, they felt cut off from the rest of the world. There was no one else to bounce ideas off, no one to gain inspiration from. It was a lonely quest.

In April of 2006, they moved into a new office on UW's north campus. Suddenly, they had office furniture, phones, a photocopier, printer, shredder, whiteboards, internet access, free software, meeting rooms, security staff, a receptionist, even a bookkeeper to do payroll. They were in startup heaven. Better still, the office was filled with fellow entrepreneurs. They met over lunch or coffee in the cafeteria, compared notes, traded tips. The loneliness waned.

That new office was the Accelerator Centre, a new initiative for Waterloo Region designed to help earlystage companies like Miovision that had an idea and a business plan.

Miovision co-founders Kurtis McBride and Tony Brijpaul had come up with a good one — groundbreaking software to help cities col-

FACTS

Accelerator Centre: Opened: April 2006 Annual budget: \$1.2 million Staff: 6 full-time, 1 part time Funding: 60% from the province

through the Ministry of Research and Innovation and the Ontario Centres of Excellence; 40% from rent paid by tenants

lect and analyze traffic data at intersections using cameras rather than people. But they didn't know where to go with it. They were engineering geeks, more at home working with hard drives and software code than marketing plans and balance sheets.

The staff at the Accelerator Centre swung into action. They brought in sales and marketing advisers, human resources professionals, intellectualproperty experts and potential angel investors. They told them about government funding programs. Doors opened that were previously closed.

Bobbi Holte, former chief financial officer for a technology company, on staff at the centre, met with them three to four times a day. She cracked the whip. No more tinkering with product. Time to take it to market. Meanwhile, the geeks broadened their skills. McBride blossomed from an engineer into CEO.

The strategy worked. Miovision's staff grew from four to 19 people. Its space at the Accelerator Centre was bursting at the seams. In November 2008, two and half years after moving in, the company left. Miovision products now roll off the line at a plant on Otonabee Drive in Kitchener.

Looking back on those days at the Accelerator Centre, McBride says without equivocation, they helped "tremendously." The centre "does a great job of connecting entrepreneurs with all the resources they need. They certainly accelerated our growth."

The Accelerator Centre opened with great fanfare in May 2006. A crowd of more than 400 packed the sparkling new building in UW's Research and Technology Park. Dignitaries and high-profile politicians attended. Cameras flashed. Speeches were made. Great things were expected. It's going to be "the crucible of entrepreneurship," said Gerry Thompson, chair of the facility's board of directors at the time.

The opening was the culmination of several years of planning. The federal and provincial governments, the Region of Waterloo, the City of Waterloo and UW kicked in funding.

The goal was to nurture technology innovators, the best and brightest from the area's universities, colleges and community at large. They could become tomorrow's Mike Lazaridis, Jim Balsillie or Bill Gates. Bold words were used. The facility would be "a world-renowned centre for the cultivation of technological entrepreneurship," its website proclaimed.

In reality, local officials were behind the times. The first business incubator opened in 1959 in Batavia, NY. Today there are roughly 5,000 worldwide, including more than 80 across Canada, all members of the Canadian Association of Business Incubation.

But the local centre was not to be "an incubator," the founders stressed. Giving birth wasn't the idea. Starry-eyed grads with vague ideas and big dreams need not apply. Tenants had to have a product nearly ready to go and revenue, whether from government funding or sales, to pay the rent. Space wasn't free at the Accelerator Centre.

The aim was not just to accelerate the growth of new technology companies and commercialize their products. These future titans of technology had to bring a "demonstrable economic benefit" to the Waterloo-South Wellington area, not Ottawa or Boston or Silicon Valley.

Since 2006, more than 25 would-be entrepreneurs have set up shop at the facility. Technology applications have run the gamut from basketball to blackjack, medical devices to marketing solutions.

NCR Canada Ltd., Waterloo Exporting Canadian innovation around the world

The NCR building on Weber Street North may look very ordinary on the outside but what's happening inside is quite extraordinary. The biggest names in the financial services industry regularly travel to Waterloo to see first hand the work NCR's research and development team is doing to transform the way deposits & payments are handled around the world.

Their technology has contributed to the fascinating evolution of the payment process as we progressed from being served at a teller window to using an ATM machine, to signing onto online banking and to the very latest innovation – depositing cheques via your smart phone. With more than 225 patents to their credit, they understand innovation. Their list of achievements and awards is long.

NCR prides itself on being at the center of the selfservice revolution, strategically poised and ready to partner with industry leaders who are focused on increasing revenues, building customer loyalty and lowering their cost of operations, while satisfying their clients who demand fast, easy and convenient options.

The Waterloo team has been a key player in supporting NCR's corporate vision as it has evolved into the leader in global self-service.

A member of the Waterloo business/technology community since 1972, NCR Payment Solutions is a global leader in the development of imaging, deposit & payment solutions for banks, bank customers and national institutions (e.g. Central Banks) around the world. Their products include ATM's, bank backoffice hardware and software solutions and branch hardware and software solutions. NCR sells solutions that include hardware, software and services for ATMs, bank front and back office, central processing, as well as remote capture solutions, self service solutions linking consumers and businesses to their financial institution. Their clients include institutions of all sizes, in many countries, in the fastest growing economies around the globe, including right here in Canada. The team is made up of dedicated engineers. project managers, marketing and product managers, purchasing, quality assurance, customer support and administration associates, as well as customer order processing and fulfillment, contract management and global operations. The senior management team of Denis Bergeron, Sue Carreon, and John Busch live and work in the Waterloo region. All are graduates of area universities.

Processing payments is an arduous and costly affair for financial service organizations around the world. They are always in search of the latest innovation to place them one step ahead of their competition. Most people have no idea what happens to their transaction after it's been passed off to the teller or inserted into the ATM. It's a complicated sequence of matching up transactions with various types of payments which usually involve some type of paper - whether it's currency, cheque, money order, etc. NCR's applications are mission critical...not only to the bank but to their customers too. If these systems aren't operating 100% of the time, accounts aren't updated, funds aren't available, cheques are returned NSF and mortgage payments are missed. NCR takes this challenge seriously.

NCR's solutions have allowed financial institutions to migrate from a costly & labour intensive paper-



Denis Bergeron, Director of Product Management, demonstrates NCR's Remote Deposit Capture (RDC) technology that allows consumers to use their smart photo to deposit their cheques.

based environment to an environment where the paper transactions are captured electronically at the earliest possible point and the image is transmitted electronically to begin the clearing & settlement process.

For the institutions, this reduces courier costs, multiple handling of the deposits, provides superior and quick research capabilities and a reduction of fraudulent transactions. For the consumer, this provides quicker access to their funds, the ability to deposit from any location and offers a convenience not previously available.

About 80 per cent of all deposits around the world are supported by NCR's Deposit & Payment Solution technologies.

"Using NCR image technology to convert a cheque or other financial document into electronic form allows banks to offer more services to its clients. Our Waterloo developers focus their efforts on digitizing payments and deposits in the branch, back office, at the ATM and even at a business or home office.," says Sue Carreon, Director of Media Handling for NCR.

"Handling physical pieces of paper is becoming a thing of the past. There are many more opportunities for businesses and consumers to take advantage of the convenience of digital images and data online.," adds Carreon.

Instead of physically moving paper from branch-to-branch, from bank-to-bank and into the clearing system, which delays the clearing of any financial transaction, financial institutions can process a transaction electronically by presenting the image for payment over their shared networks across Canada and around the world.

"Countries around the world are automating their payments infrastructure to ensure that when consumers deposit their payment one day, they are recorded accurately and applied to the right accounts the next day," says Denis Bergeron, Director of Product Management for NCR. "This provides so many benefits to financial institutions. It improves the customer experience because transactions are processed faster, statements can be sent electronically and their payments can be viewed via online banking reducing the back and forth delivery of paper. Banks can also detect and reduce fraudulent activity at the ATM, the bank branch or wherever paper-based payments are conducted."These advances in imaging continue to usher in many fascinating changes that make banking much simpler for consumers. Adds John Busch, Director of Engineering:

"The market is demanding cost effective convenience and NCR is delivering.

We are aggressively deploying remote deposit capture (RDC) applications to the marketplace. (These are branded NCR APTRATM Passport). This means bringing technology and applications which deliver cheque capture to anyone, at any time, anywhere. For instance, if you are "on the go", you can now capture & transmit deposits to your accounts on your smart phone or from your home office using a flat bed scanner. No new hardware is needed. If you are a small business or commercial customer of a bank, you can capture & transmit deposits using one of NCR's scanners. You no longer need to make that trip to a physical bank to make a deposit. However, if you do visit a bank, the ATM and branch may also be using NCR's capture software."

And while NCR's Waterloo organization has traditionally developed solutions for financial institutions, 2010 proves to be an exciting year as the team continues to explore how their solutions can be transferred beyond the financial sector. They have a keen eye on the retail sector to simplify their various payment processes.

The team is proud of their contributions and they're always in search of the best and brightest from the various educational institutions in the region. As a strong member of the community, their employees give back in so many ways including annual contributions to the Food Bank, United Way, many cancer fund raisers, Backpacks for Kids, and Operation Christmas Child.

In the spring they'll be leaving their Weber Street facility to set up shop in new office space. As one of the region's long standing businesses, they're looking forward to the future and continuing to be a shining example of Canadian innovation.



Experience a new world of interaction

Accelerator Centre's Corr: 'We're not just landlords'

Entrepreneurs continued from page 10

There's product analysis and disease analysis. One company makes components for semiconductors, another video games for teens and twentysomethings. Ideas range from the lofty — an intelligent search engine — to the practical —software enabling property managers to better manage their rental units.

Many of the tenants are freshfaced grads with well-rounded resumes. Some have double-barrelled degrees in computer engineering and business administration. Others haven't strode the halls of academia since the 1980s. They're battle-hardened veterans with at least one startup or years of work at other companies under their belt. Only about half the applicants gain admission. "I've got six or seven very strong companies waiting to get in," says director of operations Tim Ellis.

Tenants aren't there to run their own show. They must be willing to learn and take advice. "We're not just landlords," says chief executive officer Tom Corr.

He brings impressive credentials to the job. Words such as founder, CEO and director of commercialization appear frequently on his resume of 30-plus years. A second job as vicepresident of commercialization at



MATHEW McCARTHY, RECORD STAFF

More than 25 startups have set up shop in the Accelerator Centre since it opened in the University of Waterloo Research and Technology Park in 2006.

UW takes half his time. It gives him a front-row seat on the entrepreneurs of tomorrow. Taking ideas to market is his raison d'être.

Ellis brings something else to the table. He's started a company and failed. Handshake VR had the revolutionary idea of basing computer applications on the sense of touch. It was too far ahead of its time. But failure is often the best teacher. And Ellis has successful stints at other tech firms under his belt.

Including Corr and Ellis, a staff of seven runs the centre. A much larger army of support personnel is at their beck and call, including a phalanx of in-house entrepreneurs recruited from the ranks of executives in the area; outside mentors who pop in for one-day sessions; an entrepreneurship council of business leaders in the community and strategic partners from the local technology association, private sector and senior levels of government who all have offices in the same building.

A board of directors, including the presidents of the three area universities and one community college, keeps a hand on the tiller.

With resources like that, failure seems impossible. It happens, although not frequently. A few companies have quietly shut down and left, felled by lack of customers, capital or patent issues, says Corr.

Despite all these resources, only three companies – Miovision, Primal Fusion and Energent – have officially graduated from the centre. Launching a startup can't be rushed, it seems. The average stay at a business incubator in the U.S. is 33 months, according to a study there.

The graduation rate doesn't surprise the grads. Only one in 10 tech startups typically survives, says McBride of Miovision.

Another Accelerator Centre graduate agrees. Primal Fusion, which makes thought-networking software for the internet, spent two and half years at the centre. "If anybody thinks you can go in there and out in six months, it's not going to happen," say chief executive officer Yvan Couture.

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CORPORATE PROFILE

AGFA HealthCare

Chris Smith has seen a lot of software in his time. The research and development manager for Agfa HealthCare's Waterloo R&D centre has worked in the industry for more than 25 years, developing and commercializing software for companies ranging from small startups to established giants like IBM Canada. He's proud of the products he's helped create. But since joining Agfa HealthCare last June, he says his work suddenly seems more meaningful. Call it software with soul. Agfa HealthCare's advanced medical digital imaging technology is used in 1,900 hospitals, labs and clinics around the world, with 320 installations in Canada alone. That not only makes a difference for patients, but for the people at Agfa HealthCare who develop the technology. "I've worked for other companies, and you always wonder if you've really helped the human race," says Smith.

Johann Wolfgang V

"At Agfa, I can say we've helped save people's lives and improve their lives by contributing to faster diagnosis and treatment. That's really core to what motivates people here."

That quest to help others by constantly improving technology has made Torontobased Agfa Canada a market leader. The company, a division of Belgium-based imaging giant Agfa-Gevaert Group, employs about 320 people in Canada and accounts for 55 per cent of the market for picture archiving and communication systems. PACS (Picture Archiving and Communication System) are being used increasingly by hospitals and clinics as they make the transition from film to digital medical imaging, including X-rays, ultrasounds and CT scans. Agfa Health-Care PACS, which can cost anywhere from \$250,000 to \$1 million to install, have also achieved dominant market share in Europe and Australia. As a centre of excellence for the company's medical imaging R&D, Waterloo is a critical part of the company's global operations.

And it's about to become more important. Earlier this year, Agfa Canada announced plans for a \$200-million expansion of its Waterloo facility and the creation of 100 new jobs. The investment includes \$29.6 million from Ontario's Next Generation of Jobs Fund.

Agfa is looking to expand and is actively looking for a new facility. "The goal with the expansion is really

to spur on our next-generation platforms," says Jeff Nesbitt, the director of external collaborations for Agfa HealthCare. "And on the research side, we're fully, 100-per-cent committed to Waterloo Region."

The increased R&D effort is aimed at developing new applications for the company's range of digital medical imaging products. Agfa HealthCare is putting special emphasis on the growing fields of e-health and regional health, in which hospitals share resources to improve efficiency and patient care.

By year's end, about 160 R&D personnel at the Waterloo centre of excellence will be working across the site's product portfolio, including Agfa HealthCare's IMPAX brand of picture archiving and communication systems, used in facilities like Kitchener's St. Mary's General Hospital. Waterloo is also the research home for the company's IMPAX Data Centre - a multi-hospital storage centre for medical images and diagnostic information – and Talk Station, a voice-recognition system that records a radiologist's dictated diagnosis, converts it into text, and files it with the relevant image. As a major centre in Agfa HealthCare's worldwide R&D organization, Waterloo works with sites like Shanghai and Gent, Belgium to deliver multi-product solutions and develop new technologies. The transition from film to digital technology has revolutionized medical imaging, says Smith. "What used to take hours," he says, "now takes minutes." As the company's expansion suggests, demand for the technology is rapidly growing in Canada and around the world. In Ontario, all hospitals now use digital imaging technology, but imaging centres and private clinics, which account for about 40 per cent of medical images, still use film. In hospitals, digital imaging is spreading beyond radiology to areas such as mammography and cardiology. Provinces are pushing hospitals to form regional image archiving systems like the Hospital Diagnostic Imaging Repository Services (HDIRS), made up of 23 Ontario hospital corporations comprising 35 health facilities. By sharing, hospitals can save up to half the cost of keeping their own archive. And while the move to



electron

ic health records and services has been slow and sometimes fraught with controversy, the federal and provincial governments are determined to move ahead. "At the end of the day, you want your doctor to be able to access everything," says Dave Wilson, Agfa HealthCare's vice-president, sales and service. "Tying all this together becomes the key for better patient care."

These days, one of the company's biggest challenges is finding the skilled workers it needs to keep up with the growth. People with backgrounds in software development and testing, clinical work, technical support, project management, and finance are frequently in demand, says Wilson. With more than 700 technology firms in Waterloo Region and Guelph, the hunt for tech talent is particularly competitive. To attract younger candidates and raise their awareness of health technology, Agfa HealthCare last year launched a competition challenging students at the University of Waterloo and Conestoga College to invent an innovative technology solution for a significant healthcare problem. The winners received an all-expenses paid trip to Belgium to present their proposal to Agfa-Gevaert's global CEO. This year, the contest was expanded to all Ontario colleges and universities, and it may go national next year. "We've done a lot of work to recruit people," says Wilson. "There are just so many IT opportunities today that we can't keep up with the demand."

In the coming years, Agfa HealthCare will take a three-pronged approach to maintaining its rapid growth, says Wilson. It will begin by building on its existing products, increasing their functionality and opening new markets. The company will seek partnerships with both small and large technology firms. And it will continue its strong emphasis on product innovation through research and development. On all three counts, the prognosis for Agfa HealthCare in Waterloo seems decidedly positive.



Aimetis keeps an eye on business

By Alanna Petroff, Special to The Record

imetis Corp. has about 100 video cameras monitoring it's workplace of 40 employees. That sounds very Big-Brotheresque, but for Aimetis, it's just business as usual.

The in-office cameras are constantly tested and tweaked by engineers to ensure they are properly integrated with the company's award-winning video surveillance software, which not only monitors and records, but also interprets the video for various purposes.

The Waterloo-based firm sells its software to organizations around the world. including retailers, governments, airport authorities and educational institutions. "Retailers will use this software not only for security... but also for merchandising and customer service," says chief executive officer Marc Holtenhoff.

The company's signature Symphony software allows retailers to gauge customer reaction to a new store display, or oversee traffic flow using a map that indicates high and low traffic areas. This information helps them place staff more effectively, and adjust store displays and layout for a better customer experience.

"Instead of raw unstructured video, it's now information that can

be used for security, business intelligence, and a whole host of business applications," says Holtenhoff.

The system allows clients to bypass a tedious manual review of the video. Instead, much like someone uses Google's search engine, Aimetis clients can search for a certain piece of information, and the software will sift through the raw video footage to extract the exact information they're looking for.

When it comes to shoplifting or security concerns, the software issues real-time alerts to security guards or managers to ensure a safer customer experience. The search function and security alerts come in handy for governments, airports and educational organizations.

But those applications haven't always been the business vision of the two founders of Aimetis.

Mike Janzen and Justin Schorn started the company months after finishing their bachelor degrees, and shortly after the 9-11 terrorist attacks in the United States in 2001.

The two friends originally created the video surveillance software to monitor airplane cabins for suspicious activity, says Janzen, a University of Waterloo math grad and company chief software architect.

► Software continued on page 15



PETER LEE, RECORD STAFF

Marc Holtenhoff (left), chief executive officer of Aimetis Corp., and company founders Justin Schorn (centre) and Mike Janzen are proud the firm's video surveillance software is used by customers around the world.



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Software monitors strange shopping habits

► Software continued from page 14

After creating the software, Janzen discovered that monitoring a plane while it was in flight was an extremely costly and unrealistic venture.

From there, the pair moved the technology to the ground, and continued tweaking and improving the software capabilities.

Janzen reflects back on his initial idea, saying it's funny how they started out with the idea of making the world a safer place. Now, here he is, years later, working on software that monitors people's strange shopping habits.

After watching innumerable surveillance videos, Janzen says he's learned that people take three times as long to buy meat compared to buying vogurt. He's also learned that men often have a difficult time picking out underwear, and generally, after five minutes, they give up.

"You think you're trying to make the world a safer place in the beginning. And then you end up talking about guy's underwear," he says with a chuckle.

While those observations might seem like frivolous trivia to the average person, it's important information for retailers, who can use it to formulate strategies to ensure an

FACTS

Aimetis Corp. specializes in video surveillance software. The "Ai" in the corporate name is the acronym for artificial intelligence, while "Metis" is the name of the shape-shifting Greek goddess of wisdom and knowledge.

improved shopping experience.

Aside from its innovative technology, the company is thriving through its two-tier distribution strategy, which uses certified distributors and resellers to reach customers around the globe

Richard Caballero, vice-president of global channel sales, has helped the company enter new markets in Africa, the Middle East and South America, while expanding its reach in Asia, Europe and North America.

Since joining Aimetis in February 2008, Caballero, has added new distributors at a breakneck pace, going from just a handful of distributors to 40 distributors in less than two years.

"We have coverage in over 70 countries. There's no major part of the world where we can't get our software," he says, noting that the

software has been translated into German, Spanish, French, Japanese, Swedish, Mandarin and other languages.

"For such a small company, we have so much reach," he says.

As a result of its global distributors and resellers, Aimetis software is now being used by a number of international customers, including Dutch delivery firm DHL, American restaurant chain Pizza Pizza and Swedish retailer ICA.

The software is also popular at large-scale events. For example, it was used at the 2006 FIFA World Cup and the 2009 Summit of the Americas.

Holtenhoff says he's particularly proud that Aimetis software is being used at Munich's airport.

"The Munich airport is considered one of the most technologically advanced airports in the world. Other airports look to them for validation of new technology," he says.

The combination of world-class software and an effective business model has meant impressive results for the firm.

"From the business side, we're experiencing really great growth,' says Holtenhoff. "The last six months have been our best six months ever, from a financial standpoint. Despite the economy, our revenue has grown significantly.

Revenue doubled last year and we're on pace to do that again this year," he savs.

The company, which operates out of offices on Weber Street North, believes its ability to cater to small and large budgets gives it a competitive edge, says Holtenhoff.

For example, if a university is looking to buy Aimetis software this year, but has only a limited budget. there is always the option to upgrade later. The client could start by buying cameras and a security recording system.

The following year, once the organization's budget expands, it could upgrade to buy the special video analytics software.

It's all about allowing companies to upgrade later, once they're ready, says Holtenhoff. "That's proving to be a competitive advantage for us."

As Aimetis continues to expand and bring new customers into the fold, Caballero says he's extremely proud that a relatively small company like Aimetis, in a small city like Waterloo, can compete with larger competitors with offices in bigger cities.

"We can accomplish everything they can, because we have a good piece of software, a good distribution system, and a team of dedicated staff." he says.

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Jason Gillham, founder of 2G Robotics, goes into a tank of water to show off his firm's underwater laser scanner.

2G Robotics startup goes underwater for customers

By Alanna Petroff, Special to The Record

In the opening scene of the movie *Titanic* a crew searching for treasures uses an underwater mobile camera to get a better look at the sunken ship.

While the technology the crew used seemed pretty advanced at the time, Jason Gillham, owner and founder of Waterloo startup 2G Robotics, says his company could have done the search better.

Gillham, 27, and his small team at 2G Robotics have developed an underwater laser scanner that they believe is about to take the aquatics industry by storm.

The small metal scanner is designed to scan underwater surfaces and transmit images back to a computer where the operator can view underwater objects and take exact measurements. The software allows the operator to view different sections of an object from different angles, allowing the operator to get a closer look at what is going on underneath the water.

The company's new laser system is unique because of its ability to provide dimensional information that is not available through technologies like sonar and video.

"We're going to be the first company to have a commercially available and widely usable underwater laser scanner," says Gillham, who graduated from the University of Waterloo's mechanical engineering program in 2007.

To the average person, the laser may seem like nothing more than a novel idea. But it could revolutionize the way businesses operate in many industries.

Lasers expected to ship for trials within months

► 2G Robotics continued from page 16

The scanner is targeted at firms that inspect tunnels and dams, offshore oil and gas companies, and businesses that deal with shipping and port security. The scanner can also be used for scientific and archeological purposes, Gilham says.

In the coming months, the startup expects to ship its first lasers for trial runs.

"We went down to a trade show in New Orleans in March and we were able to demonstrate (the laser)," says Gilham. "We had significant interest in the product and a number of companies lined up for field trials."

The co-op students and one employee at 2G Robotics share Gilham's enthusiasm about the company's prospects.

"It's definitely exciting to work on things that haven't been done before," says 23-year-old Mark Podbevsek, a former co-op student at 2G Robotics.

While the laser is the main focus of the business, 2G Robotics also does consulting work to bring in revenue.

When he started doing the consulting work, Gillham advised companies on how to design mechanical systems.

Now, he's developing those systems for clients and inventing more complex structures.

Gillham's team also customizes technology for customers. For example, in the shop behind the company's office on Colby Drive, it is rebuilding and rewiring a large green excavator so that it can perform dirty underwater work such as cleaning out sewers.

"We're building it to do work that human don't want to do," Gilham says.

The goal of the consulting work is to establish a track record, demonstrating that 2G Robotics is a serious business that can meet deadlines, he says. "Reliability is key. You have to show that you are trustworthy and can deliver on time."

Aside from the consulting revenue, Gillham's business is largely self-financed, with additional interim financing from family and friends.

Gillham says he has taken on a significant debt to get his company to where it is today.

At first, the venture scared his parents.

"My parents are both teachers ... and they have fairly secure jobs," says Gilham.

"So being entrepreneurial with teacher parents, I'm sure they were a little scared. But they tried to hide it. They also figured now is the best time to do this because I'm young and I don't have the commitments I'll have when I'm older. So they were very supportive and said 'Yeah, go

| ahead and do this."

His father, Bruce Gillham, 61, says that so far his son has been doing remarkably well. He thinks it's a good sign that the business has made it through its first year without a hitch. "He's managing very well. We keep expecting him to ask for money, and it hasn't happened yet."

But running a technology startup requires more than just a good product, personal sacrifice and supportive parents.

Gillham says he has received a lot of help from Communitech, Waterloo Region's technology association, as well as from the University of Waterloo's Centre for Business Entrepreneurship and Technology.

The centre's students helped Gillham create a business plan and apply for grants as part of their course work. "I wouldn't be where I am today if it wasn't for that," he says. "I've learned so much through this process. I had no idea how much I didn't know."

Chris Howlett is Gillham's mentor through Communitech's Venture Services Group. As an entrepreneur in residence, Howlett gives Gillham general business advice, helps him network and arranges access to government programs to advance his business.

"What I like about Jason is he's very professional," says Howlett. "He knows the areas where he can benefit from help, and he doesn't have a know-it-all attitude that some young folks can have.

"I think he's pursuing his business in a very professional way, and he's always looking to try and fill the gaps in his knowledge."

Recently, Howlett helped Gillham secure funding for market research to figure out whether prospective clients would be interested in seeing 3-D underwater images, instead of just two-dimensional images. The research also prodded the prospective buyers to divulge how much extra money they would be willing to pay for that kind of service.

"I think that the fundamentals of what he's doing are sound," says Howlett.

"He's organized for selling and he has been for the last couple of months. He's recruiting distributors and channel partners, and they're the people who will sell his scanners into the market. And he's going about it the right way. In six months, he will have lots of sales."

For now, Gillham is waiting on those first few critical laser sales. From there, he can continue expanding his business and inventing even more advanced mobile underwater systems.

The ultimate goal for the company is "to be a significant player on the world stage for mobile robotics," he says with a smile.



Rod Foster, Covarity

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No dummy when it comes to crash-test research

Gavin Crutchley, Special to The Record

uane Cronin knows all about beating spears into plow-shares.

In 2000, he was involved in a project to develop landmine protection measures with Defence Research and Development Canada. As this area of research evolved, he and his colleagues found that there was no preexisting way to evaluate the effectiveness of any protective measures and decided to develop a surrogate human leg and virtual human models to find the answers.

From that point, it was a short hop, skip and a jump to developing a virtual human torso to predict the effects of blast injuries and, as is the case with a lot of other scientific efforts, it was soon obvious there was another commercial application for such a model – developing safer cars by modelling the effects of a car crash. Cronin, an associate professor in the University of Waterloo's mechanical and mechatronics engineering department, started working with General Motors and the Natural Sciences and Engineering Research Council, about seven years ago to model a virtual human to understand how the body responds in car crashes.

The primary barrier to the goal of



GAVIN CRUTCHLEY, SPECIAL TO THE RECORD

University of Waterloo's Duane Cronin shows part of the virtual human body his team is developing for the Global Human Body Models Consortium.

making cars safer is the "test that cannot be done" — that is using real people in a car crash — hence the need to develop virtual humans that can be used to simulate crash scenarios.

"Really, the biggest challenge is

the need to understand human body response and injury in very challenging situations that may occur in less than 100 milliseconds," says Cronin.

Cronin and his graduate students worked with GM to develop a virtual human torso and neck, and model the way the body and internal organs respond to the various forces involved in a car crash.

As it happens, the 39-year-old has a vested interest in how the body responds to crashes. He has broken his collarbone three times and his fibula once in various biking and snowboarding accidents. "In grad school I began to develop a bit of an interest in impact biomechanics as a result of my own experiences with my accidents," he says.

Cronin and his research collaborator, assistant professor Naveen Chandrashekar, and the rest of his university team got a boost when the Global Human Body Models Consortium, made up of nine automotive companies and two suppliers, was established in April of 2006. The consortium was formed to consolidate the companies' research and development activities in the area of human body modelling, in order to advance crash safety technology.

In September of 2008, UW was chosen as the Centre of Expertise for neck injury modelling, with the consortium and the Initiative for Automotive Manufacturing Innovation supporting the program and adding five graduate students and one research engineer to the team.

> Virtual crash continued on page 19





Technology has come to play an essential role in the everyday lives of Canadians. Increasing demand for network bandwidth and cheaper, faster and more feature-rich applications is driving growth. At the same time, the lines between hardware and software are blurring, and new business models are emerging.

This presents a unique set of business issues to technology companies. Whether you're a start-up or an established player, PricewaterhouseCoopers LLP can work with you to address the challenges and explore the opportunities. Contacts Glen M. Dyrda Partner glen.m.dyrda@ca.pwc.com Paul Hendrikse SWO Technology Practice Leader paul.hendrikse@ca.pwc.com Martin Kern Partner martin.kern@ca.pwc.com

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Virtual crash testing takes a lot of computational horsepower

► Virtual crash continued from page 18

Cronin also is partnered with the University of Virginia to develop the torso section of the virtual body for thoracic injury modelling.

"The use of virtual human testing will enable the development of next generation improvements and safety," says Cronin.

"The current crash test dummies are mainly used now for compliance testing. They are also used for research, but they only provide a limited idea of what goes on in terms of specific injuries sustained in any given crash scenario."

In contrast, the virtual models being developed by Cronin and his colleagues allow them to examine what happens to a body during an accident with a level of detail that is orders of magnitude beyond what could be done before. They are now able to look at individual body parts, such as the ribs, and be able to predict the injury response during a crash.

Being able to model that level of detail requires a lot of computational horsepower. During the early years of his research, computing power was a problem, but as technology has advanced this part of the research has become easier. Cronin and his team now use Linux clusters – a group of computers networked together – to do all the calculations needed to model the response of the body and internal organs to various crash scenarios, such as a side impact car crash.

Despite their successes, challenges remain.

Cronin and his team are working on refining their model to a point where they can better predict how soft tissue, not just hard objects like the ribs, reacts to the stresses caused by a car crash.

The hope behind these efforts is that the carmakers will get to the point where they only have to crash one prototype of a new vehicle before they can move on to the manufacturing stage.

That would save them a great deal of money given that each prototype costs \$500,000 to \$1 million to make.

However, the benefits of Cronin's research aren't just financial. Being able to use human models — albeit virtual models — will allow auto companies to build safer cars because they can now be engineered for "real" people.



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Dan Latendre, chief executive officer of Igloo Software, is intent on turning the developer of collaboration software into a global powerhouse.

Igloo is a hot firm with bold growth plans

Deborah Birkett, Special to The Record

an Latendre has big plans for Igloo Software, a Kitchener company that develops software that helps teams of people collaborate.

"I'm not interested in being a 100-person company or a \$10-million company. Our goal is to be the next RIM," he boldly says.

Research In Motion co-chief executive officer Jim Balsillie has nothing to worry about – he's one of the primary players propelling Igloo to success. Igloo grew out of a software platform developed for the Centre for International Governance Innovation (CIGI), a Waterloo think tank founded by Balsillie.

Igloo was established in 2004 as an online network to facilitate collaboration between CIGI researchers. The name is an acronym for International Governance Leaders and Organizations Online. The software was developed with a grant of \$15 million, equally funded by CIGI and the Ontario Ministry of Research and Innovation.

Igloo became an independent, for-profit company last year, a move that fulfilled the commercialization strategy that was part of CIGI's funding agreement with the Ontario government.

Igloo's board of advisers consists of Balsillie, Latendre and Kevin Talbot, vice-president and managing director of RBC Venture Partners, which has backstopped the business with an equity investment of \$4 million US.

Latendre, a veteran of several tech companies — including MKS Inc., Delrina, and Open Text Corp, where he played a key role in the launch of Livelink, Open Text's flagship content management software — says Igloo builds social networking tools for business that not only help improve productivity among employees but also develop better relationships with key stakeholders – customers, partners, suppliers, and even alumni of the organization.

As a pure Web 2.0 company, the focus is on technology that facilitates collaboration and knowledge exchange, not control, he says.

The software is used by a diverse group of international customers who need to create online communities in a wide array of fields. Examples include organizations such as the Canadian International Development Agency and the United Nations Development Programme, big companies like Motorola and smaller firms such Mississauga's Green Grass One.

Doug Walker, co-owner of Green Grass One, a buying group for operators of golf course pro shop, says his company conducted an extensive survey of the market before choosing Igloo as the solution provider for its online community, launched in March 2009. "We wanted a partner, not just a tool set," says Walker, who was impressed with the company's responsiveness and customer service orientation. "We could tell Igloo really got it. They saw the technology as a small part of the overall solution."

Walker says the online community has helped Green Grass One create stronger channels of communication with its 320 accounts. It also enabled the company to offer richer content, including "social networking tools, picture galleries, videos, blogs, and discussion forums," to the 450 members of its community, who include employees and suppliers as well as pro shops. "It's just made us a more productive organization," he says.

Green Grass One members have said the online features aren't just useful, they are fun. "They say, 'It's like Facebook for work."

Since Igloo was spun off from CIGI, Latendre and his nearly 50 employees have worked diligently to build and add products and services that he says are "sustainable, defendable, and hard to replicate."

That's the philosophy of Research In Motion, and Latendre says his mentor, Balsillie, has drilled it into his head.

► **Igloo** continued on page 21

A cool name

Chief executive officer Dan Latendre named the company Igloo because he wanted something that suggested a community gathering place, an exceptionally strong structure and Canadian identity.

Although he didn't want the name to be acronymic, the word IGLOO stood for International Governance Leaders and Organizations Online when it was a not-for-profit project under the auspices of the Centre for International Governance Innovation.

When Igloo was spun off as a for-profit company, the words behind the acronym lost their relevance. Some Canadians were concerned that the name was "too Canadian," but they needn't have worried. American and European feedback was overwhelmingly positive. "They went, 'Wow, that's really cool – Igloo,'" says Latendre. TECHNOLOGY SPOTLIGHT 2009 21

Online network connects 1,000 manufacturers in Waterloo Region

Deborah Birkett, Special to The Record

he Waterloo Manufacturing Innovation Network is a project close to home that Igloo Software has devoted considerable resources to.

The network, dubbed the Waterloo MIN, is an online community for the estimated 1,000 manufacturers in Waterloo Region.

Launched in January, it offers a variety of free services, such as a job board, blogs by industry experts, event listings, news stories, company directories and information about government funding programs.

The objective is to help local manufacturers succeed in competitive and challenging markets. The network makes it easier to collaborate, exchange knowledge, solve problems, and find local suppliers for products and services.

Dan Latendre, Igloo's chief executive officer, estimates Igloo has invested about \$1 million to create the network as a "proof of concept" to show that it works and can be selfsustaining.

The company has submitted a proposal to Industry Canada for funding to create 15 similar networks across the country.

Valerie Bradford, a business development officer with the City of Kitchener, is the chair of the network's advisory board.

She and several other members of the board each pay \$5,000 for their seats, which creates a pot of money that pays for programs, a part-time executive director and the membership of at least three manufacturers.

"We don't want them to have to pay," Bradford says. "It's really important that they be there and have a voice."

"We view MIN and promote it as one-stop shop for manufacturing," says Bradford.

"Anything to do with manufacturing, this should be your first source." She makes it clear that it is indi-

vidual employees of manufacturing companies who are the members, not the companies.

Bradford encourages manufacturing workers to join even if they haven't heard about the network from their employer yet.

Jason Santo, a community facilitator at Igloo, says that in its first eight months, the network welcomed more than 450 members and attracted an average of 50 to 60 new members a month.

Not surprisingly, the job board is one of the most popular features: "Opportunities have been viewed over 200,000 times and over 7,000 job applications have been submitted through this free tool for manufacturers," he says.

Santo points out that people from around the world, including "significant numbers of visitors from the United States, Germany, China, Malaysia and the United Kingdom," have checked out the network.

"This provides local manufacturers with the opportunity to promote their products and services to the global supply chain," he says.

Igloo going to next level

► Igloo continued from page 20

Igloo's Web 2.0 platform is patent pending.

Igloo exceeded revenue targets in 2008, and enjoyed about 10 per cent growth this year. "But 2009 wasn't really, for us, a growth year," says Latendre. "It was what I call a foundation-building year." He expects 2010 to be Igloo's "coming-out year, so we're gearing up for that."

He hints that the company is on the verge of securing some large, flagship customers and partners that will take Igloo to the next level.

Right now, Igloo enjoys the advantages of being a smaller company. A four-month development cycle means it is able to respond more nimbly than some large competitors, such as IBM, Microsoft, and Oracle, which tend to be on a one-to four-year development cycle. Unlike those vendors, who are adding social networking tools to

vast suites of enterprise content management software, Igloo isn't weighed down by a legacy platform. "We have speed of deployment,

we're very cost-effective, we've built it for corporate (use), and we're very configurable," Latendre says.

That potentially translates into a wealth of opportunities for Igloo.

"It doesn't take decades anymore to create powerhouse companies," Latendre says. At the rate Igloo is developing, it may take only a few years for the company to become, in his words, "the next great Canadian thing."



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COMMUNITECH

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Communiteq is banking on a growing market

By Nicole O'Reilly, Special to The Record

hen John Chambers and Irv Donald decided to start their own ATM business, they thought they would have more free time.

But the need to constantly monitor their computers for jams and other problems with their automated teller machines led the pair down a path that has kept them busier than they ever could have imagined. Their company, Communiteq Systems Inc., became the only custom designer and manufacturer of non-bank ATMs and financial transaction kiosks in Canada.

It is attracting growing international interest.

Chambers and Donald started Communiteq in 1999. They were among the early deployers of nonbank ATMs, the cash dispensing machines found in stores, restaurants and other locations.

Chambers, with a background in software development, is the company's president while Donald, with a background in sales and marketing, is vice-president.

"I'm a University of Waterloo computer geek, so that's why we're here," Chambers says of the pair's decision to set up shop in Waterloo Region.



Irv Donald (left) is vice-president of Communiteq Systems and John Chambers is company president.

Communiteq's first office was in Cambridge. Five years later, it moved to a larger facility on Centennial Road in Kitchener. In September, it moved again, this time to McIntyre Drive in Kitchener's Huron Business Park.

Communiteq has a modular busi-

ness structure, so the number of employees changes depending on the projects at a given time. There is a core group of about 12 staff, Donald says. The company contracts with six local firms for metal, plastic, painting and other work associated with building the units. Donald and Chambers have known each other for more than 20 years. They have been business partners for 10 years, but before that they worked together in the financial transaction sector. Among other things, they developed and marketed software for credit unions and small banks.

It was this knowledge, which Donald calls the "back end" of the ATM business, that gave them the know-how to branch out on their own.

"We decided it makes more sense for us to be making money ourselves, instead of teaching others how to make money," Donald says.

When Donald and Chambers started Communiteq, they thought they would just be selling and monitoring ATMs.

But the need for someone to constantly be at a computer in case there was a problem with the machines changed their plans.

Chambers wrote software that sent alerts to their BlackBerry, which Research In Motion Ltd. launched the same year Communiteq opened. He then wrote additional software that made it possible to send commands to the problem ATM via the BlackBerry.

► Communiteq continued on page 23



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Market growing for kiosks with business functions

► Communiteq continued from page 22

This saved a lot of time, Donald says, because many ATM jams are solved simply by restarting the machine.

The challenges of monitoring ATMs weren't unique to Communiteq so Donald and Chambers developed and marketed advanced monitoring software for ATM deployers across Canada. Meanwhile, they continued to build and monitor their own machines.

As Communiteq's reputation grew, the company started receiving requests for customized ATM software. For example, in 2001 a customer requested an ATM for apartment lobbies that would allow residents to use it to pay rent.

"We thought, wow cool," Donald says.

The challenge was that ATM and point-of-sale (debit card) transactions use two different networks with separate security features. Also, ATM pads generally are not programmable.

With the blessing of Interac, the electronic network that connects ATMs to the banking system, Communiteq spent six months mimicking an ATM to try to combine ATM and point-of-sale capabilities. However, in the end the technology proved to be too cumbersome because multiple pin pads were required.

Almost by luck, the pair came across Northrup Grumann, a global security company that was making ATM kiosks for airports in the Burlington area.

The company had developed an ATM that used a PC, a touch screen and had a pin pad for both ATM and point-of-sale use.

Northrup Grumman, however, did not have a monitoring system so the ATM was not selling, Donald says. Communiteq wrote its eTenant software for the kiosks and started distributing the machines.

Eventually, Communiteq started building its own kiosks.

"We started looking at this and thought, hey, we could do other things," Donald says.

The company developed machines that print phone cards and gift cards, among other things.

As Communiteq's software repertoire grew, the ATM market was changing.

After five years of deploying ATMs, Donald and Chambers saw that the number of cash transactions on ATMs was flattening out.

In 2004/2005 the market hit its saturation point – the number of overall transactions plateaued but the number of new ATM machines continued to rise.

"There was pollution in our marketplace," says Donald. "It wasn't as

IN QUOTES I IRV DONALD COMMUNITED SYSTEMS INC.

"We decided it makes more sense for us to be making money ourselves, instead of teaching others how to make money."

profitable as it was 10 years ago." Merchants that hosted ATMs started asking machine deployers for a bigger share of the revenue. To remain competitive, deployers started turning to Communiteq to add features to their ATMs that would make the machines more profitable and attractive to the merchants. "They want more than just an

ATM," says Donald. At the moment, there is a growing

market for information kiosks, and kiosks with business functions, including scanners, email and internet.

Communiteq recently reached a deal with University of Western Ontario — where it has provided ATM service for five years – to build machines that charge meal plan cards and print tickets for events in the university's stadium.

It developed a pharmacy kiosk for Loblaws that enables customers to look up drug and disease information, medical resources in the community and renew prescriptions.

Communiteq also is working with a large Canadian convenience store company to install movie theatre ticket kiosks at 900 stores across the county. Expected to be in place this fall, the kiosks will allow customers to buy and print out ticket and snack vouchers.

"The whole idea of self-serve technology is coming more and more to the forefront," Donald says. "But it's also our business model of multiple applications that brings people to our door."

He notes that there is a drawback to adding too many applications – longer lineups. That particularly becomes an issue when someone who just wants to take out cash has to wait for someone surfing the internet, for example.

"But it's a good problem to have," Donald says, adding that a second ATM or kiosk might be the answer.

Communiteq is developing the "four-sided monster," a machine with screens on four sides that can serve a number of functions including cash dispensing, business functions, the internet, tickets and possibly iTunes.

One of Communiteq's future goals is to develop meters that charge electric cars. The company would sell them to owners of parking lots and condos.

"The market is coming to us now, whereas five or six years ago they were shaking their heads," Donald says.



Tom Jenkins, Open Text

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Chris Bunt, founder of Biotactic Inc., stands inside a fishway where a camera tracks fish trying to get over the dam in the Grand River at Hidden Valley.

Biotactic makes life better for fish

By Bob Burtt, Special to The Record

That Chris Bunt would some day be working with fish shouldn't come as a surprise to anyone who is aware of his boyhood fascination with the fish in a friend's aquarium.

But no one could have predicted that some day he would be doing intricate surgery on fish, installing tiny radio transmitters in their bellies, photographing fish underwater and designing systems to track their movement and behaviour.

Bunt is the owner and senior scientist at Biotactic Inc., an international consulting firm devoted to fisheries conservation, aquatic wildlife habitat and natural habitat restoration. He founded the company in 1998 while working on a PhD at the University of Waterloo.

After graduating from the University of Toronto in 1993 with a specialist degree with emphasis in ecology, zoology and botany, Bunt had to make some choices.

"At that time, I was torn between a career in aquatic biology and entomology and what I ended up doing was going to Costa Rica for a year and collecting insects," he says. "I was the curator of an entomology collection and biology station. I still collect bugs and I have a big display in my home office."

After returning to Canada, he worked at a research station on the St. Lawrence River in New York State, studying musky and pike until he was offered the opportunity to head a new industrial chair in fish telemetry and work on his PhD at UW. (Fish telemetry involves using technology to remotely track fish.)

For the next three years, from April to October, he lived in a tent on the Grand River in the Hidden Valley area in Kitchener and studied fish migration.

"We had fish with radios in them and all kinds of fancy computer | tracking devices," Bunt recalls.

"What we ended up learning in an applied way was how to improve fish passage using fishways. The whole idea is making dams permeable to fish so they are no longer a barrier.

"What we learn from scientific literature, of course, is dams fragment habitat and cause all kinds of change in rivers, not only the flow of water but blocking nutrients and sedimentation and oxygen problems. If any of those factors go off the map it affects the fish population in general."

► **Biotactic** continued on page 25



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Technology's popularity grows

► **Biotactic** continued from page 24

After Bunt completed work for his PhD, he was awarded a National Research Council grant to do post doctoral work at the University of Illinois and James Cook University in Australia.

He tracked groupers on the Great Barrier Reef and worked on finding ways to protect their habitat.

With the post doctoral work in Australia behind him, Bunt returned to Kitchener. The Grand River beckoned.

Bunt's office, at the back of a barn on Hidden Valley Road, is as modest as his company's programs are grandiose. He started Biotactic with an investment of \$6,000. Now he has three full-time and two part-time employees and annual revenue in the hundreds of thousands of dollars. Biotactic's office and shop house the computers Bunt and his staff use to monitor fish at locations across North America, "We have a network of underwater cameras and sensors that we use to track fish," Bunt says. "All that stuff streams free on the internet and we have a system that monitors the live stream.'

Images of fish trying to climb a fishway, attacking another fish or spawning in rivers throughout North America and beyond are captured and fed back to the Biotactic, where the file is edited and sent back to the client accompanied by written text.

The information captured by Biotactic's cameras is valuable for a number of reasons. For example, power companies might want to know what impact planned or existing dams might have on fish migration and wildlife.

"What we do is process the video and make a list of what the system detected. It will tell you the size and species of fish, and whether they are attacking other fish or spawning."

Bunt says Biotactic's equipment in the Grand River at Hidden Valley provides the only live streaming camera inside a fishway anywhere in the world.

"It provides live colour video of fish trying to get by the dam. Our whole objective when I started my graduate work down here (at Hidden Valley) was to make these fishways work a lot better than they did and we've clearly done that," says Bunt, adding that there's a lot of work still to be done.

The technology is proving to be popular with government agencies that want to track the movement of fish. For example, Wisconsin has pur-

chased two systems. There also are two systems monitoring trout on a large property in Montana. The land is owned by a wealthy Chicago resident who funds work at an aquatic and terrestrial biology observation centre on the 80hectare property.

Another system has been sent to Oregon to monitor salmon that swim from the Pacific Ocean into a small stream that has no barriers or dams in Portland. South Korea has expressed interest in using Bunt's technology to show underwater activity in rivers there. The idea is to show video on billboard-type structures in parks as part of a major river restoration program.

Bunt has led the charge in developing expertise in fish surgery, radio telemetry, ultrasonic telemetry and underwater videography. His surgical skills are much in demand.

"We catch the fish, put them to sleep with a diluted anesthetic and make a very tiny incision on the side of the belly and install a tiny transmitter radio package that is about one centimetre by three centimetres in size and weighs five grams."

A tiny antenna is connected to the transmitter and extends out from where the incision was made. The transmitters are used to monitor where the fish are and where they are going. For example, they record every time a fish climbs a fishway at a dam or enters the structure on route to spawning beds.

Once the operation is complete, the fish are left in bins of fresh water until they start to thrash about and then they are released safely back to the rivers they came from.

Bunt invented new surgical instruments to help with the tricky task.

"My system is tried and true and there are people all over North America that trust me with endangered fish," he says. "It's pretty delicate stuff and there is a \$10,000 fine in some places if you kill an endangered fish."

Biotactic is a rewarding, profitable enterprise, but for Bunt the business is also about passion and a never-ending quest to find new and better ways to do things. "I'm trying not to let it get out of control," he says. "I have to stay in the water. I have to keep my hands wet. I don't want to be stuck to a telephone and meetings."

Fish ladders, floating rafts save wildlife

By Bob Burtt, Special to The Record

Technology and programs developed by Chris Bunt over the last decade are responsible for saving thousands of fish and countless, deer, squirrels, groundhogs and other wildlife in Kitchener's Hidden Valley.

Early studies by Biotactic Inc., the firm Bunt owns and operates, showed that the dam Waterloo Region installed at Hidden Valley in the early 1990s to draw water from the Grand River was blocking the movement of fish upstream and that the fish ladder that had been installed to facilitate their movement wasn't working well.

Underwater video collected by Biotactic showed that most fish making the hard swim against the current often didn't find the entrance to the concrete fish passage way and most of those that did didn't make it all the way through.

Bunt's recommendations led to significant improvements that opened the structure to light, and changed the size, shape and location of the entrance. The changes helped make the route more attractive to fish.

"There is still a lot of work to be done to improve fishways," says Bunt. "They fail more often than they work." Fish have a hard time finding them and once they are inside most of them don't get to the top of the ladder.

The design of dams hasn't changed much. "We've been using them for 100 years," says Bunt. "They really don't work and there are thousands of them all over the world."

"They are still building dams left and right and centre," he says, adding that the push for green energy, and hydro electricity in particular, will require that even more dams are

| built.

Lane Stevens, who until recently was the superintendent of field operations and maintenance for Waterloo Region, met Bunt in the mid-1990s when Bunt was camping at Hidden Valley and doing research for his PhD.

She recalls that the region was having problems with the fish ladder near Hidden Valley. It built the dam so it could draw water from the Grand River that is used for drinking water after it is treated at the Mannheim Water Treatment Plant.

"I could tell it was getting plugged and you could see fish in distress," says Stevens. "So we hired him (Bunt) and he made modifications that really helped and he hired divers to go down and clean out equipment that was supposed to prevent debris from getting into raw water reservoir.

"I was amazed at some of the things he did. For sure he is on the cutting edge," Stevens says. "One of the things he did was to put a camera in the fish ladder and you could watch what they were doing."

Blunt also did some work at the water reservoir at Hidden Valley.

"Every year we would have to dewater it and clean out the debris and there were always dead animals, turtles, ducks, groundhogs and even deer," says Stevens. "He invented a system of floating rafts that would go up and down with the level of the water and the animals could climb onto the platform and climb back out."

Now there are 17 rafts that provide safe exits for trapped animals. They still get in, but the rafts give them a safe way out. Each year, when the reservoirs are drained, Bunt climbs in and scoops literally thousands of fish from the reservoir and takes them back to the river.





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Tech sector rides out storm

By Chuck Howitt, Record staff

alsa Corp. pulls the plug on its digital cinema camera after pouring \$40 million into the project.

Arise Technologies puts its new Kitchener silicon pilot plant on hold, as the ongoing recession dampens sales of its solar energy cells.

Revenues at ATS Automation Tooling Systems plunge \$60 million in its first quarter of 2010 as the slowing economy puts the squeeze on sales.

Sandvine Inc. is working hard to get back in the black by moving into the wireless market after years of relying heavily on cable and fixedline customers for its internet traffic management software.

RDM Corp. endures a couple of tough quarters as the financial crisis in the United States bites into sales of cheque scanners and digital imaging products for the banking industry.

Waterloo Region's high-tech sector, held up as one of the stars in the technology firmament across Canada and North America, is showing some wear and tear these days as have other tech clusters across the continent. Battered by the global recession, local companies have had to change focus, target new markets, bootstrap to raise scarce capital or fall back on core technology to ride out the tempest.

Yet there have been no sudden, shocking failures of the magnitude of Nortel Networks which has crippled Ottawa's tech sector.

"I think we're doing very, very well," is the confident assessment of Tim Jackson, a keen observer of the local technology scene and partner with Tech Capital Partners, a venture capital firm that helps finance emerging technology companies.

He points to the region's "extremely diverse" high-tech sector and its foundation on four pillars: software, hardware, wireless and digital. Even in the downturn of 1999-2000, Waterloo did much better than other areas, he says. With its heavy reliance on telecom companies, Ottawa got "hammered," but Waterloo's heterogeneous mix helped it absorb the blow, he says.

To those pillars could be added biotechnology, especially in Guelph, and advanced manufacturing. Underpinning all this is the region's generous supply of educational institutions, including three universities and one community college, and the move into emerging areas such as nanotechnology, quantum computing and the digital media.

While the manufacturing meltdown has pushed unemployment to alarming levels in the region, technology companies continue to put out the help wanted sign. Though exact numbers are hard to come by, Iain Klugman, president of Communitech, the association representing technology companies in the region,



Phil Deck, chief executive officer of MKS Inc., says geographic and industry diversification helped the software company grow revenue.

FACTS

Sales of the largest, locally based publicly traded technology firms (most recent fiscal year): Research In Motion: \$11.07B US ATS Automation Tooling Systems: \$855M Open Text: \$785M US Com Dev International: \$210M

Dalsa: \$206M Descartes Systems Group: \$66M US MKS: \$58.4M US Sandvine: \$51.1M Arise Technologies: \$35.7M RDM: \$26.6M Turbosonic Technologies: \$25.4M US is confident in saying that as many as 1,000 positions are up for grabs in the local tech sector right now.

Companies have adapted to the troubled economy by "revectoring" away from soft industries such as manufacturing and automotive, and selling into more robust areas such as the public sector and health care, he says.

Another factor working in this area's favour is that many firms produce "mission critical" hardware and software, Klugman says. Companies such as Descartes Systems Group in distribution, Covarity in banking and Desire2Learn in education, to name a few, make products that are more than luxury items. They save valuable dollars and cents, he says.

A company's maturing business model can also help it ride out the tough times. A case in point is MKS Inc., which makes products that help IT engineers and specialists manage their software. Although new customers have been more difficult to find during the downturn, the 25year-old Waterloo company has seen its maintenance and service revenue grow for four consecutive quarters, says chief executive officer Phil Deck. Geographic and industry diversification have also helped.

Though its head count has declined slightly due to attrition, MKS has made no other staff cuts and plans to add personnel in the coming year, he says.

At Communitech, which among other things offers mentoring and peer-group support, Klugman has noticed no slackening of the entrepreneurial spirit. "There's still not a week goes by where there aren't a couple of startups walking through the door to talk to us about some sort of new idea."

There's actually no better time to start a company than right now, says Jackson. Looking to save dollars, larger established companies have cut back on research and development spending, leaving the field wide open to savvy and opportunistic entrepreneurs. When the economy begins to recover in a year or two, these new startups will be poised to take off, he says.

Even if the current recession eventually culls a few members, the region's tech herd is still far larger than it was five years ago. More than 570 technology companies now call the region home, a dramatic jump from the 310 of 2004 and an astonishing leap from just 50 in 1997, according to figures supplied by Communitech.

Collectively, those 575 companies employ roughly 30,000 people and produce \$13 billion in revenue.

In an ideal world, those revenue figures would be spread relatively evenly over a wide range of companies, but not in Waterloo Region, where Research In Motion strides like a colossus across the technology landscape. The mobile communications giant accounts for a large percentage of that revenue figure and has caused some to observe that, as goes RIM, so goes Waterloo Region.

If RIM is the economic engine that drives the region's technology sector, there are plenty of litres left in the tank.

Co chief-executive officer Jim Balsillie's quest for a National Hockey League franchise appears to have been no distraction for the Black-Berry maker and, if it has, founder and co-boss Mike Lazaridis is not saying anything.

The company survived a bruising patent lawsuit a few years ago, barely broke a sweat over its huge stockoption fine earlier this year and now appears to be fending off the iPhone challenge. Recent surveys put the BlackBerry's market share at 56 per cent of the North American smartphone market, with the iPhone a distant second at 19 per cent.

RIM employs a local workforce of roughly 8,000

► BlackBerry continued from page 26

And Fortune magazine in the U.S. recently named RIM the world's fastest growing company.

On the local scene, RIM employs a workforce of roughly 8,000 and continues to gobble up real estate at a voracious rate. The company now occupies more than 25 buildings in the region, and sections of north Waterloo have almost become like RIM City.

Yet Jackson argues that Waterloo is much more than a one-company town. He points to companies such as Open Text, Com Dev International and Christie Digital as significant players as well. Open Text, for example, continues to roll along as a solid No. 2 to RIM. Organizing electronic files and web data is not the stuff of Hollywood movies, nor does it end up in the hands of U.S. presidents, but Open Text's suite of products has recorded sales growth of 132 per cent over the past three years.

Its performance didn't go unnoticed by Fortune magazine, which slotted the company comfortably into 15th place on its list of 100 fastest growing companies. Open Text has trimmed its workforce slightly over the past 12 months to cope with recessionary pressures, but still found the muscle to purchase a large competitor, Vignette Corp. of Texas, for \$323 million US earlier this year.

Com Dev also seems to be riding out the downturn in fine style. More important, the Cambridge-based manufacturer of satellite equipment could be on the verge of a major breakthrough in a new market. It could be the first company on the planet to successfully monitor ship traffic from space. Work on microsatellites and technology to achieve this goal are currently underway at its new plant on Struck Court in Cambridge.

Christie Digital in Kitchener continues to make headlines with its digital cinema projectors and showrooms. Its projectors were deployed at the Beijing Olympics and Quebec City's 400th birthday last year and the company appears well positioned for years to come as movie theatres around the world gradually convert their screens to digital.



Research In Motion has 24 buildings in Waterloo including a cluster at the intersection of Phillip and Columbia streets.

How are some of the smaller firms and early-stage companies doing? Although government programs have helped fill the gap, "the funding environment is still very tough in Canada and nowhere close to where it was in 2007," says Mate Prgin, who already has one startup under his belt and is working on a second.

Avvasi, based in Kitchener, is working on the next generation of video networking technology. Despite the funding pinch, Prgin says he is "cautiously optimistic and we continue to hire and expand."

At Primal Fusion in Waterloo, one of the biggest challenges is finding qualified people. "I've got 12 to 15 spots I could fill right now," says chief executive officer Yvan Couture. The five-year-old company, which makes thought-networking software, had to go all the way to Seattle for its last hire.

For young companies with a good product, "the only challenge is on the investment side. Angels (investors) are pulling in their horns a bit," says Couture.

Denzil Doyle, a longtime observer

of Ottawa's technology scene, continues to marvel at how well Waterloo is doing. "You certainly seem to be on a higher growth curve than any of the other clusters at this point in time," he says.

One of the keys to Waterloo's success, Doyle believes, is its long history of producing homegrown practical software, starting in the 1970s at UW with educational software launched by Wes Graham and Watcom. This evolved into general purpose software developed by companies like Open Text and MKS, which laid a solid foundation for the building of a technology cluster.

And in every case it was done with local money, he says. "You didn't need much money, but what money you did need you got it locally and you were able to grow the companies up to a size where foreign capital wouldn't drag them across the border to the U.S," says Doyle, chair of Doyletech Corp., which does business planning for high-tech companies.

Mark Romoff, president and chief executive officer of the Ontario Centres of Excellence, a provincially funded agency that helps high-tech researchers commercialize their ideas, says Waterloo's tech cluster is "a remarkable mix of obvious giants" such as RIM, Open Text and Dalsa, and a slew of smaller innovative firms. But if he could pinpoint the main reason for Waterloo's success, it would be the strong connection between the business and academic sectors. "The business community and the academic community don't naturally work together," he says. "The interface doesn't work. In the case of Waterloo, the wiring is already predisposed to collaborate. It's a really great model for the rest of the province."

For Jackson, Waterloo's resilience is also based on something less tangible. If you look at the area's history, it was an in-land settlement, which forced people to be more self-reliant and altruistic, he says. "As corny as it may sound, this community takes care of itself. There's a healthy competition, but we all celebrate each other's successes."

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Spatial diaries can improve patient care

By Gavin Crutchley, Special to The Record

S ean Doherty, an associate professor of geography and environmental studies at Wilfrid Laurier University, is a man on the move, literally.

He is using the latest mobile technology, in combination with geographical information system tools, to improve patient care by giving health professionals the means to construct "spatial" diaries that show how a patient's movements affect his or her health and welfare.

The genesis of the concept came in 1998 when Doherty was busy using travel diaries to determine how to plan urban environments while doing post-doctoral work at the University of Laval.

He soon realized that available GPS (global positioning system) devices enabled him to know the "where" and "when" of peoples' movements, but not the "what." He wanted to find out why people were moving between certain places.

He started working on a system that would enable him to understand the behaviours behind our movements. While he was busy working on a system to answer this question, Doherty discovered that medical professionals also were interested in the answer to the "what" question because it would help them care for patients and develop treatment protocols. That was particularly true for rehabilitation specialists.

In response to a suggestion from the Innovations Group at the University of Toronto, which helps people like Doherty bridge the gap between a research discovery and a market ready product by linking researchers with investors and businesses, Doherty started a pilot study in 2007 with Dr. Paul Oh, medical director of the cardiac program at the Toronto Rehabilitation Institute.

They used GPS-enabled Black-Berrys, connected with Bluetooth wireless heart rate monitors, an accelerometer and a continuous glucose monitoring device, to track the lives and activities of 40 diabetic volunteers in Toronto.

The GPS-enabled BlackBerrys showed where each person spent their time and how they moved about — whether they were walking or driving — while the accelerometer gave the pair a sense of physical activity and energy expenditure. The glucose monitor gave them a good idea of how each activity or environment affected each person's blood sugar levels.

All of this information, when compiled and combined with digital geographical information, such as the maps on Google Earth, enabled the pair to construct a digital diary of each test subject's life. The spatial information that Doherty's system added to the diary immediately enabled them to tell how active or inactive a person had been and even where they had gone.

The basic aim of the exercise – each volunteer was monitored for three days, with their blood sugar levels being measured every five minutes – was to try and establish how environmental and lifestyle factors, apart and in combination, affect blood sugar levels.

One interesting finding was that there appears to be a strong correlation between the distance a person lives from work and their blood sugar level.

Because nobody previously had thought to combine the equipment that Doherty used in his monitoring system in such a novel way, he faced an immediate challenge as the study started. He needed software that would enable he and Oh to take all the data and combine it in a form that could be easily integrated with the various software packages a doctor might use.

Doherty and his team's lead developer, Luke Cwik, a University of Waterloo computer science masters student, ended up writing their own monitoring software from scratch. One immediate benefit of doing that was that Doherty was able to apply for a U.S. patent in 2006 and an international patent in 2008 for the monitoring software he and his team developed.

The pilot study was so successful, and Doherty and Oh gathered so much information — Doherty is still analyzing the data — that others in the health sciences field are becoming interested in the concept.

Doherty, 41, is working with a Toronto-based weight loss clinic that is interested in using his software and monitoring system to help clients overcome the health challenges they face. For example, coaches from the clinic would be able to monitor a client's daily routines, with the client's permission, and then make suggestions, based on the person's activity and lifestyle diary, that would help them make better choices in order to live a healthier life.

Another possible application Doherty is looking into is facility management, especially for old age residences. Using geographical information in such an environment could allow staff to better care for the residents, he says.

For example, staff would be able to monitor activity levels for each resident and better plan events. Also, the ability to quickly determine changes in activity levels would allow health professionals to allocate extra staffing resources to help improve a person's mobility, or detect early whether an underlying health issue might be causing a patient to be less active than he or she should be.

Waterloo firm plays role in drug discoveries

By Rose Simone, Record staff

few years ago, a group of international researchers were able to link a particular protein-coding gene to a group of rare inherited fatal diseases known as HRD, which stands for hyperparathyroidism, mental retardation and facial dysmorphism.

Meanwhile, at the Oregon Health and Science University in Portland, Ore., researchers were able to identify the proteins that are important biomarkers for Down syndrome.

Last year, a group of researchers at the University of Alberta announced they had sequenced a protein which has the potential to be used for safe food preservation and in making antimicrobial drugs.

All of these discoveries came about, in part, because of the work of two computer science professors at the University of Waterloo – Bin Ma and Ming Li. The Waterloo company they founded, Bioinformatics Solutions, develops software used for drug discovery research.

Ma and Li don't get the acclaim for making great discoveries, but earlier this year they were honoured for their efforts to improve the software that makes groundbreaking discoveries possible.

Ma, 35, won the Premier's Catalyst Award for best young innovator because of his research that led to the development of protein sequencing software known as PEAKS.

Li, who was Ma's supervisor at UW when they formed the company almost a decade ago, won the Premier's Discovery Award for innovation leadership in recognition of his success in launching bioinformatics software and for co-founding the university's undergraduate bioinformatics program.

While some academics are happy to simply publish their algorithms, Ma says: "I think that commercializing my research is showing responsibility to my research, because I am making software that is very usable."

It was no easy task to launch and sustain a bioinformatics company.

Li says that when Bioinformatics Solutions was launched in 2000, it was one of four Canadian companies



PHILIP WALKER, RECORD STAFF

Professor Bin Ma (left), chief technology officer of Bioinformatics Solutions Inc., and Ming Li, the firm's president and chair, have been honoured for their efforts to improve software used for drug discovery research.

that had started developing bioinformatics software tools for researchers. Of those four companies, two have gone under and a third has gotten out of biomedical research software and is making gaming software instead, he says.

"But we have survived, because of our technology and innovation," Li says. Better still, the company has been profitable for several years, he notes.

The profits have not been huge, "but we have managed to stay above water," Li says.

The company started with just the two co-founders, but now it employs about 20 people.

Most people have heard of DNA mapping to uncover the genome of living organisms, but that's just one part of the puzzle of life. The DNA is the information used to build a living organism, but it is the codes for the proteins, which are long chains of amino acids, that do the work, along with peptides, which are short chains of amino acids and the building blocks of proteins.

Proteins do jobs such as bind to foreign particles in order to give antibiotic resistance; bind and carry atoms and small molecules within the cells; transmit messages between cells, tissues and organs; and provide structure and support for cells.

If proteins are missing, malfunctioning, or not forming properly, or if they are not there in the right concentration, then a disease can result. That's why the whole field of proteomics, which involves figuring out the structure of proteins and what they do, is the Holy Grail for both medical and agricultural researchers who work with living tissue.

Bioinformatics Solutions isn't the only company producing software to help in this field.

Another big player is Matrix Science in Boston, developer of Mascot software. Matrix is the biggest player in database search software; the software goes through a huge database to find the peptides that best explain the information that the researchers get when they put their samples in mass spectrometry machines.

Bioinformatics Solutions also has software that does database searching, but the company's biggest competitive advantage comes from its PEAKS software, which does a different type of search, known as "de novo sequencing."

De novo sequencing is used when researchers don't have a complete database of information on a particular organism. The algorithms in PEAKS software analyze the mass spectrum and look for "peaks" in the data that signal which amino acids are in a peptide fragment. From there, researchers can reconstruct the peptides and proteins.

"This is much harder to do, but it is useful because even if your peptide is not in the database, you can construct it using de novo sequencing," Ma says. "It is like constructing a puzzle and we have very nice algorithms that will do this."

The software is used by scientists doing medical research at hospitals and university centres, as well as in pharmaceutical companies all over the world. It is also popular with agricultural researchers, simply because the plant genome database is still incomplete. "For that, they definitely need to do de novo sequencing," Ma says.

"Mascot has been in the market a lot longer and globally, it is the biggest, but when it comes to de novo sequencing, we are now the leader in that market," Li says.

Bioinformatics Solutions is constantly improving and adding new functions to both its database search and de novo sequencing software.

Ma says a function has been added that helps determine if the concentration of a protein in a sample of diseased tissue is different.

"The protein doesn't have to be completely missing from the sample, but if the expression level is lower than in normal tissue, that is good enough as a biomarker, so there are many researchers who want to know this," Ma explains.

Another new function helps the researchers determine if a protein's function has been modified by the cell. These improvements in the already powerful suite of database search and de novo sequencing software will help the company compete in a much bigger way, Ma says.

Ma is also working in other areas of mathematics as an associate professor of computer science at UW, but the development and improvement of Bioinformatics Solutions software will be his major focus for the next few years.

"I started this and so I have to be responsible and continue supporting this software and adding more functions as the market requires," Ma says.

Li and Ma's software is often mentioned in journal articles when discoveries are announced, and they get the satisfaction of knowing they are the people behind some of the tools that are used in making big discoveries.

"It actually opens the possibility for new discoveries," Ma says. "It is a usable product and people are willing to pay to get it, so it is very satisfying."

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Digital innovation transforms local economy



MATHEW McCARTHY, RECORD STAFF

Gerry Remers (left), president of Christie Digital, Kevin Tuer, managing director of the Canadian Digital Media Network, and Tom Jenkins, executive chair of Open Text Corp., are among the local business people spearheading efforts to put the Waterloo Region area into the forefront of the digital economy.

By Rose Simone, Record staff

he night sky above Kitchener City Hall lights up with digital images displayed on massive projection screens mounted on the tenth floor of the building.

The display is a symbol of the area's transformation from traditional manufacturing to digital innovation, led by companies such as Christie Digital, a Kitchener firm that made and donated the city hall projectors.

The region has become home to numerous digital companies, including digital imaging specialist Dalsa Corp., BlackBerry maker Research In Motion, software giant Open Text, Belgian owned Agfa HealthCare, a developer of medical imaging technology, and Com Dev International, which makes satellite equipment that is integral to today's digital communication age.

Other global technology companies, such as Electronic Arts, Google and Intel, have established offices in the region to take advantage of the area's high-tech talent, and a host of small digital media startups have taken root, including Metranome, which develops mobile video applications for smartphones, and LiveHive Systems, with technology that allows people to interact with their favourite sports and game shows.

So it was only natural that this area would become home base for the Canadian Digital Media Network, a federal program that hopes to foster and develop a digital media economy across the country.

"We want to position Canada as a global leader in digital media," says Kevin Tuer of Communitech, who doubles as managing director of the Canadian Digital Media Network.

The federal mandate is to "accelerate the pace of digital media creation and commercialization" across Canada, Tuer says. "There are pockets of digital media capability right across Canada, but for the most part, they all have their own ecosystems going. We want to break down those walls and get them collaborating in a more focused way."

A big part of the endeavour involves setting up two new digital media facilities – the University of Waterloo Stratford Institute and a digital media convergence centre in downtown Kitchener: About \$61 million has been pledged over the next five years by various levels of government and academic and industry partners for the facilities and network that will nurture the talent and companies that will be part of tomorrow's digital economy.

The University of Waterloo Stratford Institute, in the cultural and

theatrical hub of Stratford, will focus on research and graduating students who will work in digital media companies. The institute plans to launch a one-year professional graduate program in digital media next fall. An undergraduate program on global digital media should be open to its first students by fall 2011, says Tobi Day-Hamilton, a spokesperson for the UW Stratford Institute. The programs will cover the "unique intersection of business, creativity and technology," she says. "You can get a business degree, a technology degree or a creative degree, but this will combine all three in one.'

The digital media convergence centre proposed for downtown Kitchener, meanwhile, will nurture digital media startups and be a place to showcase digital media technology created in this area. A location hasn't been announced yet, but if negotiations to house it in the former Lang Tannery building, at Victoria and Joseph Streets, pan out it would transform an old economy building into a hub for the new digital economy.

Tuer says the goal is to have the digital media convergence centre open by the end of 2010. "What we are doing is merging the technical class and the creative class. So it is the tool makers and the tool users working in harmony," he says. Gerry Remers, president of Christie Digital, one of the private sector partners contributing equipment to the digital media facilities, says he envisions being able to showcase 3-D virtual environments at the centre in Kitchener, as well as providing mentorship and support to digital media startups. "We hope to be a customer and bring touring researchers and institutions through there and we may actually consider participating in startups and even buying some startups," he says.

"So we want to be heavily involved, as a supplier, a customer and a user."

Tom Jenkins, executive chair of Open Text, was instrumental in getting his company to commit \$10 million in cash, technology and services to the UW Stratford Institute. "We realized that this is the best way to create a source of talent for Open Text for the next 10 years," he says.

Open Text is a good example of a global technology company that is ready to ride the new digital media wave. The Waterloo-based company develops software that helps large companies manage their workflow as they undertake projects where information needs to be shared and worked on collaboratively at offices around the world.

Open Text ready to ride new digital media wave

► Digital continued from page 30

But today's information content is not just text. Increasingly, it is also video, audio and 3-D images.

Jenkins asks people to imagine an aircraft engine manual that is translated into many different languages for aircraft mechanics all over the world. That in itself is a hugely complex undertaking, but "fast forward to a day when you also have video of the engine being overhauled and you could hyperlink to any component on that engine to another video that shows the details ... now, all of a sudden, it is a show-and-tell story."

The example of the aircraft engine manual in video format also illustrates how the whole definition of "digital media" is expanding far beyond its traditional focus on computer games and other types of digital entertainment.

"The reality is that the underlying technology will revolutionize the way we work together," Jenkins says. "It is not unlike the fax machines or cellphones or emails revolutionized the earlier generations of this technology."

Another example of the digital revolution comes from the medical field. The digital image of a MRI (magnetic resonance imaging) scan can now be combined with a patient's digitized medical records and transmitted using an internet interface.

Christie Digital further illustrates the potential of digital media. Its digital projectors are famous in Hollywood, and in cinemas and postproduction houses all over the world. But the company also sells 3-D visualization systems that are used to create virtual environments for aerospace training, to simulate how a new auto part will look and behave, study geological data in living colour,



Kitchener City Hall lights up with digital images displayed on massive projection screens mounted on the tenth floor.

model molecules for pharmaceutical research and peer inside a human brain. All of this is part and parcel of "digital media," which is why it will continue to become an increasingly important part of the economy, Tuer says.

Another economic trend is the democratization of media. We live in a world where anyone with talent can buy a relatively inexpensive video camera, a decent laptop and editing software, and put together a professional-looking independent film.

"Whereas Hollywood needs blockbusters and hundreds of millions in box office revenue, if you can do it and capture a small audience and generate \$100,000 a year in revenue, well, that's a pretty good living for one person," says David Kruis, president of Metranome Inc., which develops applications that help independent filmmakers and big studios tap into the global audience of people who use mobile devices like the BlackBerry or iPhone.

Similarly, LiveHive Systems develops applications that help engage an audience in an internet universe with millions of channels. The Waterloo firm's technology allows people to go online and interact and play along with their favourite TV show or sports broadcast. "People are watching TV but they are often also doing something else (like surfing the web) while watching TV," says LiveHive president David Bullock.

Remers of Christie Digital says that all this content creation will be a big part of the future economy, and it will involve a merging of artistic and engineering talent.

"I don't see a difference between the artist and the engineer. These are two sides of the same coin and they need one another. In digital media, they come together.

"When we think about what kind of work our children, and our children's children will do, it is all about the spirit of entrepreneurialism in knowledge-based economies and cultural industries. It is about culture and communications, which have always been strengths for Canada," Remers says.

The faith in digital media as a strong part of the economic future is backed up by economic projections. Despite the recession, consumer spending in digital media is projected to rise in the next four vears and will outpace growth in the gross domestic product by 2013, according to the PricewaterhouseCoopers global entertainment and media outlook report for 2009 to 2013. While growth in the near term. faster access speeds and continuing demand for versatile, easy-to-use applications will drive the broadband market over the long run," Tracey Jennings, a PricewaterhouseCoopers entertainment and media practice leader, says in the report.

Jenkins says the United States is making a huge investment in digital media, and the European Union is putting a significant amount of money into its stimulus package for the digitization of cultural content.

For Canada, with its relatively small population, 'the big challenge is how do we punch above our weight," Jenkins says. "Other countries are starting to understand this is a very important part of their future and Canada is now also recognizing that."

Tuer says it is "undeniable that the world is moving toward a knowledge-based economy," and that means the investment in digital media is of critical importance from an economic perspective. "Everybody recognizes that this is where the future is, and we want to make sure that we are at the front of that line," he says.

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R001518095

Conestoga students give industry a lift



Conestoga College student Jamie Montag examines the robotic arm of a machine that makes sleeves for hot beverages out of recycled Tim Hortons cups.

By Charlotte Prong Parkhill, Special to The Record

hen Kevin King graduates from Conestoga College this fall, he'll have a feather in his cap to boost his resume.

The fourth-year integrated advanced engineering technology student was part of a design team that helped find a solution for a challenge facing Fulton Engineering Specialties.

As part of their course work, a group of students worked on a way to optimize construction of cryogenic containers, used to store materials at extremely cold temperatures.

Unlike many academic exercises, the work wasn't merely theoretical. The students were given research guidelines by Fulton, and the company, located in Caledon, plans to use their work to bring a product to market.

"The neat thing about working this way is actually the industry contact," King says. "They have input, and they have requests and requirements you want to follow up on. This is more like the real world – it has to work, and there are deadlines that have to be met. It gives you a sense of purpose in the actual project. And it makes your work more valued, which is nice."

The project was arranged by Conestoga's Office of Applied Research. The office, established in 2004, facilitates partnerships between businesses and students. Director Angela Vuk says it tries to be responsive to companies coming to the college with a particular need.

"We mobilize our faculty and our students to work on those projects to come up with solutions," she says. "The goal is to help our community partners become more economically viable, to help them create jobs, to help them become more competitive. At the end of the day, the student gets great hands-on experience, they've expanded their thinking, their innovation ability, and the company walks away with a solution to a problem. So it's a great win-win."

The college's industry liaison officer, John Goerzen, matches the requirements of the applied research projects with the curriculum requirements of the college program. Fourth-year students work on complex design and analysis projects, while third-year students roll up their sleeves and build actual prototypes.

Typically, students function as solution providers in the process of taking an idea and turning it into a feasible product. For example, two years ago, Research In Motion came to the college when it wanted to explore how the testing of keys on a BlackBerry could become an automated process. Twenty-five students

IN QUOTES I ANGELA VUK CONESTOGA'S OFFICE OF APPLIED RESEARCH

"The goal is to help our community partners become more economically viable, to help them create jobs, to help them become more competitive."

worked for eight months on that project.

"It was a first look at the problem, a proof-of-concept to find out whether it can be done," Goerzen says. "We'll help you figure out how to get a square peg in a round hole. You've come up with the square peg, and you've come up with the round hole. The college will help you find a way to make it happen."

In the future, the Office of Applied Research anticipates doing more work in the fields of health, particularly in the areas of health informatics and nursing, and telecommunications. In telecommunications, the focus likely will be on wireless networks, access and transmission technologies, synthetic instrumentation, testing and electronics manufacturing.

Although the office has worked with RIM and other corporate heavyhitters such as Cambridge-based satellite equipment manufacturer Com Dev International, most of the projects involve small- and mediumsize businesses that lack the time, staff, or research labs to get their ideas off of the drawing board.

For Cambridge Elevating, a 30person firm that designs and builds custom residential elevators, the partnership with the college was the ideal way to develop a new product.

The company had come up with an idea for a wheelchair lift that can travel almost four metres vertically, indoors or outdoors. Although it has the expertise on staff to develop the lift, handing off the work to Conestoga students will help the busy company reduce the costs of initial research.

Fourth-year students completed a design feasibility analysis, marketing study and cost analysis for the lift. They had to meet electrical and safety codes, and make sure the product could work in all seasons.

The company's operations manager, Derek Moorse, consulted with the group throughout the process and was impressed with their abilities.

"The work is very good. It's solid, it's factual. Every element of the engineering is proven. It's very complete."

Now the firm's engineers will evaluate the students' work to see if the prototype of their design is appropriate, or if modifications are needed.

More than half of grads stay in Waterloo Region

► Conestoga continued from page 32

"I would strongly recommend to other businesses to utilize the skill set at Conestoga," Moorse says.

"It's a benefit on so many levels. You build a relationship with future talent, and you get a fresh set of eyes. And there's a feel-good factor – you're contributing to a community experience."

About 60 per cent of Conestoga alumni continue to live and work in the Waterloo Region area so the program benefits the community in more than one way.

Local companies get access to a pool of students with solid research and development skills, and the graduates are ready to hit the ground running in their first post-grad employment.

"It's made it beneficial to us, to help us develop a sense of dealing with customers and suppliers and talking with real people in the real world," King says. "Because that's obviously what you have to do on the job."

A sample of projects arranged through Conestoga College's Office of Applied Research:

LMR Inc. (Listowel) – developing

the Longarm, an agricultural product for herding hogs, and increasing market capacity

Blount Canada (Guelph) – analysis and optimization for the manufacture of chainsaw chains

Com Dev International (Cambridge) – reducing noise, time and cost of an automated demurring system

Fulton Engineered Specialties (Caledon) – designing an efficient strapping system for 600-gallon portable cryogenic pressure vessels

Renmar Designs (Windsor) – optimization and fabrication of an after-market cooling and filtration system for motorcycles.

Funding your project: Conestoga College works with a

variety of funding partners, including the Ministry of Research and Innovation, the Ontario Centres of Excellence, the CME Smart Program and the Colleges Ontario Network for Industry Innovation. Funding decisions are made on a case-by-case basis.

For more information, contact John Goerzen, the college's industry liaison officer, at jgoerzen@conestogac.on.ca or 519-748-5220 ext. 2362.



Conestoga College engineering student Kevin King displays the technical details of a new process for manufacturing cryogenic containers.



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E. BRIAN CLARK, SPECIAL TO THE RECORD

Brydon Gilliss is a chief software developer at Brainpark, a Guelph startup that develops software to capture "social intelligence" from the interactions between employees.

Guelph's Brainpark capitalizing on 'social intelligence'

By Greg Mercer, Special to The Record

Brainpark is based out of an unassuming brick house along a buzzing Woolwich Street in Guelph, but its reach extends to far-flung locales like San Francisco, Atlanta and Buenos Aires.

That might seem strange because until a few months ago the company barely had any paying customers. But that's part of the puzzling nature of the software startup — internationally-minded and with notable backers, and yet barely out of the gate.

The coming months will be interesting times for Brainpark as it shifts from a focus on research and development to selling and supporting the social intelligence software it spent so much time perfecting.

"For about two years, we were locked in a room, focusing on development. Now we're trying to break out of that room," says Brydon Gillis, a software developer who came to Brainpark in those early days when the startup's design team still met in rented dance studios. Brainpark, launched in July 2007, emerged from that "room" with software that aims to improve companies' productivity by tapping into the collective knowledge of their employees. Think of it as Facebook for companies, but less about making friends and more about getting things done more quickly and effectively.

The basic premise of Brainpark's software is that companies, especially larger ones, don't always do a good job of mining the expertise and experience that already resides within their own ranks. This leads to duplication and wasted time, the company says.

"A lot of companies feel they're very strong at inventing and creating things. What they're not very good at is reusing stuff that has already been done," says Gillis, a product manager at the company. "If we can get people to do the basic things only a few times and allow other people to reuse it, then they can move up and focus on harder challenges within the company."



f

Employees subscribe to workplace democracy: everyone gets a vote

► Brainpark continued from page 34

After developing a few prototypes, Brainpark believes it has worked out the kinks in its product.

Now customers have started calling, paying for the software on a per user, per month basis.

There's the major "media conglomerate" based out of Atlanta that uses the software to connect its far-flung emplovees.

There's the large architectural firm that brought in Brainpark after finding out three separate teams within its divisions were bidding on the same project.

Then there's Great Harvest, the Montana-based bakery chain that uses the software to enable franchisees to share ideas with each other more easily.

The software can be applied to an employees' computer desktops, tracking what they search online and enter into their digital calendars.

Virtually any digital document can be absorbed by the software — as a result a coworker in another department might suddenly discover that you have information or have done research that can help them.

The object isn't to create a system that saddles its users with obscene amounts of extra work organizing their information, though.

"Ultimately, we want to know 'how do we build something that allows them to do their work better," Gillis says. "We don't want them to feel like a glorified filing clerk."

During its development, Brainpark drew the attention George Boedecker Jr., founder of Crocs Inc., the Coloradobased maker of those ubiquitous plastic clogs.

Boedecker, who became acquainted with the startup after being approached by a "friend of a friend" of Brainpark co-founder Mark Dowds. became the startup's lead investor and now serves as chair of the company's board.

Balancing out the board are Brainpark's founders - Bobby John, who created boutique

FACTS

About Brainpark Inc.: Founders: Bobby John and **Mark Dowds** Board chair: George Boedecker Jr., founder of Crocs Inc.

FACTS

What it does: Brainpark develops software that uses "social intelligence" to capture information and know-how hiding within organizations Web: brainpark.com Employees: 11

software firm Personus Inc. while still studying at university, and Dowds, an Irishborn investor who has coached executives at American Express, PricewaterhouseCoopers, Royal Bank of Canada and CIBC.

Brainpark seems to fit the bill of a turn-the-model-upside-down startup where staff bike to work and work in their bare feet.

This is not a top-down company.

Brainpark's 11 employees talk about mutual respect; they subscribe to a model of workplace democracy that means any staff member, including chief executive Dowds, can be removed by a vote by co-workers. Managers don't fire here — if a subordinate isn't doing their job, a team is put together to decide if the employee should leave or stay with the company.

For now, the plan is to remain in Guelph. All design and development work will continue to be done in the city: the company says there's no shortage of local talent or software specialists it can draw on.

What's less clear, Gillis admits, is how Brainpark will change as it moves from startup to viable tech company. "It's something we talk

about every day," he says. "It's the phase of life we're in now."

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Former jail land slated to be innovation hub



Joan Jylanne (left), a senior policy planner with the City of Guelph, and Barb Maly, a business development specialist with the city, believe the former Ontario Reformatory lands in Guelph can be turned into an innovation district that could employ up to 10,000 people.

By Greg Mercer, Special to The Record

F or the better part of a century, these acres on Guelph's eastern edge were the ultimate self-sufficient community, with livein workers who milked dairy cattle, raised crops and tended to orchards.

Today, the city is hoping to transform this same property with an ambitious project in the spirit of that original community, creating a green neighbourhood with room for thousands to live and work in cuttingedge jobs in fields such as biosciences and food research.

The only difference is this time the workers will be allowed to leave. The original workers couldn't – they were inmates on the Ontario Reformatory, and their labour transformed the valley around the Eramosa River into picturesque ponds, gardens and farmland.

Although the former prison closed in 2003, some of the landscaping done by the inmates will be preserved by the Guelph Innovation District, a 400-hectare swath of land that would be the home for a new life sciences cluster some hope will become the new pillar of the city's economy.

The innovation district, still years away from construction, is one of Guelph's most ambitious answers to projected population increases and a desired shift away from manufacturing to so-called sunrise jobs in emerging fields. Those behind it aren't naïve to the challenges. To succeed, the private sector needs to be willing

FACTS

Guelph Innovation District, by the numbers: 421 hectares (1,053 acres) Rough time frame for development: 20 years \$1 billion (estimated private and public sector costs over that span) Space for 3,000 – 5,000 residents Home to 8,000 – 10,000 jobs

to invest millions – one consultant pegged the cost of site preparation alone at around \$100 million – and planners must create an attractive place to live and play, too.

But the innovation district has already attracted interest from some developers and institutions like the University of Guelph and Conestoga College, even if blue-sky job targets of up to 10,000 workers in the district might be admittedly high.

"The big question is 'can we actually meet the employment targets?" But you have to start with a goal," says Barb Maly, a business development specialist in the city's economic development office.

Guelph has never tried to create a complete community quite like this, and the planning, which began in 2005, is complex. Designers need to preserve heritage properties like the reformatory, which was built in 1910, appease private land owners, plan for high-density condos and businesses, protect green space around the Eramosa River, and figure out how to work with two big users already there – a massive Cargill Canada slaughterhouse and the city's own waste processing facility.

Then there's the city-owned rail line which runs through the proposed district, which senior policy planner Joan Jylanne says could one day be a high-speed link to downtown. Not that the residents would need to leave – early designs call for restaurants and grocery stores for the workers who would live only a quick walk from their jobs.

Self-sufficiency is a major theme behind the planning. Even Cargill is getting in on the act. The U.S.-based company wants to build a "bio-digester" that would produce power for the planned community by using animal waste left over from its processing operations.

"The inmates at the reformatory were completely self-sufficient. They raised their own food, made their own power, and had everything they needed here. Now everything has come full circle again," says Jylanne. "This is a new era."

Guelph hopes the Innovation District will become the heart of an agricultural and environmental technology cluster, where fledgling startups and established, multinational companies can work and do research side-by-side.

"McMaster has its health cluster, Waterloo has its tech cluster, and Guelph has its agri-foods and environment cluster," said Maly. "We're building on our strengths."

The city seems to have the backing of both provincial and federal officials. In June, the department of Foreign Affairs and International Trade provided \$85,000 to create an economic development plan aimed at pulling in foreign investment for the project. Meantime, planning work rolls on – designers hope to have conceptual models unveiled this fall, so people can start to imagine what the district would look like in 20 years.

There's still another five to 10 years of planning before bulldozers can move in. And Guelph is in a bit of a race against time – it's not the only city trying to shift its economy away from traditional manufacturing toward green economy companies.

"It's in competition with hundreds of other jurisdictions who want to build the jobs of the future," says Jim Wadleigh, executive director of the Guelph Partnership for Innovation, a non-profit group that helps agricultural technology startups bring their ideas and research to the marketplace.

But his group is behind the project, saying the city needs a place where its life sciences companies and researchers can have more interaction with each other, a place where ideas are shared, partnerships formed, and hopefully, jobs grow.

"It's going to be challenging," he said. "But this is a real opportunity to take Guelph forward."
IMS aims to making driving safer

By John Schofield, Special to The Record

ony Cassetta sees some interesting sights on his frequent travels through southern Ontario. And sometimes they're downright scary.

On a recent trip from Waterloo to Mississauga, Cassetta, chief operating officer of Waterloo-based Intelligent Mechatronic Systems Inc., counted 16 people passing him on Highway 401 who were typing text messages while driving at more than 100 km/h.

The communications industry veteran admits he's terrified by that kind of roadway roulette. He has reason to be: Research suggests that cellphone use while driving increases the risk of a crash by four times. Four provinces have banned the practice: Nova Scotia, Newfoundland and Labrador, Quebec and Ontario. But many drivers still take the risk. "I want people's behaviour to change," says Cassetta. "We've just got to find a way."

Intelligent Mechatronic Systems, better known as IMS, believes it has the answer: an innovative, hands-free device called iLane that allows drivers to read and respond to email using only their voices.

Launched last year, iLane is designed to work with BlackBerry smartphones and is the brainchild of the company's Libyan-born president and chief executive officer, Otman Basir.

Basir, an associate professor of electrical and computer engineering at the University of Waterloo, is also the driving force behind DriveSync, IMS's other main product. DriveSync plugs into a car's on-board diagnostic port and can be used by insurance companies, trucking fleets or even parents to monitor driving behaviour and vehicle location.

Cassetta believes the two technologies offer the potential for significant profits. But above all, he adds, the 10-year-old firm will remain tightly focused on developing products that make driving less dangerous and the roads less risky. "Dr. Basir really started the business with a very clear mission," he says. "How do we make vehicles safer and smarter, and today we include greener."

That goal originally inspired IMS to develop safer airbags that automatically adjust their deployment velocity to match the occupant's body-mass index. Later, Basir and his researchers created a "smart" seatbelt reminder system that distinguishes between animate and inanimate objects. But the sales cycle for automotive components is extremely long, says Cassetta, so the company turned its attention to products that reap quicker rewards.

With the launch of DriveSync in 2006 and iLane late last year, growth is accelerating. In the past two years, the privately held firm's workforce has jumped from 45 employees to 120.



PHILIP WALKER, RECORD STAFF

Otman Basir, chief executive officer of Intelligent Mechatronic Systems, holds the company's iLane and DriveSync "intelligent" automotive products.

And there's room for more. In May, IMS moved into a completely refurbished, 73,000-square-foot building on King Street North that sits on 7.2 hectares of prime real estate on the site of Conestoga College's former Waterloo campus.

The firm's profile is expanding, too. In March, Andrew Seybold, an influential wireless industry analyst and consultant based in California, chose iLane as one of the three most innovative wireless products for 2009. Previous winners of the award include Research In Motion's Black-Berry Pearl.

Earlier this year, IMS was also named as one of Canada's 10 wireless companies to watch by Torontobased IDC Canada, a technology research and consulting firm. "I think there's a lot of promise for them moving forward if they can build partnerships to expand distribution," says Krista Napier, the lead analyst for IDC Canada's Technology Innovation Watch reports. "I think increasing legislation for hands-free phone use is going to be a key driver for them."

Cassetta calls iLane a "disruptive technology" that could generate exponential sales growth. Its closet competitors, he notes, are serverbased and don't provide the same security, functionality or ease-of-use.

In July, IMS announced a distribution deal with Bell Mobility that puts the \$399 iLane in the chain's more

IN QUOTES I DAVID POGUE NEW YORK TIMES COLUMN

"iLane could be heaven-sent for anyone who sits in traffic to and from work every day. It really, truly works."

than 500 stores across Canada. The company is talking to two mobile phone companies in the U.S., and iLane is already sold online in the States. Cassetta believes the product will hit the European market sometime next year. Ultimately, he says, he'd like to see it embedded in vehicles as optional or standard equipment.

iLane has impressed some of North America's toughest technology writers, notes Ken Truffen, IMS's vice-president of marketing. The converts include discerning critics like David Pogue of the New York Times. "iLane could be heaven-sent for anyone who sits in traffic to and from work every day," Pogue wrote in his Times column last March. "It really, truly works."

One potential roadblock, says Napier of IDC Canada, is research that shows that even hands-free devices can distract drivers. She doubts, however, that lawmakers would ban hands-free equipment because even radios or boisterous children in the back seat can pose a distraction. DriveSync has attracted its own share of attention, and Cassetta is confident it will play an important role in the company's success. The main target market for the product is insurance companies that are offering or testing pay-as-you-drive (PAYD) auto insurance, in which rates are determined by the policyholder's driving habits. Also known as usage-based insurance, the option is already available from a handful of companies in the United States, the U.K., Japan, and other countries.

Cassetta says DriveSync is involved in several large pilot projects, and IMS is "close to doing something commercially" with two insurance companies. The device can also be used for so-called road pricing programs, and is currently one of four devices being tested in a U.K. Department for Transport pilot project in the London area in which drivers would be charged for travelling in congested areas. Unlike some competitors, IMS offers companies an end-to-end, turnkey solution, including customer service and billing.

From the company's products to the open, glass-walled layout of its headquarters, IMS is a reflection of Basir's vision, says Truffen. "He has some aggressive growth plans for the company," Truffen adds, "and this is just that start."

If consumers and companies are willing to jump aboard, IMS could be in for a pleasant ride.

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Waterloo Region becoming leader in digital media

it is no longer enough to just be keeping up. Instead, you need to be consistently innovating, creating and collaborating to be successful.

I challenge you to find a community that is more innovative, creative and collaborative than — Hello, you're living in one — Waterloo Region.

At Canada's Technology Triangle Inc., our role involves attracting new businesses to invest in our region. That includes businesses that will contribute to the expansion of our digital media cluster as our community journeys toward becoming an industry leader in the sector.

Companies like Open Text, Christie Digital Systems, Dalsa, Agfa HealthCare and of course, Research In Motion, to name a few, are rapidly propelling us in this direction. They are working at bringing Canada up to snuff as we transition from the desktop driven world of Web 2.0 to the mobile work-life balanced world of Web 3.0.

Collaborating in a world that is redefining how we communicate is necessary; and these companies are literally transforming how we get our message out there.

There is no doubt that it is good timing for us to be working toward leading in this sector, and we are well positioned for many reasons. This past June, Open Text engaged with leaders from government, business and academia to discuss Canada's digital media strategy at the premier Canada 3.0 Forum.

In addition, we will be privy to magnificent research capabilities through initiatives such as the Corridor for Advancing Canadian Digital Media (CACDM), which will be located on our doorstep. CACDM is a partnership between Communitech and the Stratford Institute of the University of Waterloo that will focus on digital media and global business. This will indeed help to make the region a true focal point for digital media.

Look at Waterloo Region as a new, critical digital media 'hub.' Companies, research facilities, and entrepreneurs are merging talents with the common goal of sharing information to grow together to make our region into a world leader. Explore for a mo-



John Jung is the chief executive officer of Canada's Technology Triangle Inc.

ment the visual transformation that is happening to Kitchener City Hall through the efforts of our own Christie Digital. It is a digital facelift, if you will, that looks directly into the eyes of a 3.0 world and says, "I'm ready." Additions such as this, and the new Digital Media Convergence Centre in Kitchener, will help us to clearly demonstrate how serious we are about mastering the digital media stage.

As digital media moves away from just entertainment and directly into the workplace, (in just about every industry imaginable), it is not just a desire, but it is a necessity to adapt.

At Canada's Technology Triangle, we have recognized this cultural shift, and know that we need to do more than adapt. We need to lead by example.

One of the key ways we are participating in this metamorphosis is in our founding partnership with the Ontario Technology Corridor (OTC). It brings together five main regions: the three leading information and communication technology clusters in Ontario (the Greater Toronto Area, Waterloo Region and Ottawa Region) plus Niagara Region and the London area with the intent of engaging and expanding this cutting-edge technology in Canada and the world. As the OTC states: "With the projected global market for the digital media/gaming sector to reach \$1.48 trillion US in 2009, the OTC is poised as a global centre of excellence."

There you have it – a region that is striving to always be a few key steps ahead. Canada's Technology Triangle is thrilled to be an active player in the Waterloo Region – a place that is well on its way to giving a whole new meaning to being 'digitized'.

Motek is on the move with mobile content

By Nicole O'Reilly, Special to The Record

r Tyler Weichel and his team at Waterloo's Motek Mobile, staying ahead of the technological curve has been the key to success.

Specializing in ring tones, wallpaper, games and applications for mobile devices, Motek Mobile is capitalizing on an increasingly wireless world.

"Our direct contracts with wireless carriers are pretty much impossible to get now," he says. "Our timing was perfect, and timing is pretty much everything in this (industry)."

Weichel and Colin Pilsner founded Motek in 2002. They partnered with a South Korean media company with the aim of bringing mobile games to the North American market. At the time, South Korea was several years ahead of North America, Weichel says.

It wasn't easy going at first.

"We started with nothing, no capital, no investment," says Weichel, the company's chief executive officer. "But we managed to bring in some angel financing about a year and a half in."

Since then, Motek has grown to a 12-member team, moved to Weichel's ideal office – an open concept design with lots of natural light and a casual atmosphere – and hooked a number of top clients. Serving a market of up to 300 million wireless subscribers, the company has a content library with more than 10,000 unique ring tones, games, applications and other wireless content.

The company's first big client was AT&T. It now also has contracts with Rogers, Telus, Virgin and Microsoft among others.

Business has really accelerated in the last three years, Weichel says.

Weichel's background is in the creative and marketing fields in advertising. But creating and marketing mobile content was not a stretch. "I always had an interest in technology . . . and mobile and wireless," he says.

Motek, named to convey the combination of mobile and technology, made a big splash in the Canadian ring tone market a few years ago as one of the first companies to sell a number of popular ring tones.

These days, the company is focused on applications for the Black-Berry and Apple's iPhone.

It has 70 applications in its library. The big thing right now is personalized content for those platforms, as well as Google's Android.

"Everybody knows applications are huge right now for the iPhone and BlackBerry," Weichel says. "There are some emerging platforms that will be interesting."

Motek is interested in personalizing its content to meet people's needs, combining personalization with functionality, Weichel says.

And just like Motek's timing for



Tyler Weichel of Motek Mobile, a Waterloo company, displays his product.

starting the business was perfect, the | and games fro

industry experienced a boom in demand for applications at just the right time.

As the economy went sour, new iPhone and BlackBerry models came on the market. The technology demanded new smartphone applications.

"We're hiring," says Weichel. "We just hired four people and I hope to expand our team to 15 people by the end of the year."

A coup came a year and a half ago when Motek joined with Rogers Wireless in launching BlackBerry Nation, a content download store. That was before BlackBerry maker Research In Motion established is own apps store, Weichel notes.

Motek also licenses applications

and games from other companies that it sells in its library.

One of its most popular applications is the Facebook mobile gifts application that was launched a year and a half ago. It allows users to send gifts to their Facebook friends, even if they don't know their phone number.

"It's pretty slick little application," Weichel says.

He contends a large part of Motek's success can be attributed to the vast pool of talent that exists in Waterloo Region because of RIM and the University of Waterloo.

Weichel describes Motek's team of developers, designers, sales support staff and managers as a talented and dynamic bunch.

The company offers a fun working

MATHEW McCARTHY, RECORD STAFF

environment, something that becomes apparent when you walk through its office on Weber Street West. The open concept design encourages a collegial rapport among employees.

Every day, team members work on new projects, communicate with wireless carriers and offer customer support for the odd technical glitch.

Weichel frequently takes to the road to attend trade shows and meet with customers and partners. That's how Motek landed a number of brand partners, including Volcom, a California-based designer and distributor of skate, snow and surf clothing and accessories, and MTV reality star Tila Tequila.

"It's hard work, but lots of fun," Weichel says.

It's full steam ahead at generator company

By Chuck Howitt, Record staff

T tooks like one of those large rectangular trash containers that people stick on their lawns when they move or renovate.

But instead of old furniture and trash bags, it's filled with row upon row of one-inch diameter tubes, so many tubes that if they were laid out in one long line, the line would stretch for 25 kilometres. Banged out flat, the surface area of these tubes would equal four football fields.

Expanding the surface area even more are thousands and thousands of thin, half-inch tall pieces of sheet metal wrapped around each tube like fins. Linking each tube to the next is a U-bend pipe so that water flows through the entire network in a continuous "once-through" process.

Why all the fuss about surface area and flow? The capturing and reusing of waste heat is what this piece of equipment is all about. It's called a once-through steam generator, the flagship product of Innovative Steam Technologies, a 17-year-old Cambridge company that is better known as IST.

When exhaust heat from a gas turbine blows over and around these fins, it is transferred to the water inside, turning it into superheated steam, which can then be used to generate electricity or run some other industrial process.

If something weighing 200 tonnes could be said to fly, IST's generators have been fairly flying off the shelves since the company started making them in 1992. Currently, there are 145 in use in 18 countries, all shipped from a rail siding at the back of the company's plant on Conestoga Boulevard in Cambridge.

The U.S. has the most, followed by Canada, but in the last five years 80 per cent of the company's sales have been overseas. Cuba, Spain, Italy, Norway and Bolivia are among the countries where customers are using once-through steam generators to capture waste heat from power plants and convert it into more energy. In an era where saving every ounce of energy is paramount, the once-through generators, made only



Bob Dautovich (left) is the president of Innovative Steam Technologies, while Keith Solomon is a project manager at the manufacturer of once-through steam generators.

at IST, have become a hot property. Turkey has been particularly fertile territory, with 12 IST generators currently in operation. The country gets much of its power from natural gas and is building plants that fit the kind of equipment sold by IST, says company president Bob Dautovich.

"For us to build equipment that's 100, 150 tonnes and ship it to Turkey and be competitive with local suppliers I think just shows we have a different piece of equipment."

What separates the once-through steam generator from the competition? It has fewer "big pressure" components than a conventional steam generator, and uses alloy tubing which lasts longer than traditional carbon steel, he says. Not only that, it is modularized and can be assembled on site.

But building these energy-saving behemoths takes time, 10 to 12

months to be more precise, and they cost anywhere from \$2 million to \$7 million depending on the size. The life cycle is at least 25 years, says Dautovich, though he's not sure how long they last because the first ones are still running.

With waste heat no longer going up the stack, the payback can be significant. Last year, IST signed a \$33-million contract, its largest ever, to supply five generators to a Cuban natural gas plant with an output of 150 megawatts, enough to power 150,000 homes. With IST's five generators capturing waste heat, the plant's power output jumped to 320 megawatts.

Babcock & Wilcox, also located in Cambridge, makes once-through steam generators as well, but for the nuclear market instead of the thermal market, where IST's units are used.

Over the last few years, IST has

been a standout performer for its parent firm, Aecon Group, the large Canadian construction and infrastructure company.

Aecon doesn't break out revenues for IST, which is part of its industrial division. But in the financial report for its second quarter ending June 30, it noted that IST's revenues were up \$5 million in the first half of the year compared to the same period a year earlier. Operating profits increased \$2 million, it said.

Sales at Innovative Steam have tripled over the past three years, according to a report on Aecon from Genuity Capital Markets. "The amount of orders they (IST) have been able to garner in the last five years is pretty significant," says Maxim Sytchev, an infrastructure analyst with Genuity Capital Markets. "Clearly the momentum is there and there is demand for their product."

For a company that seems to be so successful, it's surprising to learn that IST was started almost by accident, Back in the 1970s, the U.S. Navy was looking for ways to save energy. It turned to Solar Turbines, a private company based in San Diego. Together they came up with the oncethrough steam generator. The first units weren't delivered until 1985, but in the energy-abundant 1980s, Solar had trouble finding commercial customers. They did manage to find one in Canada, however. TransCanada Pipelines decided to install a unit in a power plant it was building in Nipigon, Ont., in 1992.

In an odd twist of fate that brought the product to this area, TransCanada hired Nicholls-Radtke, a Cambridge-based construction firm, to build the plant. "We were intrigued by it," Dave Radtke, part owner of the company, recalls now about the oncethrough steam generator. "We saw considerable advantages to it from a construction standpoint and an operational standpoint."

They were intrigued enough to first form a partnership with Solar Turbines and soon after bought the technology.

► Steam continued on page 41



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IST wants to increase business in Alberta oilsands

Steam continued from page 40

The steam generator was not Solar's core technology, explains Radtke.

Nicholls-Radtke formed a separate company, Innovative Steam Technologies, to build the steam generators and moved operations into a plant on Avenue Road in Cambridge. Dautovich, a University of Waterloo mechanical engineering grad who had previously worked at Babcock & Wilcox in Cambridge, was IST's first employee in Canada.

"My task was to transfer the technology from San Diego to Cambridge and hire staff up here so we could kind of take over from what they started," he recalls.

After several ownership changes, IST came under Aecon Group's umbrella in 2001, a year after moving to its present 96,000-square-foot plant and office. The company employs 175 people, including 55 office staff and 125 non-unionized plant workers. Annual revenues range from \$60 million to \$80 million.

While IST has been riding high in recent years, it went through some tough times in the early to mid-2000s. The collapse of Enron Corp., the huge American energy firm, in 2001 sent a chill through the energy industry and seized up financing of power projects for years to come. It was a harbinger of the more recent worldwide credit crisis, only this time restricted to the energy sector.

IST was caught in the economic tsunami. Employment at the plant, which had reached a high of nearly 200, plunged to 60 to 70 people. "There was probably a year and a half where nothing happened worldwide. It was really a dramatic setback for the power business," Dautovich says.

"We have worked really hard to get back to where we were (before the Enron collapse)," says Keith Soloman, a project manager at IST.

The key to weathering the storm was the decision, made just prior to the Enron collapse, to go international. IST opened a European sales office in Britain in 2000 and moved it to

FACTS 1992: Company founded in Cambridge.

1995: Two generators sold to power plant in Australia, first sales outside North America.
2000: IST moves to present location on Conestoga Blvd.
2006: 100th generator sold to power plant in Hawaii.

The Hague, Netherlands, about three years ago.

"In the last five years, if we had to rely on North America, the business wouldn't be there," says Dautovich.

A helping hand was provided by the Export Development Corp. a federal Crown corporation that offers financing and insurance for companies entering new international markets.

As for the impact of the current recession, the company is noticing fewer opportunities than in the past, but is still booking orders, he says. "Expanding geographically has really helped us."

The company has also worked hard to diversify its product line. The once-through generators can be used at three different kinds of power plants. IST has also developed a steam generator that can help extract oil from the Alberta oilsands. Emission-control systems, industrial boilers and aftermarket services round out its product mix.

In future years, IST wants to increase its business in the Alberta oilsands and win a bigger share of the waste-heat recovery market, says Dautovich. He sees the cement industry as one sector that's ripe for the picking. "There's a lot of heat going up the smoke stacks that could be recaptured."

The company has made its presence known far beyond Cambridge. "We're quite proud of the fact that as a small Cambridge manufacturer, we've been able to do business around the world. It makes us feel a little bit special."

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Evan Koslow is expanding Gabae Development, a technology and business development company. He is opening another facility on Bridge Street in Waterloo.

Gabae Development: Thinking outside the box

By Nicole O'Reilly, Special to The Record

he work done at Gabae Development has to substantially change the nature of reality, says the company's president and founder, or he's not interested.

An inventor with 71 patents to his name and 40 applications pending, U.S.-native Evan Koslow brought his vision of a multi-domain technology and business development company to Waterloo in 2007.

Gabae is unusual in the diversity of areas it is involved in. It does work in chemistry and chemical engineering, software and hardware electronics, mechanical engineering and physics, and even nano technology.

"We'll do just about anything in any field," Koslow says. That's what keeps things interesting.

Innovation is critical, he believes, because that's how Gabae sets itself apart from companies that operate within a specific industry.

Koslow says those companies generally do not have to think outside the box because they already have built assets and resources, and tend to work incrementally.

"But when you are outside that industry and trying to move into unrelated industries, industries that you have sometimes never worked in, you need out of the box, game-changing technology or you shouldn't even be going in there," he says.

At any given time, the company is

working on three or four technologies.

The diversity of the areas Gabae works in becomes apparent when you walk through its facilities on Bathurst Drive. Walk into one room and you see that it's equipped with a chemistry lab; turn into another and there is a high-ceilinged shop with a 20-foot-tall pilot plant.

The 20,000-square-foot facility had a major facelift this year and a new 93,000-square-foot facility is poised to open on nearby Bridge Street.

The diversity within Gabae's workforce matches the diversity of its work. Among its 35 employees are mechanical engineers, machinists, chemists, computer hardware specialist, software developers, physicists and biologists.

Getting Gabae off the ground has been a rapid journey, Koslow says. He launched the company after a court ordered his removal from the top job at KX Industries in Orange, Conn. The court ruled he had breached his fiduciary duty to the manufacturer of water filtration systems and his limited partnership agreement with minority shareholders. He had been president and chief executive officer of the company for 16 years.

Koslow's resume also includes stints as editor-in-chief of Nuclear, Biological and Chemical Defense & Technology International and chief executive of an international defence company. When he decided to create Gabae, he set out on an international search for a home for his dream company. He says he came within a whisker of setting up shop in Switzerland and only at the last moment put Canada on the list of possible locales.

"The good news about Waterloo is that it's a very strong intellectual community, and that's what we depend upon," he says.

The downside of Waterloo Region, he says, is that there is very little organized risk capital. That actually isn't a problem for Gabae because the business is completely self-financed.

When he moved to Waterloo to set up the business, he hired only one other employee — office manager Gail Beckett. Together, they built the entire operation.

Gabae, named for members of Koslow's family, doesn't just develop technology. It also invests in a broad range of innovative businesses, making it a venture capital company as well.

Koslow says he can't discuss most of the projects Gabae has done or is involved in due to the confidentiality requirements of its customers. One project he can talk about is a pilot plant for producing resin for water treatment systems. The plant, completed earlier this year, is innovative, he says, because it does not require salt. Usually, resin needs to be regenerated with salt after a number of uses. Gabae's growth is fuelled, in part, by its increasing connection to the community. It has hired about 12 co-op students and expects to employ 20 to 25 next year.

The students are studying in a range of disciplines, including technical, marketing and business fields, says Shelley Clifford, Gabae's marketing manager. They get to work on real market research.

"We want to be able to help the environment that we are in," she says.

"I think we are the ultimate innovation experience."

A number of professors from local post-secondary institutions, including the University of Waterloo and Conestoga College, also work with Gabae under consulting arrangements. Koslow believes the company has barely tapped opportunities for collaboration.

"We don't use the university resources as much as we hoped, it's very hard to mobilize the universities," he says. "After 30 meetings with the universities, we're still probably only about 20 per cent of the way to what I think we should be doing together."

Koslow says his team is systematically building an organization that ultimately will be able to engage in large-scale, world-class manufacturing.

"We don't innovate to license, we innovate to manufacture," he says.

It's full 'stream' ahead for Metranome

By Gavin Crutchley, Special to The Record

he idea behind an ambitious startup that hopes to improve the way video is delivered to mobile devices was hatched at a coffee shop in Waterloo.

David Kruis and Craig Dunk, the founders of Metranome Inc., first met in 2005 while they worked for Research In Motion. In April of 2007, they were sitting down together at the Williams Coffee Pub on Northfield Drive to plot the way forward after they left the BlackBerry maker.

Kruis, a University of Waterloo geography grad, and Dunk, who had studied electrical engineering at UW as well as at the University of Guelph, were determined to launch their own business. They wanted to do something involving mobile communications – a rapidly expanding field in the technology world.

Their best guess was that streaming video for mobile devices was going to be the next big thing and so they decided to focus their efforts in that area. "We decided to look at that market and look at what people were doing and some of the challenges of streaming rich media, namely video, to mobile devices," says Kruis, the Waterloo company's chief executive officer.

Dunk, formerly a senior architect



GAVIN CRUTCHLEY, SPECIAL TO THE RECORD

Craig Dunk (left) and David Kruis, founders of Metranome Inc., check out videos downloaded to their mobile devices using the company's application.

in the BlackBerry Architecture Group at RIM, is Metranome's chief technology officer.

The No. 1 challenge that Kruis and Dunk saw in moving video across mobile networks was bandwidth. Basically, the problem is that video requires a huge amount of resources, due to the amount of data involved, to move across a network. As more and more users make use of the network, resources get strained further and further. As network resources falter, users find the connection to their mobile devices begins to lag, resulting in reduced video playback performance or, in the worst case, a dropped connection.

"We recognized that to deliver quality video content to a mobile device, you can't rely on the network to be able to provide users with the type of bandwidth required, particularly when most users want that content straight away," says Kruis. "If users see delays in receiving content they will just walk away. Also, producers of the content get frustrated because users are not seeing their product as it was intended."

Kruis and Dunk realized that the best way of getting around this problem was to separate the delivery of video content from bandwidth availability. Metranome's Poptiq platform does that by downloading video content to the user's mobile device in the background while the user is busy with other tasks.

The company, located in an office on Dotzert Court, not far from the coffee shop where the founders started talking about the business, also developed relevancy algorithms so that once users tell the Poptiq application what types of content they are interested in it will find video content that matches their needs and download the relevant content onto their device. "Our application starts downloading video content on to the user's device based around the themes they have told us about," says Kruis, a former director of retail product planning at RIM.

"Then they have the chance to rate

► Metranome continued on page 44



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Getting right workers a hurdle

► Metranome continued from page 43

that content and our system learns from the user's ratings, and adapts and refines the content sent out to them."

Metranome was an early developer for Apple's iPhone and had a video application available for the device in September 2008.

A similar application was developed for BlackBerry in May of this year. The company is also working on developing

similar applications for Symbian and Androidbased devices as they become available.

Looking back, Kruis and Dunk say that securing funding and finding the right employees were two of the biggest hurdles they faced in starting their company.

A round of funding they secured from Waterloo-based Tech Capital Partners last December put the amount of money they raised to more than \$2 million.

"Craig and I put up some of our own money to start the company and then we managed to also get funding from Tech Capital Partners, a local venture company that I had done some consulting work for," says Kruis.

Finding the right fit in terms of new employees is often a significant challenge for a startup. Kruis and Dunk were fortunate in that when they launched the business they already had people in mind to join their new venture.

Today, the company employs 13 people.

As for the future, Metranome has started working with actual content owners – movie and production studios, and cable operators that have large libraries of video material already available – to help them make their content available to the mobile market in a way that will help them build a new user base without destroying their original market base.

"We have advised the content producers that we are working with to produce additional content that will bring in mobile users to their original user base and not take away from it," says Kruis.

In effect, the company is evolving from just developing video applications for mobile users to developing a video content delivery model for content owners.

"We, at our core, developed a content delivery model that gives the best quality experience to the user on a mobile device," says Kruis. "But now we have to package that in a way that also satisfies people producing for the mobile market."

To cope with this evolution, Kruis and Dunk share the roles and responsibilities of managing the company. Dunk stays on top of the technological challenges Metranome faces in terms of implementing the company's vision while Kruis takes on more of the marketing and selling responsibilities.

"You can't build technology in isolation," says Kruis. "When you want to turn it into a business, you need to have customers for that technology. And the only way to understand what to build is to understand the customer's needs."

At the moment, the company is working with about 50 content owners to develop applications that are specific to their content.

And as mobile devices get to the point where they are not only able to play videos but also record video, Metranome is looking at developing applications that will allow for interactivity as well.

Navtech is soaring despite airline industry turbulence

By Deborah Birkett, Special to The Record

hen Ray and Dorothy English started an aviation software business in Elmira in the early 1980s, they probably didn't envision that the company would eventually have a chief executive officer based in Denver, a senior executive team spread across Canada, the United States and Europe, and offices in multiple countries.

Navtech Inc. has not only survived for decades in an industry fraught with big challenges and bigger competitors, it has managed to thrive, even during gruelling economic times.

The airline industry has struggled for at least two years, due to the global recession and fuel prices that almost doubled over that time. As Mike Neudoerffer, the company's Waterloo-based chief operations officer, points out, "40 per cent of the cost of an airline is fuel."

Many of Navtech's customers disappeared into bankruptcy in 2008. Neudoerffer says there have been fewer customer losses this year, but the industry's continuing weakness — the International Air Transport Association forecasts that the global airline industry will lose \$11 billion in 2009 — still has had a significant impact on Navtech's revenues.

Yet Navtech, a provider of software and services that help airlines manage flight operations, has managed to avoid layoffs.

The company, which employs 300 people including about 100 in offices in the University of Waterloo Research and Technology Park, has dealt with reductions in business through normal attrition.

In fact, the company has created new senior executive positions in marketing and business development, areas where Navtech recognized that it needed help to grow.

A new chief executive officer also came on board this year. Denver-based Mike Hulley, a veteran of IBM, Electronic Data Systems and numerous other companies across the spectrum of travel and transportation, is leading a global team in what he calls a "serious retooling."

His first priority after taking the helm in February was to develop a 100-day strategy.

"We took a very serious look at who we were, how we go to market today, how we're structured, and then we spent a good



PETER LEE, RECORD STAFF

Mike Neudoerffer (left), chief operating officer of Navtech Inc., and Lee Granger, vice-president of product marketing, are helping navigate the aviation software company through turbulent times.

bit of time examining our customers' perceptions of us, and where our customers would like us to be in the future," he says.

"In a two- to three-year time frame, we will be a company that I would say is much more nimble, better positioned to compete in the marketplace."

Hulley gave the company a new global perspective.

"One of the big shifts with Mike Hulley is that we are truly a global executive team," says Neudoerffer. "Before, this (Waterloo) was considered head office here. What we're doing now is having a distributed executive team all over the world. We don't really have a head office. We're global, our customer base is global, and we have to think that way. It's a change, a shift in thinking again from our most recent management style."

Lee Granger, vice-president of product marketing, is one of the new members of the senior executive team. Based in Florida, she says that the strengths she brings to Navtech include "a discipline about product development as well as understanding of process flows."

One area of focus for Navtech is enhancing the synergies across its five product lines – aircraft performance, charts, crew planning, flight planning, and navigation data services.

The goal is to "make it more of a product suite instead of vertical silos," says Granger.

Neudoerffer explains that Navtech acquired some of the product lines through acquisitions, including its 2005 purchase of European Aeronautical Group AB of Sweden, a deal that quadrupled its size.

"Part of what we've been

trying to do since the last acquisition three and a half years ago is to integrate them into one kind of offering," he says.

Navtech, which says its software and services are used by more than 350 airlines and aviation service organizations around the world, also is developing new technology, including so-called electronic flight bags that would replace the briefcases full of paper charts that pilots carry.

Due to the degree of aviation regulation, the technology likely will take years to implement.

"Getting anything on the flight deck takes 10 or 15 years because you have to go through all the approvals," Neudoerffer says.

Advances in flight planning software, which is used on the ground, can be put into use much sooner. Neudoerffer thinks there is "huge opportunity" for Navtech to take market share from its two largest competitors — Jeppesen, owned by Boeing Co., and Lufthansa Systems, a subsidiary of Germany's Lufthansa Group.

Granger believes that Navtech's emphasis on customer service and involvement will be one of the key elements that distinguishes the company from its competition.

"We're going to try to use that as a point of difference," she says.

"Because quite frankly, we're a small company — 300 employees. We're going to get bigger, but some of our competitors have 10,000 employees, and so we're going to have to compete with them obliquely.

"Have great technology, but leverage other things they're not so good at."

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Northern Digital Inc. chief executive officer Jamie Fraser says the firm's technology, including measuring and tracking devices, give it lots of growth potential.

Northern Digital: Measuring success

By John Schofield, Special to The Record

or Jamie Fraser, it was love at first sight — of the corporate kind.

The president and chief executive officer of Waterloo-based Northern Digital Inc. discovered the company early last year when he was searching for new opportunities.

For 11 years, he had climbed the corporate ladder at Amphenol Corp., a leading, U.S.-based manufacturer of connectors and cables. During a distinguished career there, he rose to senior vice-president and helped boost sales for his business unit from \$50 million to \$300 million a year. But by late 2007, the Montreal-born Fraser was ready for a new challenge and ready to return to Canada with his family.

In the course of his inquiries, he came across Northern Digital, a manufacturer of advanced measuring equipment for medical and industrial applications.

Last winter, he made the trek from

his home in Endicott, N.Y., to Waterloo to meet with his predecessor. David Crouch, and other senior executives. He was immediately impressed with the company's products and its people. "I was amazed," he remembers. "It has a fantastic opportunity for growth."

Since April of last year, when Fraser was picked to take the helm. he's worked hard to make that growth a reality. The 47-year-old CEO is leading the company, commonly known as NDI, through a period of significant change.

Founded in 1981 by University of Waterloo computer science professor Jerry Krist, NDI was sold to a group of company executives in 1998. In late 2007, the remaining executive owners

Crouch, chief operating officer Jim Kearns, chief technology architect Terry Fisher and vice-president Paul Clausen - sold a majority stake to the Audax Group, a Boston-based private equity firm. (Clausen and Fisher remain with the company.)

At the time, Crouch stated that

Audax's deeper pockets would help NDI reach "the next level." Last November, the company trimmed its workforce from about 130 employees to its current 108, blaming the global credit crunch and its impact on capital spending by U.S. hospitals.

Despite the tough economy, Fraser says NDI has made significant sales gains this year, and the company will continue to focus on growth by enhancing current products and adding new ones. Employees seem ready for the challenge. More than 50 have invested their own money, says Fraser, who is the second largest shareholder after Audax. "They've responded very well to the change," he observes. "These are not always easy things — to go from almost a family structure to a financial, more formal structure.'

NDI's medical division is by far its biggest money maker, accounting for about 70 per cent of the company's sales. Its Polaris line of optical tracking systems is now the standard of care in neurosurgery when line-of-

sight measurements are possible, savs Fraser.

When operations involve soft tissue and surgeons can't make measurements by sight, NDI offers its Aurora electromagnetic measuring technology. Both devices allow surgeons to precisely chart their procedures

NDI's Polaris and Aurora medical devices are typically sold to other manufacturers for integration into computer-assisted surgery systems or other medical systems, which are sold directly to hospitals.

In neurosurgery specifically, says Fraser, NDI has 70 per cent of the market for computer-assisted neurosurgical systems. As the surgeon views live images of the procedure on a computer screen, Polaris emits infrared light to track the precise position of the wired surgical instruments, which are designed with small spheres to reflect the infrared light back to the position sensor.

NDI's fastest growth this year has been from its industrial division

► NDI continued from page 46

Aurora's electromagnetic technology is used to track instruments when surgeons are required to delve deeply into tissue for procedures such as biopsies.

While sales of the medical devices have been slower this year, Fraser says they've been bolstered over the long term by a growing trend toward minimally invasive surgery. He's particularly excited by the prospects for Aurora.

"This soft tissue area is very new to us — about two to three per cent of revenues right now," he says. "But it's a very explosive growth opportunity. It has the true potential to double our medical business."

Surprisingly, NDI's fastest growth this year has come from its industrial division. It's an unexpected performance considering the sad state of Canada's manufacturing sector, and the fact that NDI has directed most of its marketing efforts to the auto sector.

The company's industrial products still account for about 15 per cent of revenues, says Fraser. But the popularity of products like its Optotrak Portable Coordinate Measuring Machine has helped drive doubledigit sales growth in the division.

Product engineers at any manufacturing firm can bring the device onto the shop floor to obtain razorsharp measurements of parts or components accurate to 50 microns — about half the width of a human hair. The device is better priced and has more applications than its competitors, says Fraser.

"Its prospects are very exciting in the sense that companies continue to make more complex structures, whether its ships or airplanes or cars," he says. "Additionally, there's been more focus on making sure those parts are of the highest quality."

NDI originally built its business on measuring devices for the life sciences research sector, with a special emphasis on kinesiology, the study of human movement. With its enormous success in the medical field, life sciences became an increasingly smaller part of the company, today accounting for about 15 per cent of sales.

Under his watch, Fraser says, no division will be allowed to wither. He believes new products like Wave, launched toward the end of 2008, will help NDI's life sciences division flourish again. Designed for speech research, the non-line-of-sight, motion-capture system can track mouth, tongue and facial movements, and is quickly being adopted by top researchers in the field. "Life



PHILIP WALKER, RECORD STAFF

Christian Monterroso uses a high-precision measuring device developed by Northern Digital Inc.

sciences before was seen as a flat part of the company," he says. "We've put together a strategy to make it grow, and it is growing."

The seasoned CEO says he'll use the lessons he's learned over a long career in industry to drive NDI's success. Raised in London, Ont., Fraser started working right after high school, selling electronic components to factories. He later joined Atlantis Systems International, a Brampton-based aerospace manufacturer, where he served as an operations manager.

Eager to graduate into general management, he enrolled in the executive MBA program at the University of Western Ontario's Richard Ivey School of Business, graduating in 1995. Soon after, he joined Amphenol's Canadian subsidiary, Torontobased Amphenol Canada Corp.

At NDI, Fraser is leading a company with a strong track record. Over the years, it has appeared numerous times on Profit magazine's Next 100 Fastest Growing Canadian Companies list, and has received Canada's 50 Best Managed Companies award eight times.

With his experience and Audax's strong financial backing, Fraser says the company can go even further.

"It's a little unusual that a guy who ran a \$300-million business comes to manage a company that's a tenth that size," he says.

"But it's such a great Canadian story of technology. I'm very proud to lead it."

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Mike Wlodek, chief financial officer of Nutrasource Diagnostics, says the company has grown despite the recession.

RYAN PFEIFFER, SPECIAL TO THE RECORD Carla Anne Cockerline (from left), Stephanie Bolliger, Rachel Rebry and Erin ÒReilly do nutrition and nutraceutical research.

Guelph's Nutrasource Diagnostics takes a healthy approach to growth

By Greg Mercer, Special to The Record

So you've got a new natural supplement that will lower cholesterol, reduce the risk of cancer and give users a healthier heart. Or at least you want to say sobut you need to prove it.

Enter Nutrasource Diagnostics, a Guelph firm that has been riding the wave of natural health products flooding the market in recent years.

It does the science behind the beneficial claims made by foods, supplements and drinks that you see on grocery store and pharmacy shelves.

Founded in 2002, the company started as a venture to commercialize an Omega-3 blood test developed by University of Guelph professor Bruce Holub.

Since then, Nutrasource has expanded into clinical trials, product analysis and consulting for companies that are trying to develop vitamins, minerals, herbal products and homeopathic medicines that

meet government regulations for health claims.

And it hasn't stopped growing – expanding its operations into the U.S., Mexico and Germany, adding a dozen staff to the head office payroll, and reporting revenues of more than \$2.5 million in 2008.

"This industry grows 25 per cent a year, even in the depths of a recession," boasts Mike Wlodek, who joined in 2003 as an investor and eventually became the company's chief financial officer.

With soft-drink giants to major food producers suddenly interested in products that improve consumers' health, the work being done by Nutrasource Diagnostics makes for an interesting mix.

On any given day inside the company's office in the University of Guelph Research Park, a chemist could be testing the components of a fish oil supplement from Turkey or helping a client from the United States access the formula in a competitor's new vitamin.

FACTS

Nutrasource Diagnostics, by the numbers: 2002 revenues: \$124,579 2008 revenues: \$2,504,294 Employees in 2002: 3 Employees in 2009: 40 Exports as a percentage of sales: 66

One door down, a team of researchers could be helping a mom and pop natural health food maker find funding for a \$100,000 clinical test.

At the far end of a hallway, a dozen lactating mothers could be resting in recliners, giving regular urine and blood samples that measure the effect of whatever new product they're testing.

It's all in a day's work for Nutra-

source, which doesn't deal with pharmaceuticals or the billions in research and testing spent trying to get new drugs on pharmacy shelves. It has found its niche focusing on natural health products, which can go to market much more cheaply and quickly than pharmaceuticals.

"We're looking at the happy side of human health," as William Rowe, the company's chief executive officer and president, likes to say. "Our customers are taking on big pharma by adding health products that are measurable."

It makes sense for the company to be in Guelph, he says. A close relationship with the nutritional sciences department at the University of Guelph ensures a steady supply of talented staff.

The university's proximity also means there's no shortage of healthy, young people to use in clinical trials, as "guinea pigs," as Wlodek jokingly calls them.

Experiencing a new online world

By Livia Fama, Special to The Record

S cott McCarter's sociology degree led to an interest in human interaction and motivated him to start his own online encyclopedia of human experiences.

"What interests me is collaborative projects where, because of the internet, everyone can get together and create something," says the University of Guelph graduate.

The 27-year old founded MelonBytes in Waterloo in 2008, selffunding the project with just \$2,500.

He worked in conjunction with database manager Boubacar Diallo, a computer science student at Wilfrid Laurier University.

Users of MelonBytes can create a free account and log their experiences on a wide range of topics with the option of sharing photos and videos.

The subject matter is openended and users can submit experiences from any topic.

"Users aren't limited to what I've incorporated into the site already," says McCarter.

"The site is an encyclopedia and it needs to keep building. Our goal is to ultimately have every experience that someone has had on the site."

McCarter, who recently moved

IN QUOTES I SCOTT MCCARTER MELONBYTES FOUNDER

"What interests me is collaborative projects where, because of the internet, everyone can get together and create something."

to Brampton and now operates the business out of his home there, is quick to point out that the experiences that make up MelonBytes' database are different than blog posts.

"It's a more structured approach, it's categorized and set up to be an experience encyclopedia, which means you can search by keywords, categories, authors, personal characteristics and attributes."

MelonBytes boasts more than 135 authors and gets more 1,000 unique visitors to its home page each month.

The site generates revenue from online ad sales, which McCarter hopes will boost traffic and enable MelonBytes to add new features in the future. "We'd like to create more of a user network, so adding things like feeds, a rating system where you can boost or bury experiences and instant messaging," he says. "We just want people to understand what it's like to live in another person's shoes."



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Standards high for testing natural health products

► Nutrasource continued from page 48

He notes that Health Canada has among the highest standards in the world for testing natural health products, so being based here has its advantages when so much of the company's work is international. More than 66 per cent of its business comes from outside the country.

"Health Canada has set the bar very high on these products. In the U.S., they still treat natural health products like food," Wlodek says. "Companies send their products here because they want the highest standard on the globe."

Part of Nutrasource's growth can be attributed to government regulation, and part of it is due to consumers' obsession with living healthier lives. In recent years, food producers have been more than happy to oblige, developing products, from vitamin and Omega-3 enriched milk to oat bran with higher levels of beta glucan and tomatoes infused with lycopene, an antioxidant.

Despite the growth in the industry, Rowe believes it's still early days. And challenges remain, such as getting test results in the hands of doctors, who are often the first line of reference for consumers looking to make dietary changes.

But as more companies develop natural products or additives that promise to keep consumers healthy, he's betting they'll need someone with the expertise to back it all up.

"This way of thinking is still in its infancy," Rowe says. "I think we're just getting started."



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Laurier MBA students give the thumbs-up to the BlackBerry



MATHEW McCARTHY, RECORD STAFF

MBA students at the Laurier School of Business & Economics learn how to use the camera on a BlackBerry. Incoming MBA students got the smartphones in a pilot project supported by RIM and Rogers Wireless.

By Livia Fama, Special to The Record

he Laurier School of Business & Economics is setting a new standard for innovation by being the first to integrate the Black-Berry into its MBA program.

Teaming up with Research In Motion and Rogers Wireless, the school has put BlackBerrys into the hands of more than 100 full-time MBA students at its Waterloo campus.

"We want to migrate to more of a hybrid learning environment," says MBA director Hugh Munro. "In today's world we have this technology that allows you to do anything, anywhere at any time, so why can't education be the same way?"

The pilot project, which started in mid-August, was inspired by Mexico's Tech Monterrey University, where the BlackBerry was introduced into the curriculum so students could maximize their mobile efficiency in a city plagued by massive congestion.

"We got a visit from them and they already had experience using the BlackBerry in the classroom," says Ginny Dybenko, Laurier's dean of business and economics. "I was stunned because it's something we've thought of doing in the past; I can literally see RIM headquarters out the window of my office, and here I am talking to someone in Mexico who's already done it."

Dybenko points out that the decision to partner with RIM was mutually beneficial. "Obviously RIM has competition in the field with the iPhone and everything Apple is doing. It's important for them to understand the age group and how they use technology, and what they need going forward in terms of new applications."

RIM says the project benefits the company and the students.

"BlackBerry already holds an estimated 73 per cent share of the enterprise market for smartphones in North America today and the Laurier MBA program provides a good opportunity to reach tomorrow's business leaders," Kristen Beattie, RIM's senior marketing manager of education services, said in an email. "BlackBerry smartphones are also ideal tools for mobile learning, offering students an easy way to stay connected and productive with a mobile solution that is renowned for delivering an unmatched user experience."

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MBA students at the Laurier School of Business & Economics learn how to use the camera function on their BlackBerrys.

MATHEW McCARTHY, RECORD STAFF

'Pushcasts' to students include reminders and assignments

► **Students** continued from page 50

The project presents a doublepronged approach to make students familiar with the BlackBerry as a multi-functioning business tool that simplifies collaboration and group work.

"I feel incredibly thankful because this is the future of learning – the whole model is shifting and I think it's great for us in terms of being part of the pilot project," says student Deborah Carter. "These experiences are what we're going to carry into the companies we're going to be working for and the potential of this kind of collaboration, this mobile teamwork and mobile learning is just incredible."

A unique challenge of the pilot project involves transforming teaching materials to make them more accessible on the BlackBerry. The students are using software called Mobile Chalkboard that RIM acquired last year when it bought Vancouver-based Chalk Media Corp. Mobile Chalkboard enables the creation, delivery and management of announcements, notices, reminders, assignments and other items that professors and administrators will push out to students.

The "pushcasts" can also include content such as video and audio, graphics, text, and surveys and tests, says Dybenko.

Students can access 30 per cent of course material through the Black-Berry during class. Web connectivity makes it easy to use socially networked data stores such as YouTube and Wikipedia, allowing professors to complement traditional curriculum by presenting items such as film clips.

"Many other industrial sectors have embraced technology to try to make them more effective and more accurate, and I believe that education is the new frontier in that regard," says Dybenko. "We can never replace that magic that happens between a professor and a student, but we're looking to see how we can augment that experience."

The university hopes to add a number of tools in the future. They include a task list tool that would remind students of upcoming assignments, a flash card that could be created or downloaded from an existing library as a study aid for one of the program's professional certified exams, as well as a reference library.

"Most importantly, we're hoping that coming out of this there will be new applications that students can write themselves, or requirements that they can give back to RIM and other companies like Rogers to develop new applications for the device that are particularly significant for the delivery of high-level educational material," says Dybenko.

Munro says the combined effort of learning and experimentation is what will make the pilot project successful. "There's a need for faculty members to better understand what is possible and what can be done, and



MATHEW McCARTHY. RECORD STAFF

Ginny Dybenko (right), dean of the Laurier School of Business & Economics, helps student Aghogho Okotie with her new BlackBerry.

it's the same for the students," he says. "They're younger and more into the technology, and they're going to drive a lot of this."

Although the project is setting a precedent in Canada, it isn't without its challenges.

"The challenge we face will be having a balance," says Munro. "The pilot project is not foolproof – the internet or systems could be down, and the device could have load factor issues – but we must be accepting of the fact that we don't have all the answers." Despite the challenges, Dybenko is already looking to the future. Her long-term goal is to put a BlackBerry in the hands of all Laurier business students.

"I've spent 30 years in the business world prior to coming to Laurier and I know full well what it takes in terms of skills and access to information to be successful in business," she says. "A huge part of that is mobile access to these various data stores – the more information you have at hand the more effective you can be in the business world."

ParkVu pushes for an unplugged world

By Charlotte Prong Parkhill, Special to The Record

Jeff Fedor and Terry Goertz want to make your life easier. That means limiting the number of mobile devices you need, getting rid of that tangled ball of cables, and setting you free from the chains of sideloading.

Goertz and Fedor have launched a company, called ParkVu, that aims to make the contents of your home or office computer – every document, every photo, every audio file – available to you on your mobile device, wirelessly. Anywhere, any time.

ParkVu's first product, i2B, makes it possible to replicate playlists from your iTunes library to your Black-Berry, and you don't need to be hooked up to your computer to do it. In fact, your computer doesn't even need to be turned on.

"This product got born because one person said to us, 'It would be really great if, when I went to the gym, I didn't have to take my Black-Berry and my iPod.' "Fedor says. "And it unfolded from there."

"When we first heard him say, 'I just want to get my iTunes onto my BlackBerry,' we thought, you mean no one has solved that problem yet?" Goertz adds.



DAVID BEBEE, RECORD STAFF

Jeff Fedor (left) and Terry Goertz started ParkVu to develop a photo storage and sharing application, but their first product makes it possible to move the contents of your computer to your smartphone wirelessly.

Syncing iTunes with mobile devices is a problem that has been solved, in a multitude of ways. But Park Vu says it is the first company to solve the problem wirelessly.

Fedor, a veteran of several Waterloo Region tech startups, and Goertz, a software developer, have a shared vision of the way mobile devices should work for consumers.

"Our views on the way a company should be built and run and our personal values are very much in line," Goertz says. "We look at technology, and problems in general, in a very similar way."

Their outlook and ideas may be similar, but their paths to Waterloo Region's tech community were very different.

Originally a human biology student at the University of Guelph, Fedor did research that included looking at CT scan slices and creating 3-D images of human bones. That 3-D computer work continued during a grad school stint in architecture at the University of Syracuse, which led to some consulting work.

Fedor grew up in a family of entrepreneurs - he ran a business when he was a kid to pay for skiing-so he was itching to start his own company. Although he says he isn't a "pure technologist," he is driven by the idea of using technology to solve problems. "I was looking to build a software company, and Waterloo is the place to build a software company.' says the native of Fonthill in the Niagara Peninsula, who went on to launch tech startups Ardesic Corp. and Covarity Inc. In the meantime. Goertz was putting his compact frame to work, leaving his hometown of Sarnia for a track scholarship at the University of Western Kentucky.

► ParkVu continued on page 53

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Goal was to find a place to 'park' photos

> ParkVu continued from page 52

The cross country and steeplechase runner earned a computer science degree at WKU, and ended up in Waterloo Region when he did a co-op work term at Sandvine, the Waterloo-based developer of network management equipment for the internet.

Fedor and Goertz met while they worked at Primal Fusion, another Waterloo startup. They also both did consulting work for AideRSS, a startup that now operates as PostRank Inc. The two men hit it off immediately.

Fedor and Goertz formed ParkVu in 2008 to solve a personal problem they could see was plaguing a wider audience of computer and mobile users.

"Right around that time my mom had just wiped out all her family photos from Flickr and called me, panicking," Fedor says.

The partners immediately set to work to make the process of storing and sharing photos easier for the average user; the goal was to create a place to safely 'park' photos and a way to 'view' them wirelessly. They developed a prototype for friends and family and were developing a commercial product when the Black-Berry/iPod/gym conundrum was

FACTS

ParkVu, now and in the future: i2B is supported for Windows XP or Vista. The application for the BlackBerry Storm, Bold, Curve and Tour is available at appworld.blackberry.com

FACTS A version of i2B will be launched

A version of i2B will be launched for Mac users and mobile phones on the Android operating system. ParkVu's original photo project is set to roll out in January, allowing mobile users to store photos in the "cloud" and access them from their smartphones.

mentioned.

That very night, in January of 2009, they feverishly did some preliminary market research, and decided getting iTunes onto mobile devices was a higher priority than their photo project.

The next morning, they met for breakfast at Benny's Family Restaurant in Waterloo and on one large sheet of paper mapped out the possibilities for solving the problem.



By the afternoon, they decided to develop i2B; the product was launched in April.

They were able to get a product onto the market quickly, in part, through the use of servers operated by Amazon.com. Goertz and Fedor say the opportunity to buy computing time through the giant online bookseller's Amazon Web Services division changes the business model for startups.

"In the same way you don't go out and buy a power plant to start generating the power you need, with Amazon you just pay for the power you use," Fedor says. "We knew that it changed the economics of some services. So we looked at what we can do differently now that just wasn't economically feasible even a year ago."

That different approach involves "cloud computing" – storing data from computers in the internet 'cloud,' and making it available to mobile devices using the cellular network and Wi-Fi connections. That's what makes it possible for users to access their iTunes library even when their home computer is turned off.

Although Park Vu hasn't widely advertised the product – it just recently started working with a marketing consultant – i2B has become popular with a certain demographic through 'digital' word of mouth.

"The majority of our customers are BlackBerry Storm users, about 70 per cent," Goertz says. "And a lot of them are actually from the United Kingdom."

Fedor says the numbers for online music purchases are significantly higher in the U.K. than in Canada or the United States, and mobile devices are also more widely used there.

Fedor and Goertz initially bootstrapped the business through fees from consulting work.

The company, which employs six people, also has received funding through government programs such as the Industrial Research Assistance and Scientific Research and Experimental Development programs. Recently, it secured funding from an angel investor.

Fedor and Goertz say the cool factor of accessing iTunes any time is just the beginning for ParkVu.

Sideloading – moving files of music, or photos, or documents via a cable onto a mobile device – seems almost archaic to the company's forward-thinking co-owners.

"We believe these are mobile devices," Fedor says. "Sticking stuff into a cable is like plugging a phone into the wall."

"You don't want to do that anymore."

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A smarter approach to using electricity

Bob Burtt, Special to The Record

magine driving home, and plugging your car in to recharge overnight with power generated by solar panels on the roof of your house or a wind turbine.

The next morning, you drive to the office, plug your car in at the office parking lot so it can be recharged using energy from solar panels on the roof of the building.

From your desk, you use a remote control to reset the air conditioner in your home and turn on the oven to cook a roast for dinner; you also instruct the washer to turn on to clean a load of laundry.

These seem like scenes from a science fiction movie, but they are closer to reality than you might think. The technology to make them possible is coming in the not too distant future, says Jatin Nathwani, a professor at the University of Waterloo.

Nathwani, a former executive with Hydro One, holds the Ontario Research Chair in Public Policy and Sustainable Energy Management at UW. He also is a member of Ontario's Smart Grid Forum.

"There is a world of change coming upon us," he says.

► Electricity continued on page 55



Jatin Nathwani, head of the Waterloo Institute for Sustainable Energy at the University of Waterloo, talks to Hung Nguyen (left), Alex Koch (rear) and Carl Chan, members of UW's alternative fuel team.



A major centre for sustainable energy research

Bob Burtt, Special to The Record

The ways people create, move and use energy are changing rapidly and scientists at the University of Waterloo are at the centre of research that is driving the changes.

Jatin Nathwani heads a group of about 70 professors and researchers at UW who bring a diversity of expertise to the table.

Nathwani, a former senior manager with Hydro One and author of several books on risk management, was awarded a \$3-million research chair in public policy and sustainable energy management at the university in 2007.

Nathwani, an adjunct professor at UW for 20 years, doesn't underestimate the challenges that will need to be addressed as the entire electricity system in the province is changed, modernized and improved.

One of the first steps he took after

he was awarded the research chair was to pull together professors and researchers doing work on a variety of energy-related issues under one umbrella by forming the Waterloo Institute for Sustainable Energy. UW is now considered to be home to the largest institute of its kind in the world, he says.

The institute conducts research in areas such as solar and wind energy, fuel cells, battery technologies and storage, clean coal technologies, clean diesel fuel for green vehicles, integration of small and locally sited power sources, and energy efficiency.

By bringing together people with expertise in engineering, environmental studies, science and business, Nathwani thinks the institute can answer some of the questions that will need to be addressed as the province's power system evolves.

One of his goals is to train a new generation of highly qualified re-



ROBERT WILSON, RECORD STAFF Professor Jatin Nathwani believes Ontario has a unique opportunity to use technology to overhaul its electrical system.

searchers and professionals who will play a key role as the province modernizes its power system and adopts new technologies. One of the things Nathwani and his colleagues are working on is a document to address questions related to the introduction of electric vehicles.

He believes it could serve as a road map for the province as it tries to bring large numbers of plug-in cars onto our roads.

"We need an action-plan for plugin cars," he says. "We need to say, 'OK, we want two million plug-in electrical cars in 10 years, so what are the problems in terms of technology, business, policy, utility organization and so on.'"

Nathwani developed expertise in working with people with diverse backgrounds and areas of expertise while he was manager of strategic planning at Hydro One.

He believes that experience is valuable in developing a multi-disciplinary approach to problem solving at the university.

'Electricity is a good thing that has enormous value'

Electricity continued from page 54

"You'll be able to use computers to get into your house and make any adjustments to your energy use that you want."

Nathwani, formerly manager of strategic planning at Hydro One, the largest electricity delivery company in Ontario, enthusiastically talks about smart appliances and smart grid technology.

A smart grid is described as a modern electric system that uses sensors, monitoring communications, automation and computers to improve the flexibility, security, reliability, efficiency and safety of the electrical system.

A report from the smart grid forum, released earlier this year, notes that the smart grid provides consumers with information about what electricity costs at any given time and allows them to make choices about when to use it, enabling them to save money by using electricity at off-peak hours. It also provides a variety of energy sources, with a focus on green energy from renewable sources, and allows homeowners to generate their own power and sell what they don't use back to the grid.

"In short," says the report, "it brings all elements of the electricity system (production, delivery and consumption), closer together to improve overall system operation for the benefit of the environment. Homeowners will have the tools and information to ... actively manage their electricity use, taking advantage of their smart meters, smart appliances and other control devices."

Right now, Ontario is saddled with aging systems that generate and transmit power to distribution systems that provide electricity for the province.

But that means it is the ideal time for the province to modernize the system, take advantage of smart grid technologies, choose green sources of energy over polluting sources and combat climate change by bringing electric cars into mainstream use, says Nathwani.

"There is a perfect opportunity now because the system is aging," he says. "So the question is do you go back and build the same thing you did 50 years ago. Now is the opportunity to transition and to install new technologies with all the promise they offer."

The Ontario government's plan to equip every home and small business with a smart meter, a device that records how much electricity is used hour by hour, is a good first step, says Nathwani.

That and the decision to shut down coal operating power plants in Ontario put the province ahead of other jurisdictions, including the United States, in moving toward adopting smart grid technologies, he says.

With the commitment to move away from coal and use nuclear energy, along with power generated by water, wind and the sun, Nathwani believes the province is well on its way to dramatically reducing greenhouse gas emissions in the power sector.

He believes plug-in electric cars

have the ability to do the same thing for the transportation sector. In fact, he sees electric cars as the cure to many of society's ills.

Historically, one of the big challenges with electric systems is that the power that was generated needed to be used as it was generated; there were no effective ways to store it on a large scale.

Electric cars could provide an easy way to store energy at night when demand and prices are at the lowest and use the stored energy during the day when prices are high.

"All governments over the last 40 years have looked to fuel efficiency to reduce use of oil but with that you end up with more cars driving farther and fuel demand goes up," says Nathwani.

"We need a completely different fuel and even ethanol doesn't do the trick."

Electric cars, lots of them, will do the trick, he says.

Concerns about limits to the distance you can travel once an electric car is charged are valid, says Nathwani. But they can be addressed by making electric cars that switch to gas once the range for electric power is exceeded, he says.

Then again, the problem might not be as big as it seems. Nathwani cites studies that suggest most people in Canada or the United States drive less than 50 or 60 kilometres on most days.

"The technology is being improved all the time," Nathwani adds. "Soon we'll be able to go 100 kilometres, then 160."

In Nathwani's vision, electric cars

would be charged at night using clean, renewable sources of energy. He notes that by using stored power, electric cars have potential to lower peak demands on power systems and dramatically reduce the cost of providing electricity.

He laments the trend that sees growing elements of society frown on the development and construction of new facilities to generate and transmit power.

"We used to promote electricity as a first-rate system and the driver for growth in the economy and a benefit for society, but we lost track of that and it became a sin to even think about wanting to build an electric plant, because of public opposition."

Nathwani says there is "enormous value" in building infrastructure to meet future electricity needs and address problems in the transportation sector.

He notes that public policy thinking about electricity is minimalist; you find ways to conserve a kilowatt of electricity and don't build anything until you absolutely have to.

"I believe in conservation to the fullest. Don't get me wrong, all those things you have to do. But you have to step beyond that and say electricity is a good thing that has enormous value to society and this is the way to solve other social problems.

"Don't be shy about it," Nathwani says.

"If that means building more supply or transmission lines so be it. Electricity has great value. You can use it to drive semiconductors, power factories, to dry your hair and now to drive cars."

At RIM, research is always in motion



Mike Lazaridis, president and co-CEO of Research In Motion, speaks at the International CTIA Wireless show in Las Vegas in April.

Chuck Howitt, Record staff

Back in the summer, Research In Motion was strongly urging the federal government to block the sale of Nortel Networks' wireless assets to Ericsson, the huge Swedish telecom company.

RIM founder and co-chief executive officer Mike Lazaridis beat a path to Parliament Hill to implore politicians to protect one of this country's future technology jewels. Allowing the sale of Nortel's wireless technology to a foreign company was like cancelling the Avro Arrow aircraft in 1959, he said.

At stake was the next generation of wireless technology, called LTE or long term evolution, in which Nortel had established a leading position. With it, smartphones could be as fast or faster than high-speed internet on home computers. Whoever possessed this technology and its patents would lead the next generation of wireless providers, experts believed.

So Lazaridis could have been excused for being a little apprehensive during a recent interview when asked about the company's prospects for staying ahead of the pack in the increasingly competitive mobile communications race.

But apprehension is not part of Lazaridis's vocabulary. In the realm of technological innovation, RIM takes a back seat to no one, he says, rhyming off a list of innovations launched by the company through its BlackBerry smartphone – the first wireless data device for the first wireless data networks. The first device to adopt GPRS, or packetoriented mobile data, when voice networks switched to that technology.

One of the things you quickly learn about Lazaridis is that conversations never get too far without a reference to some kind of arcane digital or wireless invention. After all, he's the founder of the Perimeter Institute of Theoretical Physics and a major donor for the Institute for Quantum Computing.

You get the impression he's still a hacker at heart, despite all the billions, the adulation, the magazine covers, the travel. New wireless and high-speed technology like EVDO, Ix, EDGE, 3G, UMTS and HSDPA, he says? RIM was right there, ready to include the latest gizmos in its flagship fleet of BlackBerrys.

'We are an R&D company at our

core. That's why it's called Research In Motion," says the 48-year-old former University of Waterloo electrical engineering student, who grew up in Windsor.

Losing Nortel's wireless technology? A bump in the road, but nothing unlike other hurdles RIM has handled in the past, he suggests.

If anything one of the company's biggest challenges is handling all the growth it has experienced over the past 12 years, he says. We should all have such problems. \$11 billion US in sales; 13,000 employees worldwide; a 55 per cent share of the U.S. smartphone market; the world's fastest growing company, according to Fortune magazine; its BlackBerry, one of the top 10 brands in North America, the favoured communications device of U.S. President Barack Obama.

But right out of the blocks RIM prepared for explosive growth, Lazaridis says. Very early on the company made sure it was up to speed in standards, software and tools such as here comes the alphabet soup again

— ISO-9000, SAP, CRM, CAD tools, he says, describing such things as quality management, business software, customer relationship management, computer-aided design and the like. JAE C. HONG, THE ASSOCIATED PRESS

Wrap that around a tightly woven workforce, all working from the same page in finance, engineering, manufacturing and distribution, and bingo, you have a formula to handle hyper-expansion, he says.

The strategy "allowed us to have the foundation and the discipline to sustain that kind of growth, which is where a lot of companies have a hard time." Think AOL and Nortel.

While RIM lit the fuse for its enormous growth in the business market, courting industry and government on a global scale while rivals napped, it has aggressively gone after the consumer market in recent years, starting with the BlackBerry Pearl in 2006.

The strategy has paid off to the point where consumers now make up more than half of its subscriber base. But courting the average Joe or Jane has forced the company to dramatically ramp up its marketing and branding campaigns. BlackBerry ads suddenly started popping up on TV, and in magazines, sports stadiums, even rock concerts. This year's worldwide U2 tour is sponsored by BlackBerry.

BlackBerry almost has 'cult following'

► RIM continued from page 56

According to Lazaridis, the campaign has been more successful than he ever imagined. Part of the reason, he believes, was the early popularity of the BlackBerry in the business market. The device had almost a "cult following," he says. It became cool to carry a Black-Berry. Possession guaranteed status around the office. "That exclusivity, being part of a club, really drove its cachet in the early days," he says.

When RIM made the move to the consumer market, it wasn't starting from scratch. The boss already had a BlackBerry. Now it was time for Joe Average to join the club.

"What's interesting is over ... the last three years, we saw BlackBerry as a brand jump out of almost obscurity into one of the top 10 brands in the United States. This year we were chosen as the top brand in Canada," he notes.

One strategy that works in RIM's favour, says tech industry analyst Carmi Levy, is that it "broadly covers the entire market" with a veritable bushel of BlackBerrys, available through a number of different wireless carriers. "If you want a Black-Berry, you don't have to jump carriers to get one."

Meanwhile, Apple, its chief rival in the North American smartphone market, has adopted a one-device strategy. There's only one iPhone and if you want it, there are fewer carriers to choose from, says Levy.

RIM doesn't have an industry icon like Steve Jobs of Apple at the helm, he says. It's almost like a race between the hare (Jobs) and the tortoise (RIM), "but the tortoise usually wins."

Though RIM is the "darling of the enterprise space" and its more loyal clients, it's going to have a tougher time in the consumer market, Levy says. "The smartphone market is notoriously brutal for having a shortterm memory," and new entrants are always chomping at the bit to get in, such as Google with its Android mobile operating system and Microsoft with its Windows Mobile, he says.

"RIM is going to have to put the pedal to the metal in R&D."

Some analysts have faulted the company for not having as many applications for its BlackBerrys as the iPhone, that its web browser isn't good enough, that RIM dropped the ball on the Nortel wireless sale, that it's weak in patent protection. Witness, the huge settlements it has had to pay out to companies like NTP and Visto over the past years. Sometimes being No. 1 makes you an easier target.

Yet Lazaridis brushes aside suggestions that RIM has a tough fight on its hands. "The market has always been competitive," he says with a laugh. "That's just the way things are. The good news is that the market is very large. There's a lot of runway still."

With 55 per cent of the American smartphone market, 21 per cent of the global market and 32 million subscribers worldwide, is RIM getting too big? Not for Lazaridis. The company thus far has captured only two per cent of the global "feature phone market," he says. These are phones with just one or two features such as calling or texting. And RIM has its sights firmly set on this space. "We're focused on ensuring we continue growing into that market."

Lazaridis also strongly believes, and he's been saying this at shareholder meetings for the past five years, that one day the entire market will consist of just smartphones, and their host of applications, including email, web surfing, voice calls, business planning, games and the like.

While he's thrilled with what RIM has accomplished over its 25 years in business, he also feels good about what the company has done for Waterloo.

"It's allowed a small little city that used to get overlooked to become the headquarters of one of the leaders in the wireless space and certainly the leader in smartphones in North America. That's pretty exciting for the local community. Certainly I'm very proud about what we've been able to achieve and the support we've enjoyed from the community."

RIM facts

Founded in 1984 by Mike Lazaridis, co-CEO, and Doug Fregin, now retired; Jim Balsillie, co-CEO joined the company in 1992

BlackBerry launched in 1999 BlackBerry models: Curve, Tour, Storm, Bold, Pearl, 8800 series 32 million BlackBerry users Revenue of \$3.53 billion US in the three months ended Aug. 29 Net income of \$475.6 million US in the three months ended Aug. 29. Stock listings on the Toronto Stock Exchange (TSX:RIM) and Nasdaq Stock Market (NASDAQ:RIMM) RIM went public on the Toronto Stock Exchange in October 1997 About 12,000 employees, including about 8.000 in Waterloo 24 buildings in Waterloo, including 17 in the Phillip Street/Columbia Street area

Corporate headquarters at 295 Phillip St.

BlackBerry available on more than 375 wireless networks in more than 140 countries

 RIM estimates that using a BlackBerry helps business people save
 47 minutes a day

Marketing moves: BlackBerry is the

sponsor of U2's current worldwide tour

Other accomplishments: Fortune magazine's fastest growing company of 2009



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MATHEW McCARTHY, RECORD STAFF

Ali Asaria launched Well.ca, an online store that sells health products.

Well.ca finds secret to online success

By Greg Mercer, Special to The Record

T's noon inside a downtown church basement and a group of 20-somethings are buzzing about to the sounds of rock 'n' roll blasting from a nearby laptop, filling boxes with shampoo, cough syrup and moisturizer.

The products they pack – from the latest must-have hand cream mentioned by Oprah to 30-packs of discontinued deodorant – will be shipped across the country.

This church basement is the busy warehouse of Well.ca, a Guelphbased online pharmacy that is growing so fast its address has changed four times in 14 months. In November, the company founded by former Research In Motion software engineer Ali Asaria will move once more – this time, he hopes, for good. Part of that expansion will be financed by \$1.1 million in private investment intended to help the company catch up with demand.

Hard to believe this is the same startup that only a few years ago consisted of four guys working out of a closet, wheeling shipments on a cart to the Canada Post office around the corner. Back then, the company offered about 100 items on its website. Today, Well.ca stocks more than 18,000 products, and its employees will soon number about 30.

Growing pains seem to be the only troubles bothering Asaria, whose shipments are doubling roughly every four months. He won't talk hard numbers, but says sales are now in the millions of dollars.

Well.ca doesn't sell prescription drugs, but it has had the freedom to grow quickly in a market not served by big Canadian pharmacy chains like Shoppers Drug Mart or Pharmasave, who don't sell products through their websites. Asaria, 28, says "discussions have already started" with some national chains interested in partnerships. Why partner? The big chains can't replicate the online shopping system that Well.ca has created. As popular as the free shipping and huge, everchanging inventory are, what makes Well.ca work so well is the unseen software programs that allow the business to ship all those products, he says. "The challenge for them is to build what we've built. It's not easy. This is much more about technology than retail. And those skills are hard to find in Canada."

But the company Asaria created three years ago also is flexible and personable. Every order gets a handwritten note from a staff member. In an office in the church basement, two young women scour through beauty magazines and blogs, making notes on new products to be added to inventory. Three others answer phones and take customers' requests.

Well.ca's young CEO takes a hands-on approach. He'll pack boxes with his staff, and personally delivers some orders that are within walking distance of the warehouse. "They have no idea who I am. They think I work for Canada Post," he says.

Asaria's roots are here too. He grew up helping in his father's pharmacy down the street, and used many of the contacts from that experience when he started Well.ca.

Although Asaria, still known as the creater of the BrickBreaker game for the BlackBerry, knew little about the health and beauty market when he started, he saw a wide open opportunity. He would go where bricks and mortar pharmacies couldn't and offer a discreet way for people to buy products that embarrassed them and would be open to adding new or hardto-get products that drugstores couldn't match.

In short, Asaria took a chance. "I simply grew tired of working for someone else," he says. "This started as an experiment, to see if we could do it. But I never expected it to grow into this."

Sentinelle in the fight against breast cancer

By John Schofield, Special to The Record

n the front lines of the war against cancer, Cameron Piron is holding what he believes could be a devastating weapon. During his graduate studies at the University of Toronto nine years ago, the president and co-founder of Toronto-based Sentinelle Medical Inc. became fascinated with the power of magnetic resonance imaging (MRI) to detect tiny tumours.

Working toward his master's degree in medical biophysics, he undertook research at Toronto's Sunnybrook Hospital into MRI technology that would improve breast cancer detection. When visiting doctors started asking about his work, Piron sensed he was on to something.

Shortly after graduating in 2001, he teamed up with two U of T colleagues, Gal Sela and Chris Luginbuhl, to develop the technology, and in 2004, they launched Sentinelle Medical. Today, it's attracting more attention than ever, and annual sales are skyrocketing. "I think this is how we're going to beat the disease," says Piron, who grew up in Waterloo. "And that's been the primary motivator for the whole company."

Sentinelle makes specially designed patient stretchers, magnetic resonance coils and imaging software that, combined, enable MRI machines to get closer to patient tissue and detect breast cancer tumours far earlier, more accurately and efficiently than mammograms. According to current statistics from the Canadian Cancer Society, one in nine women is expected to develop breast cancer during her lifetime and one in 28 will die of it.

Sentinelle's products are manufactured specifically for MRI machines made by General Electric, Toshiba and Siemens, which account for roughly 80 per cent of the market. Its \$200,000 Vanguard breast cancer system is currently used in more than 200 hospitals and clinics in Canada and the United States, and the company now has its sights set firmly on cracking the international market.

In partnership with Toronto's renowned Princess Margaret Hospital, Sentinelle is also developing MRI technology aimed at improving prostate cancer screening, the most common cancer in men.

"MRI for prostate cancer is growing unbelievably," says Piron, who attended Bluevale Collegiate Institute and graduated from the University of Waterloo's systems design engineering program in 1998. "The whole game has changed over the last year."

Sentinelle's technology could play an important role in fighting cancer at every stage of the disease, says Piron. In more advanced cases, he notes, MRI imaging is highly effective when used in tandem with socalled neoadjuvant chemotherapy,



IAN WILLMS, SPECIAL TO THE RECORD

Cameron Piron, co-founder of Sentinelle Medical, was intrigued by the power of MRI technology to detect tiny tumours while he was at University of Toronto.

which works to shrink the tumour before surgery takes place. MRI imaging can precisely monitor the tumour's changing size.

But Piron is convinced the real key to defeating cancer lies with early detection and yearly screening of those at higher risk. Research shows, he says, that if cancer cells are discovered at stage 0 – before they break out of their immediate area and into normal tissue – the patient's five- and 15-year survival rates are almost the same as those for a person who never had cancer. "This is how we should be managing the disease, with the emphasis on prevention," he says. "People should be screaming this from the rooftops."

It's taken some screaming – and a lot of hard work – to achieve Sentinelle's current success. Making medical devices is a risky business, says Piron: the development costs are high, the competitors are big, and the regulatory hoops are imposing. Still, he adds, the rewards of helping people in a practical way are extremely satisfying.

Piron knew what he was getting

into. His father, Ludwig Piron, a Sentinelle director, is the founding president of Waterloo-based Pinel Medical Inc., a manufacturer of patient restraint and handling systems. Working with his father during his student days inspired him to build his own medical devices firm, says Piron.

At Sentinelle, he made sure he surrounded himself with the right people. Partners Sela and Luginbuhl provided software and mechanical expertise, respectively, while Piron acted as the electronics and imaging guru. Don Plewes, Piron's U of T research supervisor, was a silent partner.

The company also employs many UW and Wilfrid Laurier University graduates and co-op students, including chief financial officer Ian Heynen and Paul Weber, vice-president of marketing and strategic business development. Weber formerly was director of the business accelerator program of Waterloo's Communitech technology association.

Sentinelle also operates a small manufacturing plant in Waterloo.

The firm's first major breakthrough came in 2007, when, after more than two years of trying, it reached a distribution deal with U.K.-based GE Healthcare, a division of industrial giant General Electric Co. Sentinelle's technology was originally designed for use with GE's MRI machines, and it needed a deal to reach a wider market more quickly. "Once you get the brand name and the leadership of a company like GE behind you," says Piron, "it really takes it to a new level."

Since then, the company's growth has gone into overdrive. Earlier this year, it signed deals with Toshiba and Siemens. Both companies once ignored Sentinelle's pitches, but came knocking on its door after the GE agreement was signed.

The privately held firm doesn't disclose revenues, but Piron says sales have tripled since last year. Both Sentinelle and Piron have earned a host of awards and distinctions, including this year's Canadian Advanced Technology Association's Award for Outstanding Product Achievement — Healthcare, and the Ontario Premier's 2008 Best Young Innovator award. "His innovative leadership in developing and commercializing the Sentinelle Vanguard system," the citation read, 'has changed the delivery of breast health care in North America."

With all the attention, the company is attracting top talent from around the world. Since last year, Sentinelle's workforce has doubled to about 130 people, from countries as diverse as Cameroon, Cuba and Sri Lanka. In June, Sentinelle moved into a new office building in the heart of downtown Toronto. "We just love it," says Piron. "We have a very young, very hardworking company, and a lot of people want to work downtown."

The high cost of MRI procedures remains a potential barrier to growth. Traditionally, MRI screening for breast cancer is about 10 times more expensive than mammography. By improving efficiency and accuracy, Sentinelle has cut that price gap in half, and wants to reduce the differential even more.

"Then we'll see this technology everywhere for breast-cancer management," says Piron. MRI's ability to catch cancer early could also save a huge amount of money. "If you catch it later, it can cost 10 times more," he argues. "This is the way we're going to save our health-care system."

With global success at hand and three industrial titans firmly in your corner, some high-tech entrepreneurs would be ready to cash out and collect the rewards of their hard work. Not Piron. He says Sentinelle has no intention of selling out or even going public any time soon.

"We want to create a long-lasting medical imaging company in Canada – there isn't one," he says. "So an exit is not an option."

UW firm uses plants to clean contamination



Bruce Greenberg, president of Waterloo Environmental Biotechnology Inc., looks at grasses the UW spinoff is testing for cleaning up contaminated soil.

Bob Burtt, Special to The Record

echnology developed at the University of Waterloo has the potential to save millions of dollars for oil and gas companies facing the prospect of cleaning up contaminated properties in Western Canada's oilpatch.

The technology, known as phytoremediation and developed after years of work in UW labs by the researchers behind startup Waterloo Environmental Biotechnology Inc., is rapidly gaining popularity among oil and gas companies because it is less expensive and more effective than methods used in the past.

"We run at about 20 to 50 per cent of the cost of other forms of remediation that usually involve trucking and landfilling," says Bruce Greenberg, Waterloo Environmental's president. "Trucking costs at remote sites become very expensive. Landfilling is expensive and creates a problem because it doesn't remediate anything. It just moves the problem."

Simply put, phytoremediation involves planting grasses and cereal crops, such as wheat, barley, rye and fescue, in the contaminated area. The plants encourage the activity of microbes in the soil, which in turn eat contaminants, says Greenberg, a professor in UW's biology department.

"The microbes that grow around the roots of the plants degrade the oil and they are found naturally in the soil. They basically eat them (hydrocarbons) and use them as a source of energy," he says. "Basically, they use them like they would use sugar or anything else."

Petroleum is degraded in the soil and isn't taken up in the plants so there is no concern about toxic or hazardous materials in the plants.

Phytoremediation, a term that combines the words phyto, which means plant, and remediation, can also be used to deal with salt buildup, a common problem in the oilpatch and on farms that rely on irrigation. The plants do absorb salt, but that isn't considered a hazardous product.

Waterloo Environmental, created in 2005 as a spinoff of the discoveries Greenberg and his team made in the labs at UW, says it is the only company using phytoremediation to clean contaminated sites on a commercial basis.

A technology known as bioremediation (phytoremediation without the use of plants) has been used, but it is less effective and more expensive than phytoremediation, says Greenberg. Without the plants to encourage microbial action, it is hard to get the process working effectively, he says.

Greenberg and his associates have been working on the project for 10 years in the lab, six years in the field and have been operating commercially for three years. Most of their work is in Saskatchewan, Alberta and the Northwest Territories.

The company, which still operates from the university, hasn't done any work in Ontario.

Greenberg says that's partly due to different regulations and economic realities. But he hopes that some day his company will become involved in cleaning up brownfield sites in Ontario.

In Alberta, oil and gas companies are required to remediate sites after oil has been pumped from the ground. The value of the oil and gas makes the remediation economically viable.

In Ontario, the cost of cleaning up some former industrial sites would exceed the value of the property. So those brownfield sites sit undeveloped. Research into adapting the phytoremediation technology for brownfield sites is continuing.

► Cleanup continued on page 61

PHILIP WALKER, RECORD STAFF

Facts

Launched at the University of Waterloo in 2005

Nine employees

Work is underway at five petroleum remediation projects at former oil well sites (two in Alberta and three in Saskatchewan)

Working on seven active sites to remove salt (tour research sites and three full-scale remediation projects) More than 200,000 former oil and gas sites in Western Canada require cleanups

1,500 to 2,000 sites are being remediated each year, but about 8,000 new wells are being drilled every year.

 Phytoremediation is gaining popularity, in part, because it is 20 to 50 per cent less expensive than other available technologies
 Most of the company's work has been in Western Canada but the technology has been used on small sites in China to remediate soil contaminated with herbicides and analytical services have been provided to clients in Ontario and New York. The company hopes to use the technology to deal with brownfield industrial sites

► Cleanup continued from page 60

One possible application would be at closed gas stations where the land is contaminated by hydrocarbons.

It takes three to five years to remediate heavily contaminated sites, and two or three years for more moderate levels of contamination.

So far, Waterloo Environmental has concentrated on old oil wells scattered across Western Canada and the Northwest Territories. It hasn't ventured into the tarsands. "We could do some work there but haven't yet," says Greenberg. "The problem is so enormous there that you're probably not going to solve it with phytoremediation."

With revenues of \$300,000 to \$500,000 a year, Waterloo Environmental is profitable and commercially viable. It expects to hit revenues of \$2 million within three to five years.

Early on, Greenberg formed a working relationship with Earth Master Environmental Strategies, an Alberta-based consulting firm. The arrangement provided a boost for both companies. "We collaborate on research and they do a lot of the site preparation work for us," Greenberg says.

Perry Gerwing, Earth Master's president, contacted Greenberg several years ago after learning of the work he was doing. "I brought him out to meet with a client of mine who is with a large oil and gas company."

The meeting went well and even-



Grasses are being used to clean up a former gas station site in Steinbach, Man.

CODITIEST DIMPERSITY OF MATERIEOU

tually a three-year research program to move the technology from the lab to the field was undertaken. The plan was proved to be commercially viable. "It's one thing to have it work in the lab but another in the field when you don't have controlled conditions, but rain, hail, drought and snow to contend with," says Gerwing.

Greenberg and his company have primarily focused on hydrocarbons at oil and gas sites, but salt contamination is another big problem.

Over the years, there have been many salt spills at oilfields, says Gerwing. In the past, firms flushed the salt from the surface of the soil. However, with new regulations in the last few years, the salt can no longer be flushed down below the ground's surface, but has to be removed. "So now, they are digging contaminated soil up and trucking it to landfills," Gerwing says.

Oilfields aren't the only sites with salt problems. Large farms that rely on irrigation routinely face the problem of salt building up in the soil.

Gerwing and Greenberg say the potential for phytoremediation is huge.

"There are in excess of 200,000 well sites in Western Canada and about 1,500 to 2,000 of them were being reclaimed each year," says Gerwing.

At that rate it would take 100 years to complete the work of cleaning up existing sites. The challenge appears even more daunting when you consider that 8,000 new wells are being drilled every year.

"We are not cleaning up as fast as we are disturbing the land," Gerwing says.

He says the decline in oil prices over the last year has caused companies to drastically cut budgets; combined with tight economic conditions, that has brought more attention to low cost remediation technologies such as phytoremediation.

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LUM DEV International, headquartered in Cambridge, UN is Canada's largest manufacturer of satellite equipment. With facilities in Canada, the U.S. and the United Kingdom, COM DEV supplies spaceflight hardware used in worldwide communications, earth observation and remote sensing.

COMMUNITECH

Phone: 519-888-9944 Fax: 519-888-7007 Email: info@communitech.ca Web: www.communitech.ca

Communited is the regional hub for the commercialization of innovation, creating economic prosperity by removing barriers to the creation and growth of technology companies. As an industry-led partnership, our goal is to create more successful global businesses for Ontario and for Canada. More than 500 organizations are part of the Communitech network.

CONESTOGA COLLEGE INSTITUTE OF TECHNOLOGY AND ADVANCED LEARNING

Address: 299 Doon Valley Drive, Kitchener, ON N2G 4M4 Phone: 519-748-5220 ext. 3656 Fax: 519-895-1097 (program and course information) Email: askme@conestogac.on.caWebsite: www.conestogac.on.ca

Conestoga College Institute of Technology and Advanced Learning is one of Canada's premier polytechnic institutes, with a comprehensive array of programs in health sciences, community services, engineering technology, information technology, business, skilled trades, media studies, professional studies and preparatory studies. Types of programs range from undergraduate certificates and diplomas to four-year degrees, postgraduate certificates and college-university partnerships.

For nine of the last ten years, Conestoga has rated as the overall #1 Ontario college on independently administered performance surveys done for the province's Ministry of Training, Colleges and Universities. For three consecutive years, Conestoga has led all Ontario colleges in graduate employment success.

Conestoga is also midwestern Ontario's largest source for part-time, career-related adult education courses and programs, as well as customized training services for business and industry.

The Conestage Language Institute offers programs and courses at various instructional levels to allow participants to acquire and enhance skills in English, for those who have another first language, or a number of foreign languages.

Conestoga's applied research office provides services to business and industry, health and community services, and educational partners with regard to research contracts and grants.

COREWORX

Address: 22 Frederick Street, Suite 800, Kitchener, ON N2H 6M6 Phone: 519-772-3181 Fax: 519-772-3182 Website: www.coreworxinc.com

Coreworx provides innovative technology and processes that enable companies involved in major capital projects to deliver on their business case by reducing risk and improving efficiencies.

The Coreworx solution enables engineering and construction contractors as well as owner-operators in the energy infrastructure and resource sectors to automate best practices and improve performance throughout the entire project lifecycle. Proven the world over, Coreworx services a customer portfolio of projects valued at over \$500 billion across more than 50 countries, on more than 400 capital projects with nearly 70,000 users.

Based in Kitchener with a staff of 75, Coreworx has offices in Houston, Calgary and Baton Rouge. Coreworx is a subsidiary of Acorn Energy, Inc. (NASDAQ: ACFN).

COVARITY

Address: 2300-30 Duke St. W., Kitchener, ON N2H 3W5 Phone: 519-749-9424 Fax: 519-749-8123 Website: www.covarity.com

Covarity is rapidly establishing itself as the benchmark provider of commercial loan management software solutions. Covarity's technology addresses labor-intensive and error-prone manual processes by enabling banks and credit unions to automatically gather, analyze and track borrower financial data. This web-based solution reduces the risk and effort associated with commercial lending and helps financial institutions deal with the increased regulation and shareholder pressure created by today's volatile

financial market. Covarity delivers increased portfolio performance and long term competitiveness to customers such as Royal Bank of Canada, HSBC Bank Canada, RBC Bank and Libro Financial Group.

Covarity is based in Kitchener, ON and is always on the lookout for top performers who bring talent and passion to their field of expertise. As a member of the Covarity team, you will help change the way financial institutions do business. You will be in control of your career, working in an environment where opportunities are abundant and making your mark is encouraged. Join Covarity as we continue to grow and innovate in new markets, achieve impressive customer wins and strengthen our market leadership.

For more information, please visit www.covarity.com.

CANADA'S TECHNOLOGY TRIANGLE INC

Address: 57 Erb Street West, 2nd Mezzanine, Waterloo, ON N2L 6C2 Phone: 519-747-2541 Toll Free: 866-233-5133 Fax: 519-576-4333 Email: info@techtriangle.com Website: www.techtriangle.com

Canada's Technology Triangle Inc is the not-for-profit, public-private regional economic development partnership marketing Waterloo Region and the cities of Cambridge, Kitchener and Waterloo to the world. Its mandate is to attract new businesses, investment and talent, while promoting regional economic growth.

The organization works closely with the Economic Development Departments of its partner municipalities, member-based business organizations and the four postsecondary educational institutions. The area known as Canada's Technology Triangle includes Waterloo Region - the cities of Cambridge, Kitchener and Waterloo and the townships of North Dumfries, Wellesley, Wilmot and Woolwich.

CTT offers a full range of services to assist firms and individuals to develop their business case for establishing a presence in the Waterloo Region. These complimentary and confidential services include detailed economic information, a welcome to local networks and introduction to professional service providers.

Known for its diversity, innovation, entrepreneurship and collaboration, the Waterloo Region has dynamic clusters of information and communications technology, advanced manufacturing, business and financial services and health and life sciences.

DALSA CORPORATION

Address: 605 McMurray Rd., Waterloo, ON N2V 2E9 Phone: 519-886-6000 Fax: 519-886-3972 Website: www.dalsa.com

DALSA is an international leader in high performance digital imaging and semiconductors with approximately 1000 employees world-wide. Established in 1980, the Company designs, develops, manufactures, and markets digital imaging products and solutions, in addition to providing semiconductor products and services. DALSA's core competencies are in specialized integrated circuit and electronics technology, software, and highly engineered semiconductor wafer processing. Products and services include image sensor components (CCD and CMOS); electronic digital cameras; vision processors; image processing software; and semiconductor wafer foundry services for use in MEMS, highvoltage semiconductors, image sensors and mixed-signal CMOS chips. DALSA is listed on the Toronto Stock Exchange under the symbol "DSA" and has its corporate offices in Waterloo, Ontario, Canada.

DELOITTE & TOUCHE LLP

Address: 4210 King Street East, Kitchener, ON N2P 2G5 Phone: 519-650-7600 Fax: 519-650-7601 Email: Jamie Barron - įbarron@deloitte.ca Or Rob Lamka - rlamka@deloitte.ca Or Jane Jantzi - įjantzi@deloitte.ca

Deloitte, one of Canada's leading professional service firms, provides a complete range of audit, tax, consulting and financial advisory services. With more than 7,700 people in 57 offices in Canada, Deloitte delivers comprehensive solutions drive by industry specific expertise. That's the Deloitte difference - a collaborative, cross-disciplinary approach offering the broadest possible perspective on today's increasingly complex business challenges.

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DYNAC Inc.

Address: 35 Centennial Road, Kitchener, Ontario, N2B 3E9 Phone: 519.571.3254 Fax: 519.576.4067 Contact: Lori Squires, Manager, Sales and Client Services Email: info@dynactools.ca Website: www.dynactools.ca

Dynac specializes in creating "CFO Intelligence".

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Whether your company is a SME or a full worldwide enterprise, DynacTools™ will lever any GL / ERP application from Simply Accounting to SAP providing full Budgeting, Forecasting, Consolidation and Financial Reporting – guaranteed!

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Would your organization lose productivity if Email or network access went down for an extended period of time?

If you answered yes to any of these questions, you could use FoxNet's assistance. Call us today!

GIFFEN LLP

Address: 50 Queen St. N., Suite 500, P.O. Box 2936, Kitchener, ON N2H 6M3 Phone: 519-578-4150 Email: dco@giffenlawyers.com

Website: www.giffenlawyers.com

Giffen LLP is an innovative, well-respected mid-sized law firm. Our clients range from large corporations and financial institutions to small businesses and individuals.

Our lawyers currently represent and have acted for many software, hardware and other technology businesses, from start-ups to mature companies. As a result, we have gained an understanding of the unique opportunities and challenges technology companies face, including short product development and commercialization cycles, proper clearance and protection of intellectual property rights, global distribution and competition, obtaining capital and human resources issues, to name but a few.

While Giffen LLP is one of the largest locally-based law firms in Waterloo Region, we also draw on a broad network of counsel in other jurisdictions and areas of specialization (including patent, copyright and trade-mark lawyers and securities law specialists) to help our clients achieve their goals. Contact Don Olson to find out more.

GOWLINGS

Address:	50 Queen Street North, Suite 1020,
	P.O. Box 2248, Kitchener, ON N2H 6M2
Phone:	519-576-6910
Email:	john.hiscock@gowlings.com, viona.duncan@gowlings.com
Website:	www.gowlings.com
Contacts:	John Hiscock – 519-575-7543, Viona Duncan – 519-575-7516
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With a long history of advising technology companies and technology users in Canada's Technology Triangle, our Waterloo Region Technology Law Group is well-positioned to provide sophisticated, practical and timely advice. Gowlings is one of Canada's largest business and technology law firms with over 700 professionals. Drawing on the strengths of our corporate, commericial, intellectual property, securities, litigation and government relations practice groups, we advise our technology clients on mergers

and acquisitions; debt and equity financing; licensing, distribution and strategic alliance arrangements; intellectual property protection; taxation; employment; immigration; leasing; commercial litigation; privacy and regulatory matters. Our clients range from start-ups to established international companies and are involved in all types of technology including software, advanced manufacturing, biotech, Internet, wireless, semi-conductors and networking.

"The Right People. Right Here."

HEFFNER LEXUS

Address: 3131 King Street East, Kitchener N2A 1B1 Phone: (519) 748-9668 Fax: (519) 895-9147 Web: www.heffner.ca

The Heffner automotive story began on September 1, 1960, when Mr. John Heffner Sr. opened shop on a small lot on Breithaupt Street in Kitchener. After a few years, the business moved to King Street East, across from Rockway Gardens, where it was located for 25 years.

Heffner Lexus is family owned and operated, which means the Heffner's are directly involved in day-to-day operations and know many of their customers on a first name basis. Heffner Lexus is committed to the promise of something better and that's exactly why they've been satisfying customers for over 49 years.

In addition to the New Toyota and Used Vehicle showrooms, the dealership includes an extensive Parts and Service Department, a state-of-the-art Body Shop, and a full-service Auto Cleaning and Detailing Centre. As well, leasing can be handled on the premises.

Come visit Heffner Lexus today and see why at Heffner's "You're part of the family" .

JOMAR SOFTCORP INTERNATIONAL

Address:1760 Bishop Street, Cambridge, ON, N1T 1J5Phone:519-740-0510Fax: 519-740-9812Email:sales @jomarsoftcorp.comWebsite: www.jomarsoftcorp.com

JOMAR SOFTCORP INTERNATIONAL with its head office located in Cambridge, Ontario, is a single-source supplier of web-based Enterprise Software Solutions that provide real-time information with on-line access to a central server for a mobile sales force, preventive maintenance crew and field services for utility, construction or service companies. Platform independent software components are selected and configured for software solutions that provide the scope, functionality and scaleability for small to midsize companies and multinational corporations.

JOMAR's software development, based on current multi-platform technology, is driven by our customers to meet the changes in their products or business processes and to maintain their competitive position in the global market. Our customers have a choice of platform that allows for the consolidation of their IT infrastructure, the reduction of their IT ownership costs and for the protection of their IT investment.

The Canadian and U.S. professional staff of JOMAR has the technology skills-set and business experience to support our customers' IT infrastructure and their global business operations.

JOMAR's Canadian and U.S. companies are wholly owned and privately held (by the same owners) since 1982. Our owners continue to maintain a strategy of investing in advanced software development for the benefit of our customers in the U.S.A., Canada and off-shore locations.

KPMG LLP

Address: 115 King Street South, 2nd Floor, Waterloo, ON N2J 5A3 Phone: 519-747-8800 Fax: 519-747-8830 Email: btoner@kpmg.ca or fboutzis@kpmg.ca Website: www.kpmg.ca Contact: Bruce Toner, Technology Practice Leader, 519-747-8266 or Frank Boutzis, Regional Manager Partner, 519-747-8258

Our technology practice helps companies deal with the challenges that change brings, both in terms of how their existing business is impacted and the way they wish to shape their operations in the future. KPMG provides this help by applying the skill and ingenuity of our people, the understanding and insights that come from our knowledge of the industries, and the dedication and commitment shared by everyone in our technology practice. Services we provide include Audit; Canadian, US and Cross-Border Tax; Transfer Pricing; Scientific Research and Experimental Development; Digital Media Tax Credits; Indirect Tax; Bill 198 and SOx Advisory Services; Corporate Finance; Mergers & Acquisitions; Risk Management; Operations Improvement and Forensic Accounting.

KPMG LLP, a Canadian limited liability partnership established under the laws of Ontario, is the Canadian member firm affiliated with KPMG International, a global network of professional firms providing Audit, Tax, and Advisory services. Member firms operate in 144 countries and have more than 137,000 professionals working around the world.



KWSQA (KITCHENER-WATERLOO SOFTWARE QUALITY ASSOCIATION)

Address: 55 Northfield Drive East, Suite #188, Waterloo, ON N2K 3T6 Email: info@kwsqa.org Website: www.kwsqa.org

Started in 1997, we are a community of software professionals from firms in the Kitchener-Waterloo region (Ontario, Canada). We are interested in the investigation and discussion of software quality topics, with a special emphasis on providing software professionals with a means of sharing their experiences. We also encourage the membership and participation of students entering the field of software development, software quality and software engineering; as well as researchers interested in the advancement of software quality.

MARK NUNES CLOTHIER

Address: 181 Park St., Waterloo, ON N2L 1Y7 Email: marknunes@sympatico.ca Phone: 519-741-9993 Website: www.marknunes.ca

Mark Nunes offers you over 20 years of tailoring and fashion experience. Whether custom making a suit or shirt or helping refresh our wardrobe.

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Marsland Centre Limited develops, owns, and manages a portfolio of commercial and industrial real estate primarily located in Waterloo, Ontario. We are a high-value-added space provider concentrating on custom turnkey office and light manufacturing space for knowledge-based industries, all of which is professionally space-planned and built to suit. We offer our clients in-house contracting and construction management services, and a network of proven, cost-effective, and technically knowledgeable subtrades and consultants.

More info on our properties and current availability is available on our website.

MCCARTER GRESPAN BEYNON WEIR LLP

Address: 675 Riverbend Drive, Kitchener, ON N2K 3S3 Phone: 519-571-8800 Fax: 519-742-1841 Email: tbeynon@mgbwlaw.com Website: www.mgbwlaw.com Contact: Tom Beynon, Paul Grespan, Michael McCarter, John Weir and Mike Koppeser

At MGBW, our focus is on helping our clients achieve their business objectives.

We understand that business is about risks and always strive to provide practical business-oriented legal advice in managing and overcoming those risks.

From its founding, MGBW has been designed to be a "boutique" firm -- one that rejects a department store approach and instead concentrates on business law and providing pragmatic solutions for a business-centered client base.

This focus has enabled us to establish a depth of expertise in distinct areas of law which is invaluable in dealing with increasingly complex business and legal issues.

The wealth of experience we've developed enables us to go beyond providing standard legal services to becoming a valued business resource for our clients.

XCCEEI/MEEI AT MCMASTER UNIVERSITY

Address: 1280 Main Street West, ETB-511, Hamilton, Ontario, L&S OA3 Phone: 905-525-9140 ext. 26566 Fax: 905-528-7901 Email: innovate@mcmaster.ca Website: businessinnovation.ca

The Xerox Centre for Engineering Entrepreneurship and Innovation at McMaster University was created to develop and administer the Master of Engineering Entrepreneurship and Innovation (MEEI) degree program. The primary goal of the program is to create a flow of engineering and science entrepreneurs capable of creating wealth from forefront disruptive technology. XCEEi's mission is to:

anapping reamongy, Accer similation is to. "Help individuals and organizations develop their ideas into successful new products or services;

*Provide engineers with the opportunity to hone their entrepreneurial skills;

*Provide the skills and knowledge necessary to transform technical expertise into commercial success;

*Promote the commercialization of technology-based innovation in Canada and around the world.

XCEEi brings together the experience, opportunity and resources necessary for aspiring entrepreneurs to become business catalysts.

Address: 580 Weber Street North, Waterloo, Ontario N2J 4G5 Phone: 519-884-1710 Fax: 519-884-0610 Website: www.ncr.com

NCR Corporation is a global technology company leading how the world connects, interacts and transacts with business. NCR's assisted- and self-service solutions and comprehensive support services address the needs of retail, financial, travel, healthcare, hospitality, entertainment, gaming and public sector organizations in Canada and in more than 100 countries around the world. NCR (NYSE: NCR) is headquartered in Dayton, Ohio and its Payment Solutions organization is based in Waterloo, Ontario.

Established in 1972 in Waterloo, NCR Payment Solutions is an industry leader in the research, design and development of innovative technology for financial institutions. For more than three decades, NCR's teams of designers and engineers have been developing imaging solutions that digitally capture and process paper-based transactions like cheques. Today, NCR's Waterloo-based teams are exploring new ways to leverage their experience and expertise in payment solutions, developing image-based technologies for financial transactions in industries beyond banking.

NCR's Waterloo-designed technologies have earned more than 225 patents, and the Payment Solutions organization is a destination of choice for many university co-op students and new graduates looking to build a rewarding career in the field of software

ON SEMICONDUCTOR

Address: 200-611 Kumpf Drive, Waterloo ON N2V 1K8 Phone: 519.884.9696 Fax: 519.884.0228 Web: www.onsemi.com

ON Semiconductor is a preferred supplier of high performance, energy efficient silicon solutions to customers in the power supply, automotive, communication, computer, digital and consumer, medical, industrial, and military/aerospace markets. The NASDAQ-listed company (ONNN) employs over 13,000 people worldwide, while the Waterloo office is home to half of the approximately 100 employees in the Medical Division. The team brings silicon solutions to life by developing and marketing highly-integrated, ultra-low-power systems for implantable devices such as pacemakers and neurostimulators as well as consumer medical devices such as hearing aids and glucose meters. Drawing on its expertise in digital signal processing technology, the team also includes a consumer/industrial audio group focused on mobile phones, laptops and touch screen applications.

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PRICEWATERHOUSECOOPERS LLP

Address: 95 King Street South, Suite 201, Waterloo, ON N2J 5A2 Phone: 519-570-5700 Fax: 519-570-5730 Contact: Paul Hendrikse, SWO Technology Practice Leader Website: www.pwc.com/ca

The firms of the PricewaterhouseCoopers global network (www.pwc.com) provide industry-focused assurance, tax and advisory services to build public trust and enhance value for clients and their stakeholders. More than 154,000 people in 153 countries across our network share their thinking, experience and solutions to develop fresh perspectives and practical advice. In Canada, PricewaterhouseCoopers LLP (www.pwc. com/ca) and its related entities have more than 5,200 partners and staff in offices across the country.

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Website: www.packetworks.net

PacketWorks provides powerful, reliable Enterprise Data Networking and Internet Protocol layer 3 & layer 2 services to boost the productivity of our customers. Based in Waterloo, PacketWorks is a premier provider of the design, build & management of Wide Area Networks (WANs).

Post Rank

Address:	505-180 King St. S., Waterloo, ON
Phone:	519-514-0064 x224
Contact:	Melanie Baker, Community Manager
Email:	melanie@postrank.com
Twitter:	@postrank
Website:	www.postrank.com

PostRank is at the leading edge of providing data and analysis to enable publishers and the people interested in them to Find and Read What Matters.

Based in Waterloo, Ontario, Canada, PostRank develops services that capture and make sense of social engagement data on the web. The company launched its first filtering and ranking service in July 2007 and now tracks the more than 50 million social engagement events each day that are associated with the millions of stories published by independent authors and mainstream media.

PRIMAL FUSION

Address: 7-258 King St, N. Waterloo, ON Phone: 519-741-1243 Contacts: Denise Williams Email: www.primalfusion.com

Imagine what the Internet would be like if computers could read your mind! Primal Fusion is building that future today, with a new online experience called "thought networking". Primal Fusion helps you express abstract ideas quickly and easily in machine-readable forms called thought networks. Software assistants then act upon your thoughts, automating many of the time-consuming activities you perform online.

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Thought networking brings the power of thinking online, helping everyone get more from the Web. Try it today at www.primalfusion.com.

RAYTHEON CANADA LTD.

Address: 400 Philip St., Waterloo, ON N2L 6R7 Phone: 519-885-0110 Fax: 519-885-0860 Email: ute_psutka@raytheon.com Website: www.raytheon.ca/jobs Contacts: Ute Psutka

At Raytheon, you will take on projects that are positively impacting our world and join 80,000 people worldwide working to keep the skies safe. Our Waterloo facility, located in Canada's Technology Triangle, is a registered Centre of Excellence in the field of solid-state air traffic control, primary surveillance radars and high frequency surface wave radar technology. Our technology will shape tomorrow by making lives better, easier and safer.

Raytheon's commitment to its employees ensures you'll always be given the resources,

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REGION OF WATERLOO INTERNATIONAL AIRPORT (YKF)

Address: 1-4881 Fountain St. N., Breslau, ON NOB 1MO Phone: 519-648-2256 or toll free 1-866-648-2256 Email: airport@waterloo.region.on.ca Website: www.waterlooairport.ca Contacts: Chris Wood, Airport General Manager Sandra McAuley, Marketing & Communications Supervisor

The Region of Waterloo International Airport (YKF) is a full service facility with modern amenities which is owned and operated by the Region of Waterloo. Year-round daily scheduled service is available with: Bearskin Airlines, offering daily service to Ottawa with four flights each week day, and one flight daily on weekends; and WestJet, offering daily service to Calgary with connections to Vancouver, Victoria, Edmonton, Abbottsford, Kelowna, Regina and Saskatoon. Seasonal sun vacation charter service is available to Punta Cana, Dominican Republic weekly with Sunwing Vacations from December through April.

Take the hassle out of your next trip and choose the local alternative! The Region of Waterloo International Airport is easy to navigate with modern amenities including free high-speed wireless internet, complimentary baggage carts and departure lounge food concession operated by Edeilweiss. AVIS, National and Hertz car rental are available on-site. Pay and Display Parking rates \$1.00 Hourly / \$10.00 Daily / \$40.00 Weekly. No traffic jams or lost vehicles, just convenient and friendly air service. For more information please contact your travel agent, visit www.waterlooairport.ca or contact Airport Administration at 519-648-2256 or toll free at 1-866-648-2246.

RIM

Address:	295 Philip Street,	Waterloo, ON N2L 3	3W8
Phone:	519-888-7465	Fax: 519-888	8-7884
Email:	info@rim.com	Website:	www.rim.com

Research In Motion is a leading designer, maufacturer and marketer of innovative wireless solutions for the worldwide mobile communications market. Through the development of integrated hardware, software and services that support multiple wireless network standards, RIM provides platforms and solutions for seamless access to time-sensitive information including email, phone, SMS messaging, Internet and intranet-based applications. RIM's portfolio of award-winning products, services and embedded technologies are used by thousands of organizations around the world and include the BlackBerry[®] wireless platform, the RIM Wireless Handheld[™] product line, software development tools, radio-modems and software/hardware licensing agreements. For more information, visit www.rim.com or www.blackberry.com.

ROBERTSON SIMMONS ARCHITECTS INC.

Address: 130 Weber St. W., Suite 100, Kitchener Phone: 519-745-4754 Email: admin@rsarchitects.ca Website: www.rsarchitechts.ca

Robertson Simmons architects inc. has a corporate history extending back to 1946. The office has distinguished itself as a regional leader in the design and delivery of institutional, educational and corporate facilities and sustainable design.

RSai provides Architectural, Urban Design and Interior Design services, from preliminary studies to design, working drawings and contract administration. We have experience with a range of contract procurement scenarios including lump sum, design-build, construction management and Public-Private Partnerships (P3). With offices in Kitchener and Toronto, Robertson Simmons architects inc. currently employs over 25 staff including seven licensed architects, intern architects, interior designers and technologists.

Robertson Simmons architects inc. has extensive experience with energy efficient projects. École secondaire Jeunes sans frontières opened in April 2008 and is the first LEED Silver certified secondary school in Ontario. Two new secondary schools, École secondaire de Barrie and École secondaire du Windsor, are targeted for LEED Gold certification. The Enermodal Engineering Offices, scheduled for completion in 2009, will be the first LEED Platinum building in the Waterloo Region. We are currently working on seven active LEED candidate projects:





ST. JACOBS COUNTRY INN INC.

50 Benjamin Road East, Waterloo, ON N2V 2J9 Address: 519-884-9295 Fax: 519-884-2532 Phone: sjci@golden.net Email:

Website: www.stjacobscountryinns.com

As a leading accommodations provider in Waterloo, we operate two hotels to pamper you when you need to stay away from home.

- Best Western St. Jacobs Country Inn, located on Benjamin Rd. in the St. Jacobs Country market district is convenient to the universities and high-tech business community. Features: meeting facilities, business amenities including high-speed internet, local shuttle service, complimentary hot continental breakfast and licensed lounge (evenings) & mini refrigerators and microwaves in all rooms.
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Address: 408 Albert Street, Waterloo, ON N2L 3V3 Phone: 519-880-2600 Fax:519-884-9892 Email: inforequests@sandvine.com Website: www.sandvine.com

Sandvine is focused on protecting and improving the quality of experience on the Internet. Our award-winning network solutions help DSL, FTTx, cable, fixed wireless and mobile operators better understand network traffic, increase customer satisfaction, mitigate the proliferation of malicious traffic, manage network congestion, and deliver QoS-prioritized multimedia services.

With customers in more than 70 countries serving over a hundred million broadband and wireless subscribers, Sandvine is enhancing the Internet experience worldwide.

SYBASE IANYWHERE

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Sybase traces its Waterloo roots to one of the University of Waterloo's first spin-off companies. Today, its iAnywhere subsidiary holds worldwide market leadership positions in mobile and embedded databases, mobile management and security, mobile middleware and synchronization, and Bluetooth® and infrared protocol technologies. Tens of millions of mobile devices and over 20,000 customers and partners rely on the company's "Always Available" technologies, including SQL Anywhere and its Information Anywhere suite.

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TECH CAPITAL PARTNERS

Address: 8 Erb Street West, Waterloo, ON N2L 1S7 519-883-8255 Fax: 519-883-1265 Phone: Fmail info@techcapital.com Website: www.techcapital.com Portfolio Careers: http://www.techcapital.com/careers.asp http://blog.techcapital.com/ Blog:

Based in Waterloo, Ontario, Tech Capital Partners manages \$95 million in venture capital. Tech Capital provides seed financing, hands-on leadership, market strategy and operational guidance to early-stage technology companies that have the potential to compete at a global level. Since its inception in 2001, Tech Capital has invested in some of Canada's most innovative high-tech companies, including: AideRSS (www. aiderss.com), Covarity (www.covarity.com), ecobee (www.avaning.com), LiveHive Systems (www.livehivesystems.com), Metranome (www.metranome.net), Overlay. TV (www.overlay.tv), Sandvine (TSX:SVC; AIM:SAND) (www.sandvine.com), Sidense (www.sidense.com), Sirific Wireless (Acquired by Icera - www.sirific.com), Coreworx (Acquired by Acorn Energy - www.coreworxinc.com) and VideoLocus (Acquired by LSI Logic). An active advocate of innovation and entrepreneurialism, Tech Capital maintains a strong presence in the technology business community. For more information, please visit http://www.techcapital.com.



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TurboSonic Technologies Inc. (publicly traded on the OTCBB market under the symbol TSTA) is a global provider of clean air technologies helping companies in the Cement, Ethanol & Biofuels, Metals & Mining, Petrochemical, Power Generation, Pulp & Paper, Waste Incineration, and Wood Products industries meet the strictest emissions regulations, improve performance and reduce operating costs.

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About Unitron

Unitron is a global innovator of technologically advanced hearing instruments. We care deeply about people with hearing loss and work closely with hearing healthcare professionals to make advanced, purpose-driven solutions available to everyone. Headquartered in Kitchener, Ontario, Canada, Unitron, a member of the Sonova Group, meets the needs of customers through 16 international offices and through distributors in a further 53 countries.

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UNIVERSITY OF WATERLOO

Address: 200 University Avenue West, Waterloo, Ontario N2L 3G1 519-888-4567 Telephone: Main website: www.uwaterloo.ca

In just half a century, the University of Waterloo, located at the heart of Canada's Technology Triangle, has become one of Canada's leading comprehensive universities with 28.000 full- and part-time students in underaraduate and araduate programs.

In the decade ahead, the university is committed to building a better future for Canada and the world by championing innovation and collaboration to create solutions relevant to the needs of today and tomorrow. Waterloo, as home to the world's largest postsecondary co-operative education program, embraces its connections to its community and the world, and encourages enterprising partnerships in learning, research, and discovery.

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WILDEBOER DELLELCE LLP

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"Founded in 1993, our firm has grown into one of the most dynamic and entrepreneurial boutique laws firms in Waterloo Region concentrating on corporate/commercial,



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WILFRID LAURIER UNIVERSITY

WilfridLaurierUniversity, SchoolofBusiness & EconomicsAddress:75University AvenueWest,Waterloo,ON N2L 3C5Phone:519-884-0710ext. 2948Fax: 519-746-5733Email:sbeinfo@wlu.caWebsite:www.wlu.ca/sbe

Laurier's School of Business & Economics (SBE) is one of Canada's leading and largest business schools. The SBE has demonstrated an exceptional ability to connect technology with the world of business through creating innovative programs and developing strategic partnerships.

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Wilfrid Laurier University, MBA Program Address: 75 University Avenue West, Waterloo, ON N2L 3C5 Phone: 519-884-0710 ext. 6220 Fax: 519-884-6016

Email: mferraro@wlu.ca Website: www.wlu.ca/mba

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School of Business & Economics, PhD in Management Website: www.wlu.ca/sbe/phd Phone: 519.884.0710 ext 2745

The PhD program accepts only a select cohort of qualified students for the three fields of concentration: Financial Economics (FE); Operations and Supply Chain Management (OSCM); Organizational Behaviour/Human Resource Management (OB/HRM). The program consists of two years of residency courses including; research methods, statistics, econometrics, quantitative analysis, and field specific seminars. In the third and fourth years, students conduct research and write the dissertation. The opportunity to partner with several prestigious research centres within the School provides a unique environment to learn in. Financial support is available to qualified students.

School of Business & Economics, Master of Finance Website: www.wlu.ca/sbe/phd Phone: 519.884.0710 ext 2745

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School of Business & Economics, MSc in Management

Website: www.wlu.ca/sbe/phd Phone: 519.884.0710 ext 2745

The MSc in Management program offers two fields of concentration: Organizational Behaviour & Human Resource Management (OB/HRM), and Supply Chain Management (SCM). OB/HRM takes a strategic perspective on micro and macro processes in management, included are courses in human resource management, organizational behaviour and organizational theory. Supply Chain Management is a multi-disciplinary program focusing on; SCM, operations management, management of innovation and technology. Laurier is one of the first universities to offer SCM education at Bachelor, Masters, and PhD levels with one of the largest group of professors in SCM in Canada.



Rock and roller supports young entrepreneurs

By Charlotte Prong Parkhill, Special to The Record

e's already been at work for more than six hours on a hot summer day, but his shirt is still impeccably pressed and his cufflinks are firmly in place. Only an open collar and the temporarily silent Bose speakers on the desk in his downtown Waterloo office hint at his rock and roll past.

Meet Rick Endrulat. He's the president of Virtual Causeway, a company that provides marketing, sales and market research services to technology companies. He's also an indefatigable mentor for young entrepreneurs in the region.

"Able to multi-task" would be an understatement on Endrulat's curriculum vitae.

A Kitchener native and graduate of Wilfrid Laurier University, Endrulat spent eight years as a member of the inside sales team at Sybase's iAnywhere Solutions business unit in Waterloo.

He returned to Laurier to earn an MBA part-time while working at Sybase, and then started his own company, which has grown quickly enough to land on the Profit 100 fastest-growth list three times.

But if you were a denizen of the local bars during the nineties, you might remember him playing guitar in rock bands Snap in Our Souls or Sweetfall. It was an exercise in marketing on a micro scale.

"I played guitar all my life," Endrulat says.

"Whether I knew it or not, I've always been marketing myself– trying to get gigs is marketing yourself, as a band. I've always been interested in that aspect of it."

Though he still plays regularly, these days he's more likely to have an audience of one – his wife Cynthia Sundberg.

In a testament to the pains the couple takes to separate career and personal life, Sundberg is first introduced as the director of corporate development before it is revealed that they also happen to be married.

Virtual Causeway was named one of Canada's 50 hottest emerging growth companies in 2005, and showed up on the Canadian Business Profit 100 list in 2007 and 2008.

Earning a place on Profit's list of fast-growing companies, and staying there, was an early goal for the young entrepreneur when he started the company in 2001, at the age of 30.

"I try to set short-term and longer term goals for myself as well as the company," Endrulat says.

"I think setting some kind of bar that you can reach or surpass keeps everybody on the same page. I set some pretty aggressive goals and rally everybody around those goals."

A rough tally on a whiteboard outside his office reveals evidence of this tenet – the numbers for one team from among his 40 employees show it



MATHEW McCARTHY, RECORD STAFF

Rick Endrulat, president and chief executive of Virtual Causeway, a provider of marketing services to high-tech companies, gets a charge out of mentoring young high-tech entrepreneurs.

has already surpassed its weekly target by 50 per cent, and it's only Thursday.

So what exactly does Virtual Causeway do?

"We help technology companies market their products, and we help them sell their products," Endrulat says. "I always liked the image of a causeway, helping our clients communicate to their next potential prospect – bridging that gap and helping them find their next client. We're an extension of their team, a virtual extension of their team."

The company adds or shifts services such as marketing automation, sales automation and technologybased marketing campaigns, depending on the needs of its clients.

Endrulat won the Laurier MBA Alumni Award for Outstanding Innovation in 2008, based in part on his high-growth, multi-layered business approach.

He was also cited for his ongoing support of up-and-coming tycoons in the region. He's a member of the Canadian

Youth Business Foundation loan committee, which looks at business plans and approves grants and loans for fledgling businesses. He works with the Schlegel Centre for Entrepreneurship at Laurier, acting as a mentor and coach for undergraduates who are starting companies or ventures. He speaks about the basics of starting a business to classes at the university, and judges business plan competitions.

In December of 2008, Endrulat met Laurier grad Mike Morrice, who was just gearing up his Sustainable Waterloo initiative. Modelled after Sustainable Silicon Valley, the non-profit organization helps technology companies reduce their carbon footprint.

Endrulat quickly became intrigued by the project, and Virtual Causeway became one of the founding partners Morrice was looking for.

It was a good fit for Endrulat, whose clients are in the tech sector. But one also gets the feeling he likes to be on the inside of new initiatives, mixing it up with recent MBA students, feeding off their energy while helping them realize their dreams.

Endrulat took his involvement with Sustainable Waterloo one step further and offered to serve on the board of directors.

"Rick could have just come in with some funding and said, 'Good luck.' But he jumped on the board and provided some expertise, offered his time to help with support," Morrice says.

"There's something very special about Waterloo in supporting entrepreneurship and supporting new initiatives. I think Rick is symbolic of that, and a really key part of it."

When Endrulat offered to sublet some office space to Sustainable Waterloo, the entire Virtual Causeway team became its support system, offering everything from photocopying to IT services to marketing. Morrice seeks advice from his biggest booster when the two men meet for breakfast once a month.

Endrulat does not go out of his way to promote the volunteer work he does, and points out that he also gains from the experience, networking with people who could be potential clients or employees in the future.

But he also remembers his early days as a business owner, not so long ago, when advice from a mentor could have helped him shape a more realistic initial growth plan, and surmount the obstacle of attempting to borrow money from Canadian banks.

"I just want to give back, I guess. It sounds cheesy, but ..." his words trail off with a shrug of embarrassment.

"One thing for Rick is his general congeniality," Sundberg says. "He is just able to get along well with anyone, whether he's dealing with the toughest client ... or if it's a person giving him accolades, he's just very humble and he has a lot of humility."

Endrulat has traded in late nights on the stage for early mornings in the office, where he often arrives a couple of hours before anyone else, so he can get some work done before the hubbub of the day.

But his inner rock star can't resist blasting the White Stripes or Big Sugar on his office stereo.

Vigor Clean Tech sees bright future in wind

By Alanna Petroff, Special to The Record

early two years of negotiations, meetings and testing is finally coming together for Vigor Clean Tech.

Final stage testing is being conducted on Vigor's environmentally friendly wind and water turbines, and contracts for pilot projects with various Ontario municipalities should be inked shortly.

"Our intent is to get the turbines up this fall so we can test our turbines in the winter elements. So we're pushing as quickly as possible," says Jerry Enns, vice-president of business development for the Kitchener-based distributor of green energy products.

The company's unusual wind turbine looks something like a 20-foot tall egg beater, which spins like a carousel in the wind. The long blades are bent at certain key angles to take advantage of wind coming from different directions.

There are two different kinds of water turbines. The first is designed to operate in an open river and looks similar to the wind turbine. The second is designed to fit inside water pipes, requiring the PowerPipe turbine to be shaped like a compact ball of blades that spins when water passes through.

Although the company's three partners initially focused on wind and water power, of late they are putting more emphasis on solar power. Dale Brubacher-Cressman, the company's president, notes that it is much easier to find suitable sites for solar power installations than for wind and water turbines.

"It is looking like solar may be a faster way of getting started," he says. "Wind and water also have longer approval processes."

And many of the people the company talks to about wind and water power also are interested in solar power. "When you talk to them about wind and water, without fail they ask: 'Do you do solar?' so the market demand clearly is there."

Vigor's product line caters to clients, such as municipalities and small businesses, that are looking to get involved with green power, but on a small scale, says Brubacher-Cressman. "A lot of people, when you talk to them, they talk about major wind farms or mega hydro projects. Even those people looking at solar are looking at big solar farms. There are relatively fewer companies offering smaller scale projects, especially wind and water."

Brubacher-Cressman says he was excited to join the Vigor team when he discovered that the company would be catering to this underserved niche market. After a 17-year stint as an engineer at Research In Motion, he says he was eager to pursue a new challenge where he could grow a business.

The company took advantage of



Dale Brubacher-Cressman, president of Vigor Clean Tech, stands in front of a 10-kilowatt solar tracking system near Innerkip that his company is selling.

Enns' contacts to open doors in the municipal sector. He previously worked in management roles for several area municipalities, including the City of Guelph and Wilmot Township.

Vigor currently is in talks with the cities of Kitchener and Guelph, and the Region of Waterloo and County of Wellington to begin pilot projects within the next few months, says Enns. The Wellington County District School Board also has entered talks with the company.

Small anemometers have been installed to test wind speed at various sites to locate the most suitable locations for turbines.

While Vigor is still working out a price, a typical wind turbine with installation is expected to cost no more than \$40,000, says Brian Unrau, the company's vice-president of finance. "We haven't finalized numbers. We're working with the number of \$40,000, but we know that we'll be able to come in under that. So an upper limit would be \$40,000."

"The only way this business can be successful is if this technology is cost-efficient," adds Brubacher-Cressman.

While the company is working hard to keep its costs down, the partners note that it helps that due to various government incentives Ontario is considered to be one of the most progressive clean technology jurisdictions in North America.

Vigor has already secured a funding commitment from Kitchener, through the city's Local Environmental Action Fund. The money is helping to pay for the testing, purchase and installation of the new wind turbines. It also is pursuing other applications at the municipal and provincial level, and has applied to the Green Municipal Fund, run by the Federation of Canadian Municipalities. The company also plans to apply for funding from Ontario's Innovation Demonstration Fund, which is run by the Ministry of Research and Innovation.

The company also will show customers how to take advantage of the Feed-in Tariff Program, which is part of Ontario's new Green Energy and Green Economy Act. The program will allow them to sell renewable energy, such as solar, wind and water generated power, into the electrical grid at a premium.

Vigor also plans to establish its own power generation sites to take advantage of the Feed-In-Tariff program. They include one at Boyle Marina on Manitoulin Island, where Vigor would like to install both wind and water turbines. The idea is for the site to serve as a showcase for Vigor's products, says Brubacher-Cressman. It also would generate capital for the company through the Feed-In-Tariff program, he says.

Pat Boyle, owner of the marina, has an ownership stake in Vigor. He invested in the company after hearing his nephew, Enns, talk about the company. "I've known Jerry all his life and I know the potential there. Nothing's a sure thing, but it's close to a sure thing," says Boyle.

Currently, Vigor's prototype turbines are designed and produced by Vigor's sister company, Lucid Energy Technologies in Goshen, Ind. Vigor was established to be a distributor of Lucid's turbines, but its partners ended up buying half of the U.S.-based business. "We liked the technology so much, we bought the company. Or half of it anyway," says Brubacher-Cressman.

Tim Braun, Vigor's founder and former president, was installed as the new president of Lucid.

Vigor and Lucid continue to work together to put the finishing touches on the turbine designs. However, when it comes to mass production of the turbines, Vigor likely will look for a Canadian-based manufacturer. Keeping production in the U.S. may be detrimental because it would put the company at the mercy of currency fluctuations, says Unrau.

As the company works to seal its first official turbine sale, it is already thinking of expansion.

"The short term focus is to establish ourselves here in Ontario," says Brubacher-Cressman. "Then, once we're experienced with the technology and the business, we can expand to other areas, in particular, underdeveloped countries."

Vigor is talking to Mennonite Economic Development Associates because the development agency's Sarona Green program helps companies like Vigor establish green technologies in third-world countries, says Brubacher-Cressman.

In addition to global expansion, the partners have their eye on remote Canadian communities in the North. These communities would benefit from using turbine-generated power, instead of diesel-generated power, says Brubacher-Cressman.

6:30 a.m.

Mary, dressed warmly and carrying an umbrella, takes Brutus for a walk because the morning TV weather forecast said cool and rainy. These fore-casts were created using weather satellite data and were distributed via communications satellites that rely on COM DEV hardware. Like most people, she doesn't consider how many lives are saved every year because ships and planes avoid dangerous weather, and whole populations are warned of pending hurricanes and tornadoes, thanks to space instrument capabilities

7:40 a.m. Driving to work, Mary tunes her digital satellite radio station for news. The broadcast satellite has COM DEV equipment on-board. Mary doesn't know it, but the news reporters in the field are also transmitting their stories via satellite links to the production studio. COM DEV is there again.

8:25 a.m.

Mary arrives at her job as a teacher of Environmental Science. Her classes are attended not just by her local students but also by a dozen students who join her classes via satellite connection from remote classrooms, one in Northern Ontario and another in Nunavut. Through such tele-education programs, satellites help bridge the distance to provide equal education access for Canadians living in remote communities and around the world.

8:30 a.m.

As Mary prepares her class, she isn't aware of COMDEV's large part in the building of Canada's RADARSAT satellite, though, as an environmentalist, Mary is very aware of the role it has been playing imaging the entire earth every 30 days over the past ten years. She knows that, uninhibited by clouds or weather, RADARSAT is continuously monitoring polar icecaps, icebergs, oil spills, crop damage, deforestation, floods and a host of other environmental concerns around the world.

10:10 a.m.

Mary's father calls her from Europe on his cell phone with news of a promotion. His call is routed via satellite. Mary passes on the details to her brother who is airborne over Saskatchewan Her email is delivered via satellite to his laptop computer. He replies that he will contact Dad directly using the airplane's satellite phone system. More Canadians staying connected via COM DEV.

11:20 a.m.

Mary takes a break and checks her favourite stock market web site. Oil prices dominate the news. In all the talk about prices and shortages, no one mentions that satellite remote sensing technology is vital to finding new sources of oil and ensuring its safe delivery and distribution. The web site Mary is accessing is regularly updated via satellite.

Noon

Mary walks across the road to buy a sandwich. Copies of the local newspaper litter the only available table. Picking up a section of one of Canada's several national newspapers, it never occurs to Mary that such newspapers are delivered electronically via satellite from Calgary or Toronto and printed locally.

2:14 p.m.

It's September and still hot. Mary is thinking about global warming and the record highs. Scientists are thinking about it too. Much of their analysis is based on data collected by satellites. Space instruments are invaluable for monitoring our atmosphere for changes like the increase of greenhouse gases and shrinkage of the ozone layer. No one ever told Mary about the ground-breaking new technology from COM DEV that contributed to making such satellites possible.

4:30 p.m.

R00151

Mary dashes over to the local mall. Her interest in the technology stock market has made her curious about High Definition Television. She has heard correctly that the new HDTV is part of a trend that will replace the current standard definition TV systems. Mary is not aware that HDTV requires much more satellite capacity to deliver the signals and for COM DEV, these developments continue to make for exciting times ahead.

6:02 p.m. Mary microwaves dinner. COM DEV is not involved.

6:48 p.m.

Brutus slips his leash and temporarily disappears. Mary wonders if she'll ever have a satellite Global Positioning System (GPS) terminal on his collar and a mapping system in her hand.

8:00 p.m.

Mary, wearing her favourite bunny slippers and a flannel dressing gown, settles down to watch some reality TV. COM DEV technology is used in delivering the TV signal to the cable company.

10:00 p.m.

Bedtime. Brutus hops up and begins to dream of slow-footed cats. Mary drifts off into space. COM DEV hardware continues working through the night and for years to come, making life better and safer for MaryBrutus and all of us.

"Wake up, Mary. It's a new day."

Like most Canadians, it never occurs to Mary how much our daily lives rely on space satellite technology. Mary's day is made more productive, easier and more fun because of the assistance of satellites. Space also makes her life safer and more secure. Given Canada's huge land mass and small population, satellites are ever more essential in keeping us connected with each other and the rest of the world.

Mary rarely thinks about outer space or satellites. And Brutus ... well, who knows?

The world is ever changing and much of the change relies on satellites, most of which carry COM DEV hardware. Where will change take us? Who knows? But you can be sure COM DEV will be there.

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