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## **Entrevestor Intelligence**

Entrevestor Intelligence is published quarterly to provide a deeper analysis of the Atlantic Canadian startup world than can be delivered in daily Entrevestor news stories. We're financed by paid advertising, including ads from universities and government agencies. Entrevestor compiles data on the startup community and sells analysis of this data to clients, including government agencies and departments.

**Cover photo:** Craig Sheppard and laian Archibald of Halifax-based Swell Advantage are developing an app for boaters that will have industrial applications in later iterations.

Entrevestor Intelligence Design: Roxanna Boers

# A Cluster of Industrial Startups

Atlantic Canada is distinguishing itself in the development of startups that target large industries as their clients.

### By Peter Moreira

Jordan Kyriakidis doesn't just think his company QRA Corp will benefit from the Industrial Internet of Things. The CEO believes the IIoT will benefit from his company.

Based in the former back office of a Halifax bank, QRA has developed software that helps large manufacturers detect flaws in products early in the design stage. Modern manufacturing includes the integration of incredibly complicated components, and QRA makes sure early in the design phase that they can all work well together.

Kyriakidis believes the QRA technology will prove invaluable to the IIoT industry, in which machines communicate with one another and respond in real time.

"In the not too distant future, the Internet of Things is going to be a big deal," said Kyriakidis as he sat in the QRA board room, which was previously the bank's vault. "But I don't think they realize the problem that they're going to have.

"People are talking about standards, but there'll still be a world of hurt when they start connecting all these devices because they will have the mother of all integration problems."

QRA is just one of the Atlantic Canadian startups that is capitalizing on growing trends in industrial technology, whether it is llot, data analytics or robotics. If we group them together as a sector unto itself – let's call it advanced industrial applications – we get a cluster of some of the most exciting startups in the region. They are among the strongest magnets for venture capital. They are linking with major industrial multinationals. Most have revenues and growing sales at or near the triple-figure level each year.

Consider that twice in the last two years Frost & Sullivan, an 1,800-employee market research and consulting firm based in Mountain View, Calif., has recognized startups from the region for product leadership -- Halifax-based metamaterials company Lamda Guard Inc. in 2014 and Moncton-based RtTech Software in 2015.

"As a unique participant with an unrivaled solution to improve safety with such simplicity, [Lamda Guard's product] metaAir could become a standard in the industry and it may become mandatory in the advent of stricter safety regulations," said the report.

Here's another interesting point about startups that target industry or other enterprise customers: They have been some of the most successful companies in the region in raising venture capital funding. (See accompanying chart). Recent fundings have included the \$9.2 million raise announced this year by Introhive and last year's \$8.5 million financing raised by Reno Sub-Systems of Halifax.

There's a slight paradox in all this given that the industrial sector in Atlantic Canada is waferthin in comparison to larger jurisdictions. It would seem logical that Atlantic Canada would be a bit of a desert when it came to the nurturing of industrial-related technology. So why is the harvest so bountiful?



# **Industrial Startups Have Attracted Substantial Investment**



Jordan Kyriakidis believes the Industrial Internet of Things creates a huge opportunity for his company QRA Corp.

The reasons lie in the ecosystem for data analytics, the research conducted at educational institutions, the quality of university research and the increasing ambition among startups in the region.

For the past few years, there have been concerted efforts to make Atlantic Canada a centre for excellence in Big Data – the description coined by the leader in the movement, Geoff Flood, CEO of the tech consultancy T4G.

Since Flood first floated the concept three years ago, there have been several tangible steps toward developing at the very least a community of analytics companies and organizations. It is happening in government, industry and academia, and it's having a huge impact on the growth of startups in Atlantic Canada. Not the least of the enhancements was the creation of the Big Data Congress by T4G itself. After two standing-room-

only events in Saint John, the event has now moved to Halifax as the Big Data for Productivity Congress.

Academic institutions across the region have taken up the banner of Big Data. Dalhousie University in Halifax opened its Institute for Big Data Analytics in 2013. Acadia University in Wolfville followed suit with its Acadia Institute of Data Analytics and University of New Brunswick in Fredericton announced its Cisco Chair of Big Data in 2014.

Major businesses have played their part. IBM established a Global Delivery Centre in Halifax. And the global accounting and businesses services consultancy EY – which has worked with Entrevestor on a comparative study of startup costs in Halifax and other cities, see pages 16 and 17 – has established its Canadian Centre for Advanced Analytics, or CAA, in Halifax.

The CAA comprises a team of about 30 specialized advisory professionals that work with major clients across Canada and around the world. EY is working with clients to examine the data they have and to find ways to use it to cut costs or improve performance.

Steven Maynard, Partner and EY Canada Analytics Leader who is based in in Halifax, said the year-old team will grow as more and more clients realize the benefits of understanding their data and using it to make decisions.

"This isn't the future we're talking about -- this is actually under way," said Maynard. "But yes, there is a lot of untapped potential that companies can act on."

Some major corporations are also getting more interested in using data to improve their bottom line, even partnering with the region's startups to do so. The global food giant McCain Foods has become the first customer of two promising New Brunswick companies that analyze data. Resson Aerospace of Fredericton has developed software that can analyze a

# INDUSTRIAL STARTUPS THAT HAVE ATTRACTED CAPITAL FROM PRIVATE VC FUNDS

Company	Location	Product	Amount (C\$M)	Major Investors
Introhive	Fredericton, Washington	Uses internal data to help companies reach external leads.	9.2	Tech Equity Partners, Build Ventures, GrowthWorks Atlantic, NBIF
Reno Sub-Systems	Halifax, San Diego	Semiconductor Process Equipment Instrumentation	8.5	Intel Capital, Innovacorp
Smart Skin Technologies	Fredericton	Pressure-sensitive surface materials	3.9	Rho Canada Ventures, Build, GrowthWorks Atlantic, NBIF
Resson Aerospace	Fredericton	Integrated system for agricultural analytics	3.0	Rho Canada, Build, BDC Capital, NBIF
RtTech Software	Moncton	Energy-saving automation 3.0 for manufacturers		McRock Capital, NBIF
Affinio	Halifax	Social media analysis	1.5	Build
Analyze Re	Halifax	Risk analysis for re-insurers	1.4	Rho Canada, BDC, Innovacorp



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# **Promising Fields Include Data Analytics, IIoT**

range of data gathered on farms to improve crop yields. And Monctonbased Fiddlehead Technology, founded by tech veterans David Baxter and Shawn Carver, helps large food producers better predict demand so they make neither too much nor too little food.

These are just a handful of the Atlantic Canadian startups that are developing products that analyze data for corporate users.

Some are aiding small business. Brownie Points of St. John's, which attended the FounderFuel accelerator in Montreal, has developed reward cards for retail businesses that help the owners monitor their traffic and attract customers. Expanding aggressively in the U.S., Hotspot Parking of Fredericton lets shoppers in downtown locations pay for parking on their payphones, but it also helps local merchants monitor customer traffic and advertise with clients.

And of course others are for enterprise customers, such as Analyze Re, a Halifax company that has devised risk analytics software for the reinsurance industry.

Another Halifax company, Swell Advantage, is now a business-toconsumer company but plans to develop an enterprise product for maritime industries. The first iteration, now available on Apple's App Store, provides recreational sailors with a social network and navigation tools. The next phase, to be tested soon, will use sensors in smart phones to collect data on the boats' environment and surroundings.

# 'This isn't the future we're talking about – this is actually under way. But yes, there is a lot of untapped potential that companies can act on.'

- Steven Maynard, Performance Improvement Partner at EY



Matthew Stenback pitching at the FounderFuel Demo Day last year.



Left: Scott Everett

Right: Shawn Carver, left, and David Baxter are the brains behind Fiddlehead Technology, an analytics company that has secured McCain Foods as its first client.

The longer term strategy is to analyze the data to develop a product for nautical industries.

"The strategy is to be B2C at the start," said CEO laian Archibald. "What comes from all of that is the data we're pulling in. We can develop datasets with that from which we can build products for industry, government and academia."

Of course, analyzing data is only part of the story on industry-focused startups. There are also the companies involved in other facets of the segment, including advanced manufacturing and the Industrial Internet of Things, or Ilot.

We tell the story of a great advanced manufacturing project in our report on Thinking Robot Studios on Pages 10 and 11. And Scott MacDonald, the Co-Founder of McRock Capital, assesses the future of IIoT in an opinion piece on Page 19.

One of the McRock portfolio companies, RtTech Software, exemplifies the progress being made in IIoT in the region. Its products are RtEMIS, which can pinpoint when and where part of a system is using excess energy; and RtDUET, which allows companies to examine specific processes to find the cause of downtime and poor utilization issues.

It is just one of the Ilot companies making waves in New Brunswick. Others include Fredericton-based Eigen Innovation. Eigen's CTO Scott Everett has developed algorithms to automate manufacturing processes with the food processing industry as its first target market. The product uses thermal cameras to make sure food is processed as thoroughly and efficiently as possible.

Another New Brunswick company finding traction with customers is Shift Energy of Saint John, which offers automated environmental controls to large complexes with a range of levels and spaces. Its customers include the Rogers Arena, the home of the Vancouver Canucks.

And as we mentioned earlier, Halifax's QRA believes the development of the IIoT industry will be a key component in its growth.

As an example, CEO Kyriakidis cited the case of self-driving automobiles, currently a hot topic of conversation. Though some companies are discussing how close these cars are to being rolled out, Kyriakidis noted that the data demands of these vehicles are far more onerous than most people understand. For example, Atlantic Monthly has reported the Google Car operates so well in Mountain View, Calif., because the car has been pre-loaded with a very precise digitization of that city, right down to the height of the curbs. With its current technology, it wouldn't be assured the same flawless performance in other locations.

"They're going to get behavior you can't predict with current systems," said Kyriakidis. "They're seeing it in aerospace right now and they're going to see it in IIoT." \*



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# **Dotting the Map with Outposts**

# The recent growth of tech incubators in Atlantic Canada helps startup groups overcome the region's vast distances.

### By Peter Moreira

At the Entrevestor Luncheon in Sydney in the spring, it didn't take long for the 100-plus attendees to zero in on one essential thing missing in the local ecosystem – an incubator.

The event, which was sponsored by BDO Canada, asked the diners to discuss how the ecosystem could be improved. And while most people enthusiastically applauded the mentors in the Cape Breton city, they thought Sydney needed a physical space where companies could work, where entrepreneurs could learn from one another, and where events could be held.

# THE NETWORK OF EAST COAST TECH INCUBATORS

NAME	<b>CITY</b> Υ	EAR FOUNDED
Volta Labs	Halifax	2013
Planet Hatch	Fredericton	2013
Genesis Centre	St. John's	1997
Venn Centre	Moncton and Saint	John 2014*
Navigate	Sydney	2015
Common Ground	St. John's	2013

\*Venn Innovation dates back to 2010 but opened its current Moncton location in 2014.



Lindsay Uhma, left, and Ardelle Reynolds recently opened the Navigate Startup House in Sydney – the latest incubator in the region.

It turns out they didn't have to wait long.

The Navigate Startup House announced last month that it would open in October in the New Dawn Centre for Social Innovation. Founded by startup evangelists Ardelle Reynolds and Lindsay Uhma, it will have offices for four startups and enough co-working space for about 20 other teams. And – as the people at the luncheon envisioned – it is a meeting place that the community can call home.

"People who are interested in starting a startup but are at an earlier phase will be able to become members of our network," said Reynolds in an interview. "It means you can have access to our events, mentors, and other resources. The idea is to build the startup community."

Another facet of Navigate is that it is the latest piece in a network of tech incubators that spans the Atlantic Provinces. Call them co-working spaces, incubators, startup houses or whatever, they are offering a physical space in the major centres in the region. Just as the British Empire had outposts and the Hudson's Bay Company had factories, the Atlantic Canadian startup community has incubators.

There are three things to keep in mind about this network of tech-focused spaces – it's young, it's expanding and it's integral to the particular challenges facing the Atlantic Canadian startup community.

You can appreciate the youth of this group when you consider that only one dates back more than three years. Volta in Halifax and Planet Hatch in Fredericton both celebrated second birthdays this autumn.

Eighteen-year-old Genesis Centre in St. John's is undoubtedly the elder statesman in the bunch. Now located on the Memorial University campus, Genesis will relocate in 2016-17 to the Battery complex on the side of Signal Hill.

It's one of several facilities that is expanding. Volta this year doubled its size when it moved to two floors in the Maritime Centre on Barrington Street in Halifax. And Venn Innovation of Moncton opened its second Vennture Garage – this one in Saint John.

The reason these facilities are so important is the vast geographic distances involved in the Atlantic Canadian startup community. The regional accelerator Propel ICT has no headquarters and it needs meeting places for its events and classroom sessions. These incubators are community partners for Propel, which held cohorts at the Venn Centre, Planet Hatch, Volta and Common Ground this past summer.

Reynolds and others have been in touch with Propel and look forward to the day when the accelerator holds sessions in its space.

"We're planning to take our first Propel ICT cohort early in the New Year," she said.  $\star$ 



# A Clever Plan for the Smart Grid

New Brunswick's intelligent electricity network could be a potent test facility for startups like Fredericton-based SimpTek.

### By Peter Moreira

New Brunswick's smart grid project is an opportunity to develop a national, maybe international, leader in energy distribution. But it may also be a Petri dish for experimentation in the efficient use of electricity.

Certainly the process of inviting startups in to use the grid to test new products has already begun. Last month, NB Power unveiled an agreement to test the energy monitoring software of Fredericton-based

SimpTek Technologies in 150 homes.

If proponents like NB Power and the economic development agency Ignite Fredericton get their way, SimpTek will not be the last.

"NB Power's vision to be a leader in this industry across North America is still only in its infancy, but the power and potential of their plans are incredible for this city and our province," said Ignite Fredericton CEO Larry Shaw.

Three years ago, NB Power partnered with the German technology giant Siemens AG to develop a smart grid in the province – that is a delivery infrastructure that can assess and react to demand from clients and generate energy accordingly. New Brunswick has a lot of attributes that lend itself to such a project. The utility is government-owned, and there is a willingness among politicians and voters to experiment in the name of reducing energy consumption. And the utility is vertically integrated, meaning one body controls the generation, distribution and other facets of the electricity industry.

The project is ongoing, and at the reception at Fredericton's Planet Hatch, NB Power CEO Galltan Thomas encouraged the crowd to use their imaginations to conceive of what the smart grid could become. He envisions a day when solar panels are common features of a family home. The solar device in optimal conditions would produce enough electricity for the family's needs. Frequently, the household would have a surplus that it could sell back to the grid. That's right – a household on some days could be a net seller rather than buyer of electricity.

"You know the old saying, 'You can't manage what you can't measure?" said Thomas. And referring to Simptek, he added: "Well, this is the tool that will let us measure how we're using energy."

Founded by University of New Brunswick alumni Asif Hasan, Lionel Fernandes and Keelen Gagnon, SimpTek has developed a product that can assess the energy usage throughout a home. It gives the homeowner detailed, real-time information about how much energy appliances or components of the house are using; and it provides a utility with detailed aggregated information about energy usage in its customer base.

"We're hoping that once people can actually see how much energy they are using in their homes, they will alter their habits to save and reduce



Keelen Gagnon, left, and Asif Hasan have signed a pilot agreement to test SimpTek in 150 homes.

energy," said Hasan, the company's CEO. "We've been working for over a year to develop our product and look forward to seeing how New Brunswickers take advantage of this information to save money."

SimpTek, which has grown to a five-person operation in two years, provides the homeowner with a dashboard detailing the energy consumption in the home – right down to how much power each appliance uses and when it's used.

In the \$15,000 pilot project, NB Power will provide and install hardware capable of collecting real-time data on energy use in up to 150 homes agreed upon by SimpTek and the utility. SimpTek will analyze the daily data and report it to NB Power over a one-year period, keeping data for individual homes anonymous and confidential.

NB Power's agreement to become SimpTek's first customer demonstrates the support available to Fredericton startups from a range of institutions. SimpTek emerged from UNB's Management, Technology and Entrepreneurship program and went through Accelr8, the former Planet Hatch accelerator. It won \$222,250 by placing second in the New Brunswick Innovation Foundation's Breakthru competition in March. It graduated from two levels of the Propel ICT tech accelerator. The company is trying to raise \$600,000, and has some funding commitments.

Now SimpTek has secured an early adopter – which can be one of the toughest tasks for a B2B outfit.

"As early adopters, NB Power and Siemens are paving the way for emerging start-up companies to develop new, innovative technologies right here," said Shaw. "We look forward to more announcements in the future."

He envisages a range of startups that can use the smart grid as the bedrock for their innovation, and a range of community partners in Fredericton to help nurture them.

What the SimpTek founders are looking forward to is completing the pilot and getting more customers.

Said Gagnon: "Obviously we want to maintain a presence here, but our plan is to roll this out across North America."\*

# Thinking Robot is Thinking Big

# The 3D printing outfit is in the early stages of developing one of the leading advanced manufacturing hubs in North America.

### By Peter Moreira

Natasha Hope Simpson's story is both heartbreaking and, like her name, hopeful. And the second chapter of that story highlights the potential of manufacturing-based startups in Atlantic Canada.

In November 2013, the young artist was hit by a speeding car in her hometown of Wolfville, N.S. Her leg was crushed and had to be amputated. She has described the tragic event as creating a huge "artistic challenge," for she wanted to design something beautiful to replace the lost leg. So she worked with the 3D printing concern Thinking Robot Studios to fulfill her vision.

Simpson and her magnificent prosthetic captured the media's attention when she revealed it publicly in early 2014.

The second chapter of this story may be just as inspirational, for Thinking Robot is now creating something impressive and unusual. It is developing a multi-faceted plant in Nova Scotia that promises to become a North American leader in the manufacture of medical implants. Over the next four years, the company plans to develop a state-of-the-art advanced manufacturing facility that will house what may become the largest, concentration of diversified manufacturing equipment in North America. It will employ about 700 people and greatly improve the treatment of people with devastating injuries.

"What we're doing is the most difficult corner of this industry," said Thinking Robot CEO Kendall Joudrie in a recent interview in a Halifax coffee shop. "Right now, the industry is tooled toward the generic manufacture of implants."

Over a lengthy discussion, Joudrie and Director of Global Projects Gregor Ash outlined their plans to develop a plant in the province that will have one of the most sophisticated and diversified manufacturing operations on the continent. It will include large-scale 3D printers operating 24 hours a day beside nano-printers that can



Natasha Hope Simpson displays the prosthetic leg she designed for herself. She considered her accident a huge "artistic challenge".





'When you think about work place accidents or car crashes, the more specific we can be with the engineering, the better our chances are of returning that person to full productivity.'

Thinking Robot believes this 55,000-square-foot facility will just be the beginning of a massive advanced manufacturing operation.

make products too small for the eye to see. And its prime market once it receives regulatory approval will be medical implants.

As of press time, Joudrie was close to deciding on and signing a development agreement for a Nova Scotia site on which the first plant will be located. It will be a 55,000-square-foot facility, and he has lined up \$35 million in financing which will cover the cost of this first plant. But that will just be the first phase and eventually Joudrie envisions a total factory space of 500,000 square feet and a huge range of equipment.

The selection of industrial-grade machines will include a dedicated metal printer, powder-based printers and resin-based printers as well as printers specializing in nano-technology. The printers will be housed in a facility with strict environmental control systems.

"We could be printing out a jet turbine blade right next to a heart pump at the same time," said Ash.

The primary purpose of the plant will be to produce customized implants for patients needing, for example, hip or knee replacements or those suffering from trauma or deformity. There will also be ancillary operations such as the prototype support and manufacture of prosthetics.

Medical implants are currently produced en masse and ordered by doctors with the hopes that a certain size will fit a patient. Thinking Robot wants to work with pairs of doctors and engineers through a practice already being used in Europe. The Thinking Robot team already has access to considerable expertise given that Dr. Vladislov Raikov of the Department of Orthopaedics and Trauma Surgery at Bethanien Hospital in Germany is a core medical collaborator. And Co-Founder and Chief Technology Officer Jourdan Dakov, a Bulgarian engineer, recently immigrated to Nova Scotia to work more closely with the team.

Raikov and Dakov are experts in a procedure in which a surgeon uses 3D imaging to obtain a precise measurement of a joint, and an engineer uses advanced 3D printing equipment to quickly produce the implant. Joudrie said this method can speed up the procedure to about three days from the current four to six months, and it can do so at one-tenth of the current cost.

"This is where the integration of this technology comes in," said Joudrie. "When you think about work place accidents or car crashes, the more specific we can be with the engineering, the better our chances are of returning that person to full productivity."

The first market that Thinking Robot will target is revisions – that is, replacement implants that are needed after the first hip or knee replacement wears out. Revisions tend to be far more complicated than the first operation because the deterioration of the original implant can damage bone and muscles. The screws and components of the implant can break

– Kendall Joudrie

apart, and there can be debris in the surrounding tissue. It's a critical and specialized market, and it's expected to double in size in the next 15 years.

Thinking Robot contracted the American market research firm Dymedex to assess the market for these products, and the result was one of the



highest market scores the firm had ever seen, said Ash. That helped convince the investors to come on board.

Joudrie said there are companies involved in producing implants now, but the major companies involved in the space are mass producing a generic product. "We're shifting the paradigm," he said.

As well as the direct economic benefit of developing a state-of-the-art manufacturing operation in the province, the principals believe the project will enhance research and development opportunities. They have already received interest from such institutions as Pennsylvania State University

Kendall Joudrie

and University of Massachusetts at Lowell. And the facility should be good news for maker projects in Atlantic Canada because of the sophistication of the equipment they can use in prototyping.

"You have a plant here in Nova Scotia that has all the equipment to do all your prototyping," said Joudrie. "Our goal is to actively support R&D as much as we can."

Thinking Robot plans to have the initial factory operational in the spring of 2016, and its first product will be fairing systems – that is, the covers for prosthetic limbs.

Once the factory is operational, the company will begin to seek approval for its manufacturing processes from the healthcare regulators in the U.S., the European Union and Canada. Ash said the approval process should be completed by late 2016.

The company plans to have about 30 employees working at the plant in 2016, and increase the staffing to between 60 and 90 the following year.

The employees include Natasha Hope Simpson. Though her artistic medium previously had been paint, she is now working with Thinking Robot as a specialist in 3D design. \*

*Full disclosure: The author's daughter is working with Thinking Robot Studios.* 



# Rob's changing the world – block by block.

CarbonCure founder and CEO Robert Niven and his team are creating some of the most environmentally friendly concrete in the world.

Their technology meets a rapidly growing market demand for affordable green building materials – all the while improving concrete's material properties.

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A concrete manufacturer's operation can be retrofitted with CarbonCure's technology in less than a day. And since concrete is still the world's mostused construction material, the company's market opportunities are, well, *building*.

Equity investment from Innovacorp is helping Rob construct his green empire from his base in Nova Scotia. We look forward to building it with him – one block at a time.

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# Peace of Mind for Your Behind

Septic Sitter Founder Kelly Galloway is quick to joke about her startup, but she's deadly serious about its business potential.

### By Peter Moreira

When Freescale Semiconductor put together its Internet of Tomorrow Tour last year, it included an exhibit on a little-known piece of Atlantic Canadian technology many of us would prefer stayed underground.

Based in Austin, Texas and valued at US\$11 billion, Freescale assembled a mobile exhibit in a truck to educate its customers and the public about the wondrous things the Internet will do in the next few years. And it showcased Septic Sitter, an advanced system that helps homeowners avoid problems with their septic systems.

Version I is due to be launched this autumn, and its developer Stratford, P.E.I.-based Dynamic Monitors (a unit of Engineering Technologies Canada Ltd.) is already planning for later versions that would feature full Internet of Things applications.

"I want this to be as valuable and logical to have as part of your septic system as the sensors and warning lights in your car – the ones that warn you your engine is over-heating," said Kelly Galloway, the President of ETC.

"I see a system that has flexibility in how the end-user wants to receive the information. I anticipate many septic owners will also want direct communication between the system and their designated serviceprovider."

Septic Sitter – whose tagline is "Peace of mind for your behind" – places sensors in a septic tank and drainfield, the underground area that catches the runoff from the tank. The sensors send readings to a sensor hub in the house, which can assess whether there is unusually high runoff and keep a record of effluent levels and temperatures in the septic system. It sends an alert to any internet-connected device whenever pre-defined alarm levels are exceeded or dangerous trends are detected.

If the flow from the septic tank suddenly spikes, the homeowner can take measures like reducing washing machine use or repairing a leaky toilet flapper valve before there's a catastrophe. The record can also be used when selling a house to demonstrate the septic system is in working order.

Galloway said some people believe their systems will be fine as long as they pump the tanks regularly. But other problems can occur regardless of the usual maintenance and Septic Sitter helps to prevent these.

The market is huge. The U.S. Environmental Protection Agency estimated there were more than 26 million households with septic systems in the U.S. alone in 2007. And the pain is . . . well, ask anyone who's had a septic tank back up how acute the pain is.

The exciting thing about Septic Sitter is what the later generations will be. ETC is working on an Internet of Things system in which septic sensors



Kelly Galloway

can detect high levels, and instantly cause any number of potential overload sources to be shut down. The system might automatically shut off a smart washing machine or close a smart valve on the main water supply to make sure a leaky toilet stops running.

"One of the real big goals for the system ... is to not just have early warning capabilities but for the system to be integrated into third party smart home systems and have actuation or control capability," said Galloway, an engineer who specializes in the design, installation and maintenance of on-site sewage systems.

She noted that when people speak about "smart homes" they usually envisage systems that control lighting, heat, electricity consumption and security. But ETC is working on a unique component of a smart home that would benefit tens of millions of homes.

In the lead-up to the launch, Galloway has been refining both the hardware and software side of the product. As of press time, she believed the launch will take place in early October. And she's talking to potential investors with a view to raising money once the product has some sales. Galloway recently joined an Entrepreneurs3.0 tour to Toronto, during which she pitched for a range of investors. She also went through the Propel ICT Launch accelerator program this summer.

She has presented the product at events like 2015 Water and Wastewater Equipment Treatment and Transport Show in Indianapolis. And, of course, Septic Sitter is part of the Internet of Tomorrow Tour that has been travelling around the U.S.

Freescale now plans to expand that tour, replicating it in China and Europe. And will Septic Sitter be part of it? Galloway wasn't sure. She's been busy focusing on the coming launch, but she's also interested in marketing Septic Sitter in overseas markets. **\*** 



# **#StartupEast at #StartupFest**

# About 35 Atlantic Canadians trekked to the International Startup Festival in Montreal, which has grown in influence in just five years.

### By Ashley Greene

In just five years, International Startup Festival has become known for its informal vibe (think conference meets music festival) and investor attendance. It's also a launching ground for Canadian startups on the rise.

About 35 members of the Atlantic Canadian startup community attended the annual event in July including Halifax's Pacta and Proposify, as well as New Brunswick's HotSpot Parking, Monamie, and Castaway Golf Technologies. While #StartupEast made up only about two per cent of attendees, we fared better in impact with Pacta securing one of the 12 onstage pitching spots.

The festival sold out this year with more than 2,000 investors, startup personnel and accelerator members gathering in Montreal. Most major Canadian VCs attended with decent investor turnout from New York and Boston, and to a much lesser extent, San Francisco.

One of the key attractions for entrepreneurs is the annual \$100,000 investment prize. Interestingly, any startup attending is eligible

for the investment. There is no short-listing beforehand. This year, Sharethebus, a marketplace to connect travellers with private buses (and a recent FounderFuel graduate), snagged the big \$100,000 investment.

The angels funding the \$100,000 investment included Sophie Forest, Magaly Charbonneau, Gary Pudles, Jesse Kaplan, Anna Goodson, Phil Telio (#StartupFest Founder), Mike Fuller, Mathew Rosenblatt, Jonathan Kolber, and Jamie O'Hara.

Many East Coast attendees came via the Planet Hatch-led "East Coast Crew Bus", a cost-effective way for both entrepreneurs and



# Don't do it if it isn't fun



supporting organizations to get to the festival. In Montreal, the Atlantic Canada showcase tent served as both a communal hub and a space for startups to demo their products.

Terry Jones, founder of Travelocity, delivered the keynote speech to a packed, advicehunary crowd. The highlight? This startup mantra: "Prototype as if you're right. Learn as if you're wrong."

Bottom-line, International Startup Festival is a great place for relationship building. In particular, you should consider attending in 2016:

- If you need to build relationships with investors outside Atlantic Canada. This is a bia one.
- If you can attain one of the onstage pitching slots.
- If you or your cofounder(s) are great at connecting with investors guickly and can shine with a five-minute pitch. Any startup can try to secure the \$100,000 investment prize, but you've got to find and impress 10 angel investors in less than two days. Sharethebus, didn't pitch onstage, and still secured the \$100,000 investment.
- If you're an accelerator. There is an accelerator-only first day with many staying for the full event including reps from major Canadian accelerators, as well as 500 Startups, Dreamit, and Boston's hardwarecentric Bolt.
- · If you're a startup hoping to get into one of the accelerators mentioned. It's a good way to get the inside scoop.
- If there is an East Coast Crew Bus (or any organized bus or train), this can be a relatively cost-efficient way to build relationships outside the region (and a chance to solidify ones with fellow travellers).

Ashley Greene is the founder and Chief Growth Consultant at Instratify, a growth strategy advisory that helps entrepreneurs grow their companies like the world's top startups.

# **VFC Fellows Are Staffing Startups**

Emily Miller and Danny Williams exemplify the upbeat university grads who are finding careers through Venture for Canada

### By Sabina Wex

Emily Miller recently spent a month at the Halifax Central Library curating information on various Maritime and Ontario startups – she really wanted to work in the startup space. A political science major at St. Francis Xavier University, Miller used her research skills to prepare for her interview with Venture for Canada, or VFC, an organization that partners young people with Canadian startups to encourage entrepreneurship.

Her research paid off: Miller was accepted as a 2015 VFC fellow and the program paired her with Halifax startup Eyeread, an eye-tracking application for ebooks that measures and analyzes children's independent reading. Today, Miller is Eyeread's general manager.

"I've always had a passion for helping children learn to read—I was a tutor throughout high school, a camp counsellor, and have done several trips to India to work in schools," Miller said in a recent email. "I realized that this product has the potential to revolutionize the way children learn to read and impact millions of children around the world."

The application process for VFC is rigorous—just like the program. It consists of essays, transcripts, resum[]s and interviews. The VFC website cites intelligence, character, founder potential, ability to contribute and grit as the characteristics required of VFC fellows.

Danny Williams, another 2015 VFC fellow, attributes his acceptance into the program with his involvement in growing his own startup.

"The best predictor of future success is past action," Williams said, also in an email. "If there is one consistent thread amongst all the Fellows at Venture for Canada, it's a history of past action."

# "There was never a negative 'we can't do this' attitude. If a challenge arose it was 'how do we fix this or get around this?"" – Emily Miller

The program begins with a five-week bootcamp, in which the cohort of 46 learn from world entrepreneurship experts about business, tech and startup worlds. It is designed to prepare them for their two-year placement at an Ontario or Maritime startup.

This year's bootcamp featured entrepreneurs such as Shopify Director of Product Satish Kanwar and Salesforce Senior Vice President Dan Debow.

"We constantly brought discussions from the classroom back to the dorms and spent many late nights debating and teaching each other," Miller said. "There was never a negative 'we can't do this' attitude. If a challenge arose it was 'how do we fix this or get around this?""



Miller and Williams take a break from their duties at Eyeread and its parent company Norex.

Once the fellows completed the bootcamp, they were matched with a startup based on location preference, skillset and company fit.

Williams chose to work for Norex, a global web design and innovation firm and the company from which Eyeread originated. He said he was drawn to Norex because of its competitive nature.

The company has a 20 percent innovation time policy, in which staff spend one-fifth of their time creating and innovating new products. As product and innovation manager, Williams ensures that these projects are feasible for creation and commercialization.

Eyeread, where Miller works, was one of the projects that originated from the 20 percent innovation time policy.

"We're essentially building micro startups within the company," Williams said via email. "It's awesome."

The goal of VFC is to give young Canadians the network and resources to understand the startup world for two years so that they can then create their own startups and contribute to society and the economy.

Williams and Miller both work in Atlantic Canada with Norex and Eyeread, respectively. They both expressed the importance of retaining more talent in the East.

"I do think that Atlantic Canadians can be a little too humble and scared of pushing themselves outside of the region," Miller said. "We need a global mindset."

Added Williams: "I would encourage Atlantic Canadians to embrace the same mentality that was ever-present at VFC's Training Camp - that is to have the audacity to start out with the goal of changing the world." \*

Applications for the 2016 cohort are now open. Miller said she would be happy to meet with interested applicants to discuss her experience with VFC and the application process.



# The Atlantic Advantage in Costs

# EY and Entrevestor teamed up to discover whether startups save money by being based in Atlantic Canada. The answer: they do.

### By Peter Moreira

When Sunil Sharma, managing partner of Extreme Venture Partners in Toronto, attended the Atlantic Venture Forum in Halifax in June, one thing that caught his attention was how "capital efficient" Atlantic Canadian companies are.

In other words, he perceived they can do more with less capital investment than their peers in other locations.

Aside from the non-dilutive financing available to Atlantic Canadian startups, Sharma noted commercial leases and core business expenses are less than in a market like Toronto, and wages for technical people tend to be lower.

That's the impression, but is there data to support the notion that it's cheaper to establish a startup on the East Coast of Canada? EY, the global business services consultancy, and Entrevestor have teamed up to do a comparison.

We've created a hypothetical company that we'll call TechCorp. This five-year-old enterprise has a Software-as-a-Service product that is attracting global clients, achieving C\$3 million in revenue in calendar 2015. It has 10 employees, and one exec must attend meetings events in San Francisco four times a year and twice annually in New York.



Pamela Achenbach, CPA, CA

We wanted to estimate TechCorp's annual costs if it were based in Halifax, Toronto or Silicon Valley. So, on the facing page you will see the three respective income statements. We've assumed that the company accrues \$3 million in revenues in 2015 regardless of location, based on the theory that a SaaS company can access customers around the world regardless of where

# 'The talent pool and talent cost in the East Coast of Canada is an advantage and it's not just entrepreneurs who benefit from this.'

– Pamela Achenbach

it's based. But our research has shown that on the cost side, there are definite advantages to being in Atlantic Canada. The total costs are 15 percent less in Halifax than in Toronto and 46 percent less than Silicon Valley.

"While there are benefits to locating a business close to capital, mentors and customers, we've found that companies can hold costs down by being based in a smaller center," said Pamela Achenbach from EY Halifax. "The talent pool and talent cost in the East Coast of Canada is an advantage and it's not just entrepreneurs who benefit from this. The more businesses choose to do business from our region and invest capital, the greater the collective gains to our communities and economy."

The big factor in the cost analysis is payroll. TechCorp (CEO, CFO, CTO, two sales people, four developers and a support person) pays about 80 percent of its annual expenditures to its staff. And the biggest difference is in developers. According to PayService data secured by Nova Scotia Business Inc. and the Halifax Partnership, a software developer with five years' experience makes approximately \$58,000 in Halifax – which is about 42 percent less than in Silicon Valley and 14 percent less than in Toronto.

Across the company, the payroll in Halifax is about \$682,000 – a saving of almost half from the payroll in Silicon Valley and 15 percent from Toronto, clearly a significant opportunity to save funds.

Those sorts of savings are also seen in professional services like lawyers and accountants. You pay about 10 percent more for these services in Toronto and a whopping two-and-a-half times as much in Silicon Valley.

The final result is that annual costs in Halifax are \$834,900, in Toronto \$981,900 and in Silicon Valley \$1.56 million. These cost savings give Halifax a small advantage in pre-tax profit over Toronto, though the profit is largely the same once taxes are taken into consideration. The profit in both Toronto and Halifax is about 75 percent higher than in Silicon Valley.

The complete income statement shows a breakdown of all costs, and we should highlight that travel costs from Halifax are the highest. So if a company has to travel a lot to the U.S., the cost advantages would be eroded. This could be an important factor as the company scales and sales calls (even for a SaaS company) become more important.

And one final factor that we admit freely is that there are definitely huge intangible benefits to being in Silicon Valley. You're closer to thought leaders and to mentors who have built companies that changed the global industry. And of course there is far, far more capital in northern California than in the other two centres.

Certainly there are strong benefits for locating a business in Northern California, but the big question is how much the entrepreneurs are willing to pay for that advantage. In the growth stage, companies like TechCorp will likely find that better capital retention is also a critical factor for success, and that can strengthen the decision to locate to a smaller centre. **\*** 





# **TECHCORP - PROJECTED 2015**

# STATEMENT OF INCOME

December 31, 2015 (\$ in hundreds)

	Notes	HALIFAX CAD \$	TORONTO CAD \$	SILICON VALLEY CAD \$
REVENUE	2	3,000,000	3,000,000	3,000,000
EXPENSES				
Salaries and employee benefits	3	681,700	803,100	1,289,500
Rent	4	67,700	82,700	100,000
Travel	5	12,600	11,600	5,300
Utilities	6	12,900	16,900	22,800
Professional fees (accounting and legal	) 7	50,000	57,600	127,300
Misc. (supplies, insurance, sundry,				
sales, marketing)	8	10,000	10,000	10,000
		834,900	981,900	1,554,900
Income before income taxes		2,165,100	2,018,100	1,445,100
Provision for income taxes	9	571,000	438,000	534,000
Net income for the year		1,594,100	1,580,100	911,100

See accompanying notes

Note 1: USD converted into CAD at a rate of 1.31 based on December 31, 2015 forward rate curve

Note 2: Assume global market and global buyer - no revenue differential

Note 3: Assume common equity holdings at CEO and CTO level with a market based salary (Source: PayScale August 2015

Note 4: Based on 2000 sq. ft. grade A space (data source: Cushman Wakefield)

Halifax: \$33.85 psf/year

Toronto: \$41.35 psf/year

Silicon Valley: \$38.16 USD psf/year

Note 5: Assume one trip per qtr. to Silicon Valley (4 trips per year), two trips to NYC. \$100/day for taxi, food etc. duration 5 days

Note 6: Midsized office, heated by electricity. Servers running 24/7 with extra workload during working hours.

Note 7: Fees determined based on industry rate cards by geographical region

Note 8: Assume negligible cost differential by region

Note 9: R&D incentives for 2 developers are netted against tax expense



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Canadian industry is beginning to understand the implications of the Industrial Internet of Things, but we need to develop the sector more aggressively.

# **Canada's Opportunity in IIoT**

### By Scott MacDonald

It's incredible to think that Aug. 9 was the 20th anniversary of Netscape's IPO. That listing symbolized the launch of the internet, and it's amazing to realize how the online world has invaded and enriched so many facets of our lives in just two decades.

The reason this resonates so strongly with me is I believe the Internet of Things (or machines communicating with one another over the internet) is now at about the same point the Internet of people was when Netscape went public. We're in the infancy of this movement,

and it's mind-blowing to think what might come about in the next 20 years.

This revolution in connectivity offers a huge opportunity for Canadian industry, if only we choose to seize it.

It will be tough for Canada to make huge waves in the Consumer Internet of Things – there are just too many huge players in the western U.S. too far ahead of us. But the Industrial Internet of Things, or IIoT, is another story. There's a lot Canada can do in IIoT largely because we have software specialists who understand the inner working of our industries.

Think of some of our traditional industries like manufacturing, pulp and paper, mining and oil and gas. The companies within these sectors employ software developers with intimate knowledge of how these industries work. These developers – and those working at startups that are the partners of these industrial giants – could spearhead Canada's move into IIoT.

You may ask whether corporate Canada is gearing up to grasp this opportunity. My answer

is we could and should be doing more, but you can see evidence that we're making progress in three segments of the industrial community.

First, the Canadian subsidiaries of major multinationals certainly understand the opportunity. We work closely with companies like Cisco Canada and GE Canada. They are moving into the IIoT realm because their parent companies are attacking it so aggressively.

Second, there are major Canadian corporations, and we're seeing more and more indications that they are at the very least researching the segment. At our most recent McRock IIoT Symposium, there were numerous executives from CN Rail. The major telecom companies are also making moves into this space. There are still too many senior executives in Canadian industry that are suspicious of emerging technologies like cloud

Scott MacDonald

'IIoT represents an absolutely massive opportunity for the Canadian economy. There are estimates that the segment will be worth \$19 trillion by the end of the decade and that 50 billion devices will be connected to each other.'

> Scott MacDonald, McRock Capital

computing, but corporate Canada is slowly moving in the right direction. In stark contrast, companies like Netflix have already moved 100 per cent to a public cloud infrastructure and are scaling their business rapidly by adopting technology.

And third, there are the startups that can produce new technologies that analyze the data generated by machines and respond to it in real time.

In February, our new \$65 million fund McRock iNFund LP led a \$3 million investment in RtTech Software of Moncton because we believe it is an

exemplar of these young companies. RtTech's products can pinpoint when and where part of a system is using excess energy and adjust it accordingly. They can also examine specific processes to find the cause of downtime and poor utilization issues.

We were really impressed with the quality of the development team at RtTech and by how well they worked with the engineers at the nearby Michelin plant.

RtTech was the first investment by McRock iNFund. In May, we made our second investment, joining in a \$6 million financing of Montreal-based mnubo, an IoT realtime data analytics startup. What we like about mnubo is that it helps industries figure out what their data means and how they can use it to improve performance and create new high-margin revenue streams.

We're looking at other Canadian startups that are making waves in the IIoT world. What we like about Canadian companies in particular is the quality, cost and loyalty of talent in these companies. When we say loyalty, we mean that staff tends to stay with these companies as they grow. That means our portfolio companies have a good chance of continuing to innovate because they will be working with top-flight development teams over the long haul.

Let me emphasize again that IIoT represents an absolutely massive opportunity for the Canadian economy. There are estimates that the segment will be worth \$19 trillion by the end of the decade and that 50 billion devices will be connected to each other. There is an economic opportunity in developing companies that produce the technology that connects machines and creates value from that new intelligence. There's also an economic benefit when our traditional industries use this technology to improve profitability and capture more global market share.

We need to start seizing this opportunity. \*

Scott MacDonald is the co-founder of McRock Capital, a venture capital firm focused exclusively on the Industrial Internet.



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