MaRS Market Insights

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The Connected Home: Smart automation enables home energy management

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To download the original report, please visit
http://www.marsdd.com/news-and-insights/connected-home-smart-automation

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Table of Contents

04 What is the connected home?

06 The opportunity

07 Home automation

- 08 Fast facts for the connected home
- 09 Table 1: Drivers and challenges

10 Automation and control: A building becomes a neural network

10 Now we're talking

11 Energy data: Developing standards beyond Green Button

11 The market players

- 11 The chicken or the egg? Home automation comes first, followed by HEM
- 12 Telcos and security companies already have a foothold in the home
- 13 Can the success of smart phones be replicated in the connected world?
- 13 Apple slices into the connected home market with Homekit
- 13 Samsung's Smart Home platform takes aim at the connected home
- 14 Google lays a Nest egg
- 15 Google and Microsoft have failed before. What's different now?
- 16 Utilities and communication carriers: Could they collaborate to boost the HEM market in Ontario

16 Energy management: An embedded feature in the smart home

18 Profiles

- 19 Rainforest Automation
- 23 MMB Networks
- 27 Ecotagious
- 30 ecobee
- 33 Liricco Technologies
- 36 Energent
- 39 Eyedro

42 References

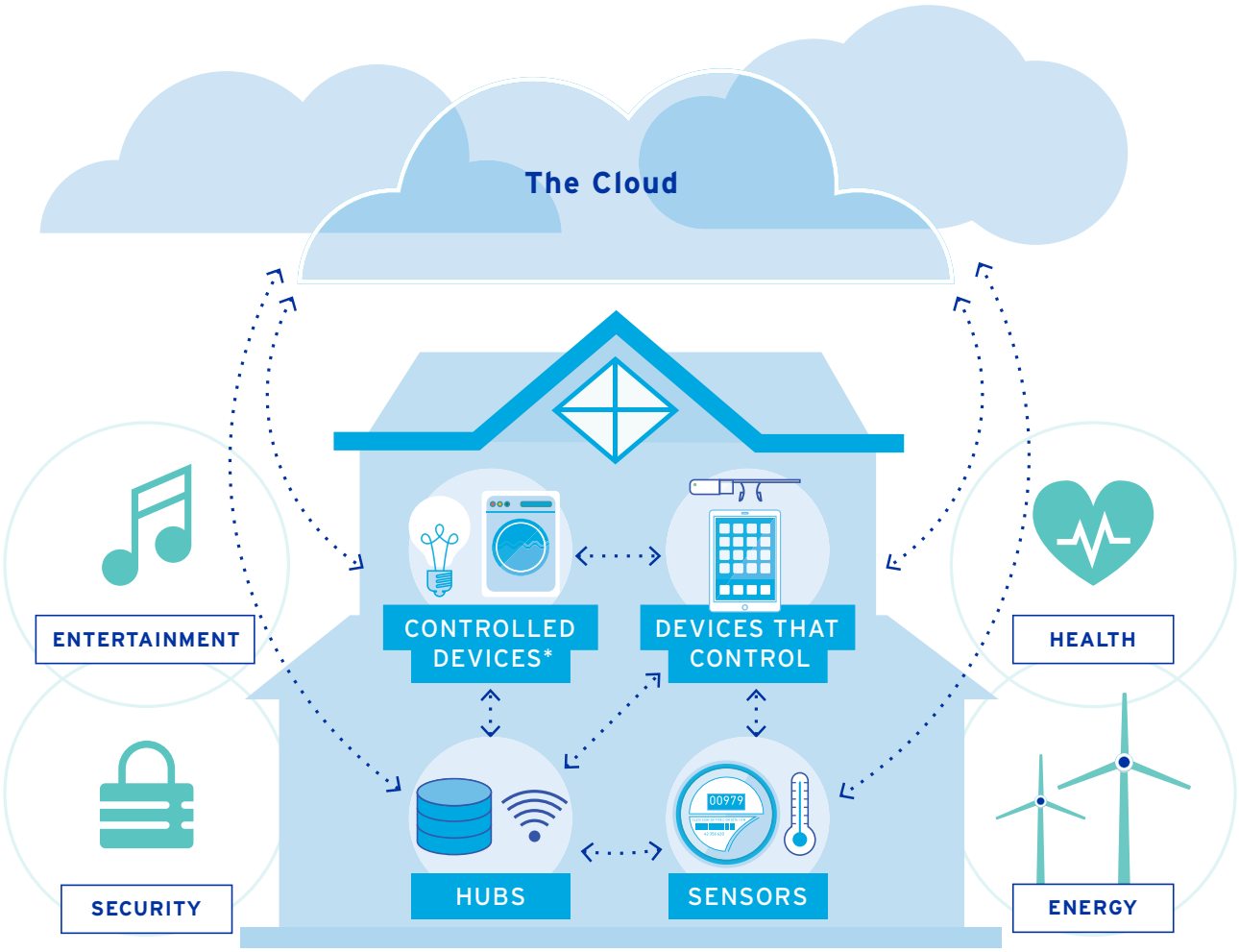
What is the connected home?

In recent years, we've all been hearing a lot about the connected home, the smart home and the Internet of Things (IoT). Some of our friends and family may have talked about their smart thermostat that they can adjust using their mobile phone, and we saw media stories in 2014 about the $3.2 billion acquisition of prominent smart thermostat vendor, Nest Labs. We've heard of the coffee pot turning on when our home senses that we've gotten out of bed. We live in a world where Internet connectivity and smart phone ownership is near ubiquitous. Underlying and complementing these factors is the IoT. The cloud, mobile computing and social technologies make the connected home possible. Another key component, however, is energy. Not only the energy to power the interconnected devices that comprise the smart home, but more importantly, the energy that can be measured, controlled and managed. Home energy management is a service, a set of products and a market that is thriving due to all these factors.

The connected home is controlled by the user via a control hub that connects to and communicates with digital devices throughout the household. These devices can range from heating systems to wall sconces to automated door locks to appliances to thermostats to televisions, and more. The connected home is a package of services and solutions that collectively add value for consumers.

It is in this light that we review the market opportunity that is presented by home energy management (HEM), a subset of the home automation market and the connected home market. Due to its relationship to other markets, HEM is less likely to stand alone. Being a component of the connected home presents a unique set of opportunities and challenges for this market. This report examines HEM in detail.

Figure 1. Image of the connected home. Data flows throughout:



*Controlled devices are smart devices.

Features of the connected home include:

- Smart appliances
- Smart meters and advanced metering infrastructure
- Smart grid
- Cloud computing
- Mobile
- Touch screen
- Sensor networks
- Controls
- Hubs
- Home automation
- Smart thermostat
- Health (elderly monitoring, home care, health & wellness, etc.)
- Security systems

The opportunity

The Internet of Things (IoT) market is projected to grow rapidly. Cisco Systems Inc., a global communications and information technology company, puts the value of the Internet of Everything (IoE) at $14.4 trillion (net profit) over the next decade.[1] This growth is driven by connectivity. According to Gartner Research, the number of connected devices in the world will reach upwards of 26 billion by 2020.[2,3] Some even estimate that this number will be closer to 100 billion.[4]

Frost & Sullivan, a market research firm, predicts that the market opportunity for connected homes, work and cities could represent $731.79 billion by 2020.

It foresees that the "connected city [will account] for over 50% of the market as the need for intelligent infrastructure and automation increases."

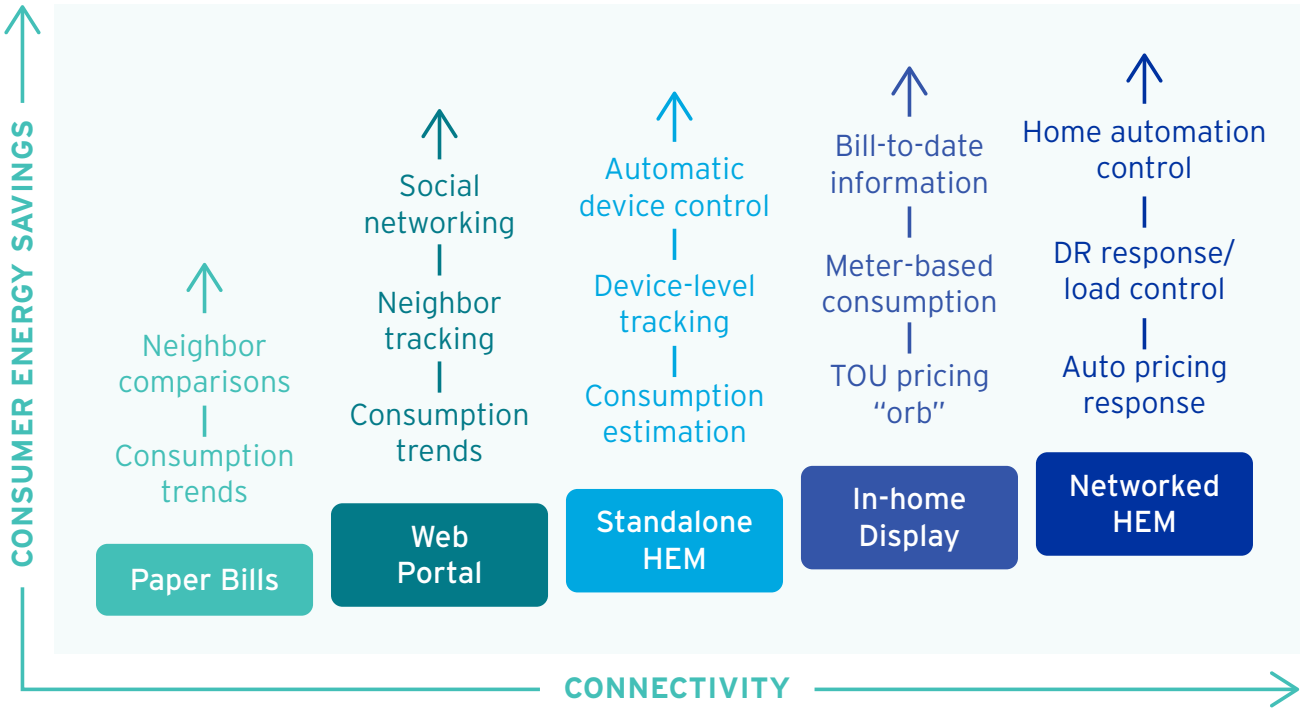
The connected home has a market potential of $111.03 billion.

Of this market, the media and entertainment segment will grow exponentially from $21.2 billion in 2012 to $76.9 billion by 2020,[5]

and the energy segment will grow from 2.35 billion in 2012 to 8.61 billion by 2020.[6]

Analyzing the energy market a bit further, Navigant Research predicts that global revenue from HEM systems will grow from $512 million in 2013 to $2.8 billion in 2020.[7] It also points out that the market will develop along a continuum, from paper bills to web portals to standalone HEM to in-home displays to networked HEM. Figure 2 illustrates how Navigant defines the segments in the continuum.

Figure 2: Development path for the home energy management (HEM) market



Source: Navigant Research.

Home automation

Home automation systems are increasingly popular as they enable an increase in comfort, savings in energy through intelligent energy management, and enhanced home security. A home/building automation system is a computer-based control system that is installed in order to integrate, monitor and control electrical and mechanical devices (i.e., the connected devices) within these buildings via a computer network that can be accessed remotely.

Fast facts for the connected home:

- **26 billion devices connected by 2020,**[8] with some estimating this to be closer to a 100 billion[9]
- To date, **4.8 million homes and commercial facilities** (each with a grid connection under 50 kilowatts [kW]) in Ontario have been **outfitted with smart meters in Ontario**
- **60% of Ontario's homes and small businesses** are **Green Button standard** enabled.
- 84% of Ontarians have Internet connectivity, as do 83% of Canadians[10]. **Globally, Canada ranks eighth in terms of connectivity**[11]
- **In North America, smart phone usage is near ubiquitous.** According to eMarketer, 65.5% or 165.3 million Americans use smart phones, and 61.5% or 17.1 million Canadians are smart phone users[12]
- **Investment capital is flowing into this space.** Notable deals in 2014 included Google's $3.2 billion acquisition of Nest Labs and OPower's $115.9 million initial public offering
- **Savings are deep in the commercial and MUSH (municipalities, universities, schools, hospitals) sector.** As energy use is the largest operating expense for an office property, reducing energy use by 30% lowers operating costs on average by $25,000 per year for each 50,000 square feet of office space[13]
- **Homeowners do not have the funds** that commercial building owners have to invest, nor the potential for savings
- The **rate of growth in electricity consumption is projected to slow,** yet consumption is still expected to increase by 29% from 2012 to 2040[14]
- **Energy prices are rising.** In Ontario's Long-term Energy Plan, for example, the province projects a 42% increase in home power bills by 2018, with the increase reaching 68% by 2032[15]
- **The average Canadian household consumed 40 GJ of electricity in both 2011.**[16] In the US, the average annual electricity consumption for a residential utility customer was 10,837 kWh in 2012, an average of 903 kWh per month[17]

rainforest™ automation

Rainforest Automation is an industry leader in energy feedback products (i.e., technologies that have hardware, in contrast with...

More on **Page 19** ▶

Table 1: Highlights the drivers and challenges in the home automation market.

DRIVERS	CHALLENGES
Increasing desire by the consumer for convenience	High implementation costs
Growing desire by the consumer for safety and security	A lack of consumer awareness
Technological innovation in sensors, analytics and touch screens	Complicated installation
Popularity of IT dashboards and web portals (IT is driving growth in and of itself)	Consumer confusion (e.g., too many products with similar features and not enough product differentiation, complex or cumbersome user interfaces)
Widespread connectivity: many homes now have a broadband connection	Consumer concerns for data security
High energy costs, which drive energy efficiency and optimization of energy consumption	In jurisdictions where energy costs are still comparatively inexpensive, motivation is low for residential energy consumers
Our aging population, which puts a focus on:* • Rising health costs—in Ontario, for example, rising costs are driving the public health system to move care into the home • A desire by consumers to age in place at home	

**For more on the transition to connected care in Canada, see Transforming Health: Toward decentralized and connected care.*

Automation and control: A building becomes a neural network

Automation and control (A&C) is an established market, with new applications in the home and in utilities. Technological advancements in the automation industry (such as remote connection, Internet and wireless technology) enable third parties to provide monitoring, automation and control services.

To the customer, HEM is just part of a suite of services and benefits enabled by A&C. A&C adds the smarts to the home. This comprises embedded sensors, in-home displays, processing power and hubs that act like a neural network. Nevertheless, this network only works if all these components can communicate fluidly. Interoperability is key to the success of home automation.

Now we're talking

Proprietary methods of communicating have left a mark on home automation—many connected devices simply cannot talk to each other. Open standards are breaking down some of these silos (for more on this, see the Connected World Market Insight Series reports, Game of Homes and The Evolving Digital Utility). Companies such as MMB Networks are also leading advancements in wireless technology, enabling third parties to provide home automation services using ZigBee (a communication protocol). MMB has developed a platform solution to address the challenge of connecting different proprietary platforms. MMB makes modules for consumer electronic appliance and device manufacturers to simplify the integration of ZigBee.

MMB Networks
Simply Connected

MMB Networks' RapidConnect is a hardware and software platform. It enables consumer electronics manufacturers to rapidly add...

More on **Page 23** ▶

Energy data: Developing standards beyond Green Button

To further facilitate device-to-device communication, or to really get the home to behave like a neural network, a new standard from the Consumer Electronics Association (CEA) has been approved. Called the CEA-2047/CE-Energy Usage Information, this standard gives users:

EYEDRO is a real-time electricity monitor: a piece of hardware that customers can install in different places...

More on **Page 39** ▶

"...a more detailed picture of device-specific energy consumption [that can be communicated over a home area network]. Though not mandatory for [consumer electronic] device makers, the new standard sets up a framework for manufacturers to provide energy consumption data that could be fed to an energy management system or to an application and present it to consumers on TVs, PCs, or mobile devices. In essence, the standard enables devices to be energy self-aware and share that energy data with other devices. The new standard is also compatible with the Green Button initiative, an industry-led move to provide utility customers easier access to their energy consumption data."[18]

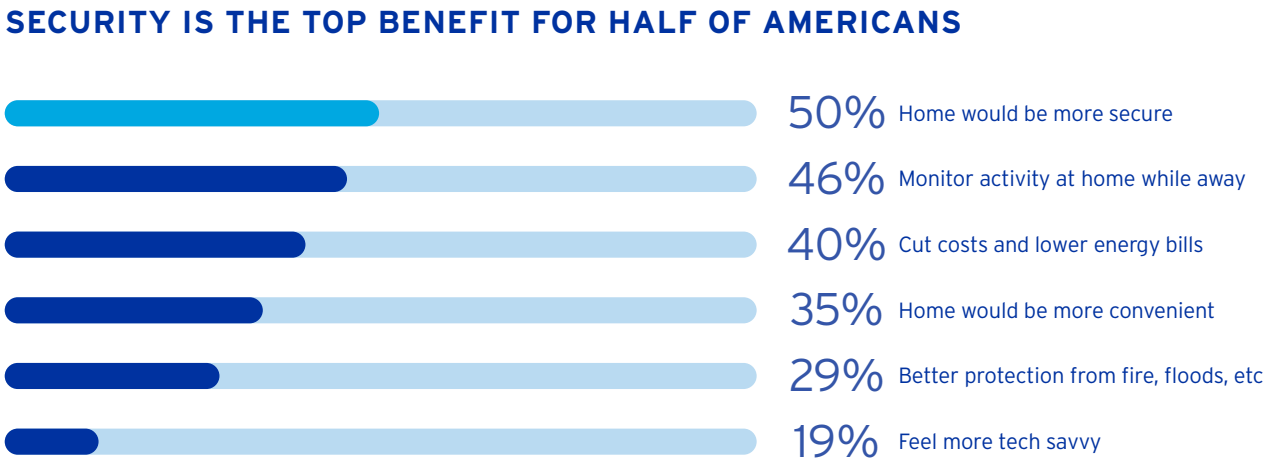
Not only does this standard enable consumer electronic devices to communicate their energy usage information, it also enables these devices to optionally respond to basic demand and response commands.[19]

The market players

The chicken or the egg? Home automation comes first, followed by HEM

In a US survey conducted by Lowe's, the home improvement store, the company found that consumers ranked security as the highest benefit of home automation (see Figure 3).[20,21] The results also indicated that 70% of consumers would like their smart phone to be able to control appliances or devices in their home while they are in bed, and that 44% wished to be able to adjust their thermostat remotely.

Figure 3: Security is the top benefit for half of Americans



Source: Lowe's via Greentechmedia

These numbers reflect key drivers in the home automation market—that is, once consumers are participating in automation for the purposes of security or convenience, they will then engage in consuming energy more wisely. Lowe's is leveraging this through its home automation platform, Iris. The platform connects devices from diverse vendors such as Honeywell, Schlage and First Alert through a hub on the home's broadband network. Available initially free of charge, which sets it apart from its competitors, Iris is included in the purchase of the smart hub and related items such as smart thermostats and door locks. For a monthly fee, users can upgrade Iris to tap into more features.[22]

Perhaps unsurprisingly, in the Lowe's survey, consumers indicated they'd prefer to be able to install the additional products or features themselves, without the monthly fee.

Telcos and security companies already have a foothold in the home

Communication companies such as Rogers, Bell and Telus, and home security companies such as ADT and AlarmForce, can provide products and services for the connected home and home automation. They hold an inherent advantage due to their existing connectivity and wiring infrastructure in the home. Energy utilities can become involved if they wish to recapture some market share from the new players entering into what was traditionally a utility market. Smart thermostats, in-home displays, mobile phones and other networked devices are the tools customers can use to increase energy savings and comfort—tools which tend to be purchased for entertainment, comfort and home security reasons.

ECOBEE makes WiFi connected thermostats that control your heating and cooling system...

More on **Page 30** ▶

Can the success of smart phones be replicated in the connected world?

More than a billion smart phones (iPhone, Android) have been sold since 2008. One of the key drives of success for Apple and Google's business models resides in the implementation of app stores, which allows innovators to create applications at a rapid pace, leading to a plethora of available apps. Can Apple and Google, and similar companies such as Amazon, replicate this success with the Internet of Things (IoT)?

With Apple, as long as it is an Apple product (smartphone or tablet), you can automate your home using whichever device you prefer. This echoes the Apple Store/iTunes business model. At the same time, Google is giving away its OS (operating systems) at $40 a prototype. Both companies are creating the marketplace and motivating others to innovate within that space. In future, Apple may feature a store dedicated to connected home products. The business case is already proven—Apple would just be applying it to the home.

Apple slices into the connected home market with Homekit

In June 2014, Apple released Homekit—a home automation platform that allows a variety of smart home vendor technologies to be managed through one application on one of Apple's devices. This is part of a broader strategy for Apple to enter into the IoT and connected home markets. Apple has a history of success in harnessing entrepreneurs to bring value to the devices it seeks to sell. Homekit could be Apple's attempt to recreate their success with the Apple Store, and apply that model to the IoT.

Samsung's Smart Home platform takes aim at the connected home

Similarly, in January 2014, Samsung, the global electronics giant, unveiled its Smart Home platform. This platform lets users connect and control their home using their Samsung devices through one app via their Samsung Smart TV or their smart phone.[23] According to Computerworld, "The company claimed it will 'collaborate with third-party partners to make the Smart Home service extendible to their products and services,' but it will doubtfully support its competitors' products."[24]

Samsung has partnered with a Toronto condo developer to offer its smart home service as a built-in feature. This service enables condo owners to control their access to the building and their unit, their comfort, and, for an additional fee, their appliances and entertainment systems.[25] This building project is set for completion in 2017.

Google lays a Nest egg

As of October 2014, Google did not yet have a competing platform (like Homekit), but with the acquisition of Nest, it has positioned itself as a key contender (see Figure 4). Like Apple in the smart phone market, Google has shown its ability to harness the crowd as well as developers' ingenuity to create a multitude of apps and devices.[26]

Nest has partnered with Airbnb, providing users with free access to MyEnergy, its energy monitoring service in 2013. According to Greentechmedia's Stephen Lacey, this strategy brings "thousands more customers onto the platform...a great way for Nest to gather more information on how people are using the devices and saving energy, while potentially pitching more services like residential demand response as the company expands utility partnerships."[27]

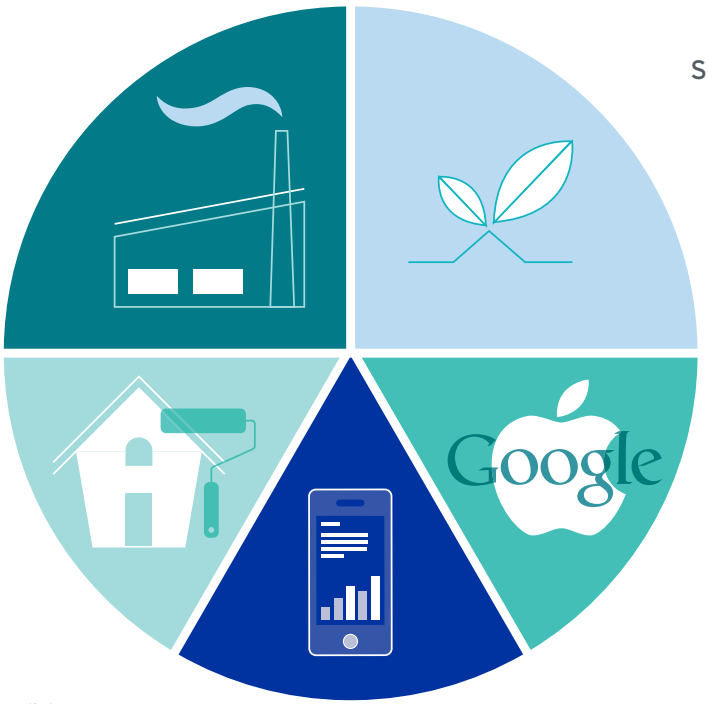
In its 2014 report, visionmobile said it best: "the evolution in mobile in the past 6 years holds a clear lesson for the Internet of Things. To realize its full potential, the fledgling Internet of Things industry needs to follow IOS and Android's recipe of market-creating innovation."[28]

valta

LIRICCO has developed an energy management platform called Valta that consumers can use to automate their devices to fit their...

More on **Page 33** ▶

Figure 4: Key market players



DEVICE/EQUIPMENT MANUFACTURERS

Schneider Electric
Logitech
Samsung
Johnson Controls
Whirpool
General Electric
Siemens
Honeywell International

NEW ENTRANTS

SmartThings
Opower
Ecotagious
Energent
Icontrol
Rainforest Auto mation
Ecobee
Eyedro
MMB Networks
Zuli
Liricco Technologies

BOX STORES

Lowe's Home Depot

IT GIANTS

Apple Google Cisco

COMMUNICATION CARRIERS

Rogers Telus Bell

**Note: This is not an exhaustive list. Combines market players active in Ontario or major market players globally.*

Google and Microsoft have failed before. What's different now?

Gigaom's Katie Fehrenbacher wrote in 2011 about Microsoft's Hohm and Google's PowerMeter and how both companies had pulled their online energy tools pulled from the market. Fehrenbacher noted the reasons as: [29]

- Low initial uptake
- Utility barriers. (Note: smart meters and data accessibility had not really arrived yet in 2011. Utilities were slow to act and did not initially select the best product for their meters. In Ontario and other markets, this adversely affected startups as new ventures in particular are not attuned to the long utility sales cycle)
- Market immaturity
- Not enough value for consumers and utilities being derived from the initial product, and opt-out programs being more effective than opt-in programs at driving adoption. (Note: this is why utilities are such an important partner in HEM. They are one of the few types of companies that can run an opt-out program [i.e., you are in until you opt not to be]. This type of utility partnership is key to Opower's success—they are part of a utility opt-out program.)

It's been over three years now since Fehrenbacher made these observations. While still heavily fragmented, and with no clear market winners, the connected home market is maturing. Utilities are beginning to come around: the Green Button program has been launched by utilities across North America, with over 60 million customers using the standard, and participation continues to grow. With this program, utilities are no longer as wary of the large influx of data and the broadband entailed. As well, they maintain control over consumer energy data and consequently retain their customer relationships.

With more and more consumers investing in smart home technology, utilities actually gain a market opportunity. Market research firm Gartner reports that utilities can leverage consumer investment in smart home technology to better engage with their customers. For example, utilities can bundle HEM technologies with energy service plans. This connection to the customer goes beyond the issue of customer retention—it also fulfills the utilities' business objectives. Utilities can access the customer's home (with permission) as part of a demand management strategy, and later coordinate renewables and other distributed resource integration.

ECOTAGIOUS
Energy conservation. Worth spreading.

ECOTAGIOUS helps utility companies meet their energy conservation targets by breaking down smart meter data into insightful and useful information for customers...

More on **Page 27** ▶

Utilities and communication carriers: Could they collaborate to boost the HEM market in Ontario?

In Ontario, in addition to the smart meter roll-out, participation in the Green Button program, time-of-use pricing and an explicit strategy from the province to move forward on the smart grid, utilities are also required to achieve 7,000 GWh (7 TWh) of energy savings. This savings must be achieved between 2015 and 2020, and the utilities have been proposed a budget of $1.8 billion dollars to do so[30]. Ontario's Long-term Energy Plan allocates $4 billion to meet the conservation targets it sets out.

A key path to reach this robust goal could be to enable companies such as Rogers, for example, to use the Green Button standard to formally participate in the 2015-2020 Conservation Framework and to drive conservation savings. Currently, if a third-party company drives savings through consumer engagement, there is no mechanism for the utility to count those savings toward their targets, and, subsequently, it cannot pay those companies for the conservation. However, should third parties and their conservation solutions be eligible to capture a portion of this funding through payments from Ontario's utilities, then such a strategy would help grow Ontario's HEM market.

energent

ENERGENT INC provides state-of-the-art energy management information system solutions. The company collects all energy...

More on **Page 36**

Energy management: An embedded feature in the smart home

As discussed, energy conservation is not a strong market driver in home automation. The key drivers are security, comfort, entertainment, and features geared for an aging population (see Table 1). Home energy management as a service can piggyback on these other services for which consumers are willing to pay.

Market players, including startups, are creating and pitching a need for HEM in order to develop the consumer market. At the same time, large US companies such as Comcast, ADT, Verizon and AT&T "have added energy management as an option that can be bundled with home security, automation, or Internet access," says Neil Strother, a senior research analyst with Navigant Research. He explains, "the uptake of home energy management by consumers is still relatively low, but these service providers are seeding a market that has reasonable potential over the next several years." [31]

Whoever can control demand in significant quantities can essentially act as a utility. "If a company touches a device in a user's home through a Lowe's application, SmartThings, Revolve or Nest, they are essentially now a utility," comments Daniel

Moneta of MMB Networks, in an interview for this report. "That company is able to buy and sell demand on the grid. They have a customer base that is larger than any single utility, and that's going to be an interesting shift in the market within the next decade."

There is a battle underway for domination of the HEM market. As of 2014, the winners are not yet clear. The HEM market is young and fragmented, and a key piece—simple, intuitive UI/UX— is still largely missing.

PROFILES

We interviewed seven early-stage Canadian companies that are helping shape the connected home and HEM landscape. Their profiles highlight the companies' approaches to the market as well as their products.

rainforest™ automation

Bill Richardson, VP of Marketing

Chris Tumpach, CEO

About the company

Rainforest Automation is an industry leader in energy feedback products (i.e., technologies that have hardware, in contrast with platforms that do not have a hardware component). The company makes products that enable utilities and their customers to manage real-time energy use. Its home area network (HAN) devices, software products and services enable energy efficiency and demand response programs for utilities, and provide automation convenience and reduced energy costs for residential and commercial consumers. Rainforest Automation's products are in use across the US, Canada and Australia.

Back in 2004, the original concept for Rainforest Automation was home automation, and the company is now seeing this market gain traction. At the time, the team quickly realized that there was basic technology that needed to be developed and got involved in the 2008 bidding process with BC Hydro for smart meter deployment. The utility expressed an interest in an in-home display. The Rainforest team built the first product, called the EMU (an energy monitoring unit). As it turned out, BC Hydro was not ready, though, so they headed south and began pursuing business with utilities in the US.

The company is now focused on monitoring solutions, but its original vision, to offer users the benefits of home automation, is again in its sights. This time Rainforest Automation is approaching the industry from a utility's point of view. It is leveraging its experience of nearly a decade of working with utility companies and understanding their approach to load control. The company has used this experience to develop products and services for homeowners who can then benefit from demand response and energy efficiency programs.

We spoke to Bill Richardson, VP of Marketing, and Chris Tumpach, CEO, to learn more about Rainforest Automation.

Chris Tumpach (CT): We basically have two lines of products. One is an in-home display that connects directly to the smart meter via ZigBee radio and gives consumers real-time energy feedback. It's a really simple device that anybody can use to get a handle on their energy usage. Our other product line is our EAGLE gateway platform. This product connects to the consumer's home network through a WiFi router. It

communicates with the smart meter, pulling energy data from the meter. The product can show this information to the user or push the data to the cloud for additional analysis through any number of third parties.

This is stage one of the EAGLE product. In stage two, we integrate control for demand response, providing home automation capabilities to that same platform, through a software upgrade.

Who are your users?

Bill Richardson (BR): We have a large installed user base with thousands of retail users in California. Just this week, we offered them a software upgrade and received hundreds of requests within minutes of the offer. Our users are very engaged. Our next software update, which we will release in in late 2014, will offer control features. The control part allows us to bring other partners into the fold, such as thermostat, load control switch, and smart plug makers.

How do you differentiate from your competition?

CT: There are two different competitive spaces. There are those [competitors] that come from the utility space who are selling non-intelligent devices—devices that can only read the meter, without capability to upgrade or monitor or manage or do anything with the information. There are other competitors such as SmartThings or Revolv that have built gateways that can connect to various devices. While they're interesting and users can control things in their house, they do not integrate with the utility and the energy side of the equation, so they are not eligible for utility rebates. The cost of those products ends up being a lot higher. They can't be controlled by the utility, so neither the utility nor the user gets the incentives to monetize that path.

We merge the two worlds, the utility and the consumer space. That's something that nobody else has done successfully.

According to our research, customers are not adopting home automation services to manage their energy consumption. They are adopting automation services for security, comfort, health or other reasons. So, how do you see yourself in the connected home space?

CT: It's really interesting. Basically what you have to do is to offer different things to different people and make sure you connect with them. For consumers, you're right. What they really would like is to control everything through their smartphones. That's their main goal. So that's what we provide them. The utility doesn't really care if the consumer has control through their smartphone. They would like to, occasionally, have their own control.

Both have the ability to control the platform, although the homeowner has the last say, which is important because homeowners want to feel they're in control. You're right. For consumers, [energy management] is not the prime reason for purchasing these products, but having it as an optional feature allows them to take advantage of the utility programs.

BR: There is a study done by Lowe's that determined that the number one thing that people want is control through their smartphone. We provide that function and, as an extension, we tell them they now qualify for utility programs and incentives. For them, it's just a bonus because what they really want is to have the convenience of being able to control things from their phone.

The utilities get access to our user base, to this whole segment of the population that is ready for their programs.

Tell us about the customer segments you're targeting.

BR: We have two primary segments. One of them we have mentioned: residential, the normal consumers. But in addition to that, we're also targeting small commercial users. This is a neglected market. The problem with small commercial— like coffee shops, small grocery stores, convenient stores, that kind of thing—is that they are paying commercial rates, which means they're paying peak demand charges. But they have no way to manage their energy consumption because they can't afford the thousands of dollars that it costs for the monitoring equipment, and the hundreds of dollars per month for the monitoring service.

We bring consumer technology, developed for residential clients, into that small commercial space— it's very affordable hardware. That is a whole untapped market that the big industrial demand response [competitors] is not dealing with because there's not enough money, even though the volume is huge. On top of that, we are tackling the residential [market], which is hard to aggregate. We are attacking that market through monitoring first and then adding the demand response aggregation. It's really a Trojan-horse strategy where we've got the monitoring in place and then we offer clients to be part of the utility programs because they're already connected.

Do you see yourselves as another ENBALA or EnerNOC or are you not going that far with demand response? Do you aggregate it?

BR: Yes. EnerNOC has big industrial customers. We have a program where we are putting monitors in schools, which is a low-end market for them, but for us, it is big. So yes, we think of ourselves right now as a junior EnerNOC, attacking markets that don't have the economy of scale because they can't do the high-volume, low-yield markets.

We think that's critical too for demand response at the residential level...

BR: If you look at the growth curves of electricity usage, you'll see that industrial is fairly flat because they're well regulated. They're all in these programs because it makes economic sense for them, but the commercial and residential curves are still growing because they haven hundreds of dollars per demand response.

What would you say has been your biggest challenge to date as a startup and in bringing your product to market?

BR: Well, as a company, I would say capital was a big challenge. We're completely self-funded and not by choice, I can tell you that.

CT: Being a Canadian startup, we have to take a very different approach to how we run our company. We have to be creative and say, "Okay, we have to create a profitable business that will allow us to grow to the point where we can then get decent investment." Capital has

been a real challenge for us because we can't grow at the rate that I think we could if we had that capital investment.

What about bringing your product to market?

CT: The biggest challenge is that this is a new space that nobody is really familiar with. We're breaking new ground, and when you're breaking new ground, there's a lot of education involved. We're not only educating individual consumers, but educating the utilities as well. We have to be really creative to make what we do fit into what they do. That's been really important.

What do you think is needed to alleviate market barriers?

CT: I would say our biggest market barrier has been in being able to work with smart meters and the utilities that have them. Let's take an example. The state of Florida has deployed five million smart meters, but because the state regulator hasn't pushed the utility into action, they are purposely not getting started.

BR: It's a hassle. We worked together with some lobbying groups to actually open up the California market because it was closed until last year. In the state of Florida, we are involved in a lot more politics than we thought we would be, working with the state regulatory bodies in order to force the utilities to move forward. It's starting to happen now. We have several states that are just opening up this quarter. Three more states are opening up by the end of 2014, but there's still more than 40 to go.

What are your next steps then?

CT: We have some amazing growth opportunities on the horizon. Our goal as a company is to get additional growth funding, hire more people and then go after those markets. We know now in California that for every dollar that we invest in product promotion, we'll get $20 back in revenue. We believe that we can replicate that in several markets.
There are international opportunities that are being presented to us as well. We just need a few more resources so that we can deliver the proper solutions. Our biggest challenge is that we're 90% of the way to getting some fantastic growth, but, organically, we need some help.

BR: It's really about delivery. There are customers just waiting for product. In addition, there are markets where we have complete products and we're already selling those products, but we can't afford to promote them.

There are a number of significant opportunities that are just sitting there waiting for us to take advantage of, because there are very few companies who can deliver what's needed.

About the company

MMB Networks' RapidConnect is a hardware and software platform. It enables consumer electronics manufacturers to rapidly add ZigBee connectivity to their products with automated interoperability across major connected-home platforms. MMB's founders realized early on that with networking technology becoming cheaper and the value of having devices connected increasing, simpler devices were becoming more complex. Companies that manufacture these devices often do not possess the resources, time, expertise or market knowledge to integrate connectivity and bring their products to market through a number of emerging channels. MMB's founders saw an opportunity.

Before launching MMB Networks in 2008, the company's three co-founders worked at another startup in the energy management space, developing wireless control systems for the hospitality industry. Part of developing this product included evaluating the right wireless technology. They eventually decided on ZigBee, a very new technology at the time.

After this experience, they moved on to start their own company. Their first client was a company trying to add connectivity to their existing thermostats. It recognized MMB as having leading experts with the emerging Smart Energy standards that were built on top of ZigBee.

As a result, MMB would often send the tools and software they had built for internal development to their client's customers to help with testing. When the software for testing proved superior to what the users had in their own labs, MMB started getting additional purchase requests. This marked the start of MMB's focus on connectivity solutions for the smart grid, connected home, and IoT applications.

We spoke to Daniel Moneta, CEO of MMB Networks, to discuss the company's next steps.

Who are MMB's customers?

We have a wide variety of customers, ranging from small startups to large multinational and household brands. On the large brand side, one of our customers is Kwikset, an electronic door lock manufacturer that sells products through major retailers under a variety of brands. At the other end of the scale, there's companies like Zen, which has developed an innovative, beautiful and simple new thermostat, designed specifically to be a good citizen of a connected home.

Typically, our clients are companies making some sort of consumer electronics — whether in an established category like thermostats or in new ones like lawn monitoring sensors. They want their devices to be connected and able to join the many and growing number of platforms now available to consumers. For instance, they want to be able to sell the same device to subscribers whether they are using Rogers' Home Monitoring System, Control4, Lowes' Iris, Smart Things, Crestron or others. MMB's software platform allows users to connect to any of these platforms, and to more in the future.

Can you describe your product?

MMB offers our customers wireless modules that get embedded into their products, enabling them to communicate on connected home networks. These modules are enhanced by MMB's RapidConnect embedded software platform that automates ZigBee connectivity and interoperability.

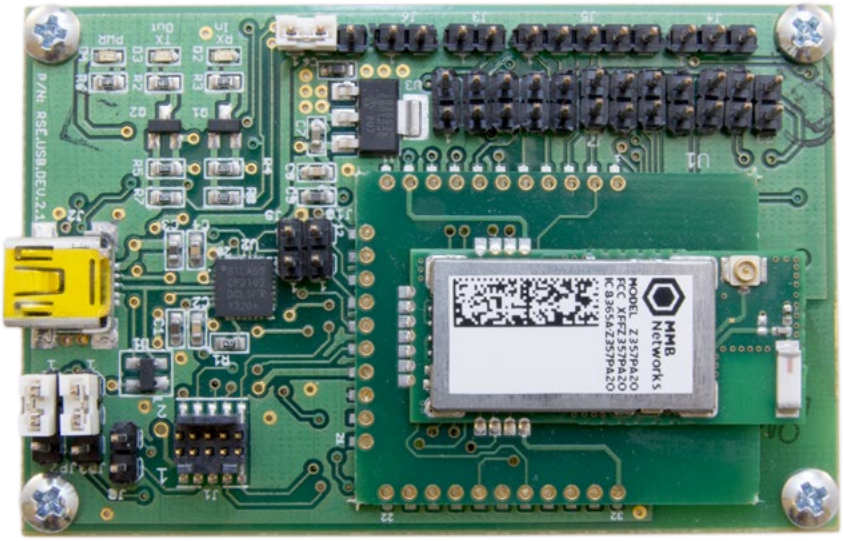
Today our products are primarily based on ZigBee. ZigBee is a secure, low-power, low-bandwidth, mesh networking wireless standard, which makes it perfect for connected home devices. But a good radio isn't enough if everyone on it isn't speaking the same language. So the ZigBee Alliance did something very important, which is to define things in what's called the "application layer" —defining how devices of certain types should behave and talk to each other on a network. This lets different manufacturers develop devices that will all talk to each other. This isn't necessarily the case for other protocols. With WiFi, for example, no matter how ubiquitous it may be, a WiFi door lock, a WiFi thermostat and a WiFi remote made by different companies won't talk to each other. They'll connect to the same network, but they can't interact unless those companies have made the effort to work together and integrate each other's proprietary protocols.

That said, even the most robust standard still requires you to implement it, and to implement it well. Product developers, with or without an embedded or wireless engineering team, have to put in a lot of work to create a product that will perform well in consumers' homes. Their devices have to operate in a variety of wireless environments and interact with any number of other devices and platforms that may not all behave the same way. This is called interoperability. It's extremely important to the success of a connected product, and product developers spend a lot of time trying to get this right, and make a lot of the same mistakes along the way. That's a lot of effort spent on a critical, but likely not core part of your product's functionality.

How does MMB help?

We've automated a big part of that process. Our embedded software, RapidConnect, implements and automates ZigBee Smart Energy or Home Automation standards in a robust way. It's built on years of MMB's real-world experience. We convert a lot of complexity and intelligence out to a simple interface that's easy for product developers to work with. For some of our customers, we'll even adapt our interface to match one already in their product, so they don't have to change their device to add connectivity.

Beyond just implementing the standard well, keeping up with the rapidly evolving connected home landscape can be a challenge for vendors. There are different platforms, including Icontrol, which powers the Rogers, Comcast, Time Warner, Cox and Peq (Best Buy) platforms, as well as Lowes' Iris, and Wink, which is now carried by Home Depot and Amazon. They generally all use common standards, mostly ZigBee. But they're



competing with each other, so one of those platforms is going to have three features that the other platforms don't have, or have different requirements of products in their ecosystem, based on how they're used.

What are your biggest challenges?

We started the company as very smart grid-focused. We built our platform around Smart Energy standards—enabling in-home devices to talk to smart meters. Tens of millions of smart meters were rolled out with ZigBee built in, to enable appliances and other devices to use real-time energy data in order to conserve and manage energy.

As it turned out, actually getting devices to connect to those meters once they were rolled out was more challenging than expected. Utilities don't have the same motivation as (and, in fact, have more barriers than) retailers and service providers to enable and support an ecosystem of connected devices for consumers, despite perhaps their best intentions. We're now just starting to see them turn those features on and let consumers bring energy monitoring devices home. MMB is supporting those efforts, working with companies like Lowes and ADT to link their existing platforms to meters in California, for instance.

So that was a major challenge for us: waiting for the market to catch up to what we were trying to do. But now, with the home automation/connected home/IoT market heating up, we're finally starting to see the acceleration we'd been waiting for.

Also, in the past, our challenge had been the scarcity of ways to offer these products to the consumer. Now almost all the major retailers and all the major service providers have a platform. And everyone else who doesn't have one is trying to figure out what they are going to do.

What needs to be accomplished next to alleviate any remaining market barriers?

I think there's a lot of work still to do in standards, but we're getting there. There are a few different dominant standards in this space, each with its own ideal uses, and that's how it should be and probably will be for a while. Nothing is funnier than watching people who are super-biased about particular standards argue with each other. There are different reasons for different types of technology. You'll always have a little bit of diversity and people will always be competing with each other. It's the same thing when you're building apps or accessories. Google is going to have few things that Apple doesn't have. Apple is going to have a few things that Google doesn't have.

The more diversity, the better our value proposition gets because we're helping those OEMs [original equipment manufacturers] navigate both the knowledge and the technical capabilities to connect to all of those different channels.

Did utilities lose an opportunity?

Ontario was ahead of the game in terms of rolling out meters, but didn't have real-time communication to the home. There are some other technologies, but

they are not really a two-way communication.

But home automation started to catch up, and it was obviously a lot faster and more innovation-driven than the smart meter- or utility-driven side of the market. We've enabled many more devices on the home automation side than on the smart energy side. But now, we're actually selling a lot more smart energy products that connected home automation systems to smart meters. Instead of the smart meter "talking" to everything in your home, in the new model, the smart meter talks to your connected home solution, such as Rogers, the IDT panel or the Lowes hub.

I think this is the right model. Utilities came a while ago to the conclusion that maybe they should just be information providers.

In your opinion, what's next?

I think soon you're going to see major service providers or connected home platforms starting to manage as much load as utilities, and have far greater control over it. This is going to enable big advances in the smart grid, including both renewables and distributed generation. Companies like Apple, Google and Amazon are building power plants just to feed their data centres. They are getting good at that and they are going to be able to start putting power into the grid. Increasingly, especially as we move towards renewables, the biggest value in demand response will be in matching demand to capacity. Whoever is in control of the load will have the most leverage.

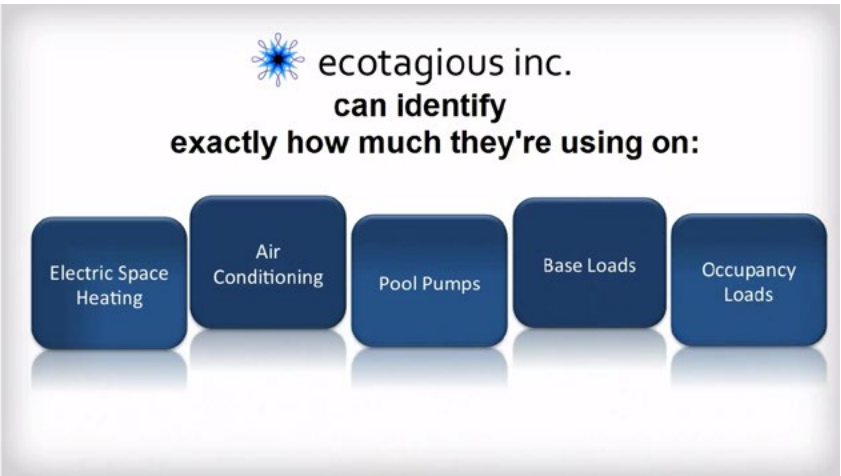
ECOTAGIOUS

Energy conservation. Worth spreading.

About the company

Ecotagious helps utility companies meet their energy conservation targets by breaking down smart meter data into insightful and useful information for customers. The premise is that the more the customer understands how they are using their electricity, the more likely they are to take action to conserve. Ecotagious has developed a SaaS (software-as-a-service) product that allows utility companies to provide appliance-level feedback to customers. The software requires no additional hardware aside from the smart meter. By being able to target feedback on specific loads, such as air conditioning or electric space heating, Ecotagious can help utilities shape their profiles for summer or winter loads, reduce peak demand and drive customer satisfaction.

Ecotagious was launched in 2010 when the co-founders began developing the complex algorithms at the heart of their offering. The first pilot ran in early 2014. It resulted in a commercial launch a few months later with seven utility customers coming on board.



We interviewed Bruce Townson to learn more about Ecotagious.

Townson is the company's CEO and has more than 20 years of experience in strategy and business development for clean energy technology companies. With a degree in engineering and physics from Queen's University and a MBA from Columbia, Townson has worked in the energy sector for Schlumberger and in the consulting sector for Boston Consulting Group.

How many employees does Ecotagious have? What are their backgrounds?

There are eight of us right now. Salim Popatia is our VP of business and development and has about 15 years of experience in sales, marketing, government affairs and people management in the pharmaceutical industry. He's very familiar with selling into highly regulated markets. Mike Walsh has about 17 years of experience running a software-

as-a-service company that delivers stakeholder engagement services to municipalities and other companies. David Berkowitz is our executive chair, and has 15 years of experience in the venture capital industry. That's our senior management.

What are the company milestones?

We released our first alpha product to utilities in 2012. We ran a pilot of our second-generation SaaS offering, which delivers conservation, to utilities in the first quarter of 2014. We commercially released that same product later in 2014, and within months signed on seven utility customers.

That has proven two things for us: number one, significant customer interest, and number two, the large market opportunity for our product. What the pilot proved was the effectiveness of our SaaS offering in delivering cost-effective and high-impact conservation—something that really interests the utility companies.

What distinguishes Ecotagious from its competitors?

Two things. First, because we can disaggregate smart meter data to major appliance loads, we can deliver high customer satisfaction. Customers appreciate getting more information about how they are using their electricity. This is something they have never had before. They feel like their smart meter is working for them.

Second is the impact of the conservation that we deliver. For example, in the fourth month of our pilot, we delivered over 4% conservation across the residential segment we served. It's very cost effective relative to other residential conservation programs.

So, on the technology side, we have smart meter data analytics to drive conservation because we can disaggregate the smart meter data to measure appliance loads. Utilities gain high customer satisfaction from the residential customers who participate in the program because of the value it delivers—savings and information on their electricity use. For utilities, the product is very cost effective and gives them a high conservation impact for a segment of their customers (the residential segment) that is typically very hard to serve.

Who are your main customers right now?

Some of our customers are Greater Sudbury Hydro, PUC Distribution and Northern Ontario Wires.

How much capital have you raised and from what sources?

We have raised capital, but we haven't disclosed how much. We prefer to keep that information private.

What is the company's biggest challenge?

The biggest challenge has been accessing the large amounts of data that we need for our algorithm and our smart meter data analytics. It is not only a technical challenge, but also a commercial and a market one. Utilities are now dealing with 720 times the meter data that they used to manage. In the past, they hadn't done much more than bill consumers based on that data. Accessing the data on behalf of the utility companies is a new process that has taken time to put in place.

But it's getting better. Every time we access data, it gets easier and easier. Even so, this is probably the most significant barrier.

What has been the most exciting part of building the company?

Building the right team to bring the product to market has probably been the most exciting part of it. We've got a fantastic team in place, so it's fun to come to work. The team is dedicated and driven and we're all focused on the same objective.

And what has been the most challenging part?

Having the time to pursue all the opportunities that are available. As a small company, we are resource-constrained, so we have to be very deliberate about the opportunities that we pursue. Yet, we see with smart meter data analytics an enormous amount of opportunity. We have to be very judicious in how we deploy our resources.

What do you think is needed to alleviate market barriers? Initiatives like Green Button, for example?

Standards like the Green Button absolutely will help alleviate some of the barriers. I think that's probably the biggest one. As utility companies and their suppliers, like meter data management repositories, become more familiar with deploying our analytics, it will alleviate another associated barrier.

You've been in the market for a while. What trends do you see? What changes are affecting the sector?

We're beginning to see recognition by utilities of the value of smart meter data analytics in driving conservation as well as customer satisfaction. We're starting to see much more interest and confidence in the value that our software-as-a-service offering can provide. There's still a huge opportunity ahead, but it's starting to gain momentum.

Ecotagious just ran a pilot with Greater Sudbury Hydro. What were your main findings?

We ran a pilot with Greater Sudbury Hydro last winter, from January through April 2014. During that pilot, we discovered we were able to deliver over 4% conservation in the fourth month after launch, across the residential segment that we served. This proved a few things: the ability of our product to drive the specific conservation the utility wanted (winter energy savings), rapid deployment and impact of a turn-key program for the utility company, and high customer satisfaction as a result of delivering reports to customers.

Where do you see Ecotagious six or eight months from now?

We see Ecotagious continuing to grow quickly throughout North America and Europe.

ecobee

About the company

ecobee's mission is to help consumers use technology to conserve energy, save money and reduce their environmental impact. The company recognizes that 50% to 70% of a home's energy use is spent on heating and cooling, so it manufactures WiFi-connected thermostats to help consumers conserve more.

The company started when Stuart Lombard, CEO and co-founder, looked at ways to reduce his environmental impact. "I thought about buying a Prius, putting solar panels on my roof and all the different things that I could do," he explains. Lombard soon realized that heating and cooling is also a big portion of energy use and controlling it can have a significant impact without a lot of cost.

When ecobee launched in the summer of 2007, related market products were hard to use. Many users did not know how to properly program a thermostat and thermostats did not offer features that Lombard thought would be most helpful. "They weren't internet-connected, you couldn't control them through a smart phone, or through the web." ecobee is Lombard's third company. His first enterprise was one of Canada's first Internet service providers. It went public in 1995 and raised about $50 million in its initial public offering. He then started a second startup that enabled clients to encrypt data across the Internet. After a successful sale to a Boston firm, he spent close to eight years working as a partner in a venture capital firm.

We asked Stuart Lombard to tell us more about his product and where ecobee is headed.

Tell us about the product. How does it work?

ecobee makes WiFi connected thermostats that control your heating and cooling system. The thermostat connects to the Internet and, once connected, it can be controlled through a smart phone or a tablet. Our newest product, the ecobee3, solves a design flaw that has existed in thermostats for decades: the problem of only measuring temperature in one location, often the hallway. ecobee3 is different. It works with wireless remote sensors to measure temperature and occupancy in multiple locations to make you more comfortable when you're at home and save you energy when you're away.

Does your solution provide only feedback—or advice too?

For consumers, we provide feedback on what the right temperature is when they are not home, based on outdoor weather, home performance and heating and cooling system equipment performance. Our newest product includes remote sensors that measure both occupancy and temperature. They provide two really unique features. The first one is called "follow me." One of the biggest problems with thermostats is that they're not necessarily installed in the rooms that the consumers use. By putting a remote sensor in that room, we know when a consumer is in that room and we can control your heating and cooling system to deliver better comfort to the rooms that you use.

The second feature uses those sensors to detect when a consumer is home or not. If the thermostat "thinks" a consumer is at home, but the sensors detect that they are not, we can automatically turn down the equipment so that consumers don't waste energy.

What are ecobee's biggest milestones?

The first milestone was to start the company: to quit what you're doing, to quit your day job and to actually jump in the pond. Another huge milestone was to ship

the first product. That was clearly a big milestone for us. I think the next milestone is feeling that you've understood the processes to make the business work and customers start actively seeking you out to buy your product. We're starting to cross this milestone at ecobee.

Who are ecobee's customers?

We are very focused on families who use technology to make their life simpler or better, but who are not necessarily very technical. They're people who love their iPhones, love their tablets, are engaged on the internet, whether it's Facebook or social media, and are looking for other ways for technology to simplify their lives. Typically, it's young families who are looking to put a nice product in their home that's going to look great on their wall and who are comfortable using technology to make their lives simpler.

Has ecobee done any fundraising?

Yes, we have. We've raised capital from venture capital sources. For example, Relay Ventures, Tech Capital Partners and the Ontario Capital Growth Corporation are investors in the company, as are some of our largest customers.

What would you say has been your biggest challenge?

I think the biggest challenge is the focus. As a startup, what you need

to be successful is great word-of-mouth. To get great word-of-mouth, you need to build a really great product. You need to focus on all of the details that make a product truly exceptional: making sure the product does what your customer wants and that you deliver on the value proposition that you promised. As you grow the company, as you get successful, one of the challenges is that people want to do more with your product and start using it in different ways. Then you're exposed to a lot of opportunities and I think is critical to keep focused and to understand when to say no. I think that's the biggest challenge.

Is it easier now because you have previous experience in running startups?

I think it's both easier and harder. When I started my first business, I had nothing. I remember the day I quit my job. I packed everything I had into eight boxes and I moved back home with my dad. I had nothing to lose. In the worst case, I was going to go back and get another job. In some ways, starting ecobee was harder because I had, frankly, a lot more to lose.

Obviously, from the perspective of having confidence, of having been through it, of understanding some of the challenges you're going to face, it is easier.

What's your market? Are you selling in the Canadian market only?

We sell in both the US and Canada.

Do you think it's easier or more difficult to sell in Canada?

No, I don't think it's more difficult. I think if you're a Canadian startup with a consumer technology product, you need to be focused on a market outside of Canada to have a larger addressable market. Our belief is that if we can't sell in the US, which is close to us and speaks the same language, we're not going to sell anywhere. We've been very successful selling in that market—about 90% of our sales are in the US.

I don't think we see significant market barriers other than normal business challenges, such as how do we market better, how do we sell better, how do we build better products, how do we hire better, or how do we help develop our employees.

What's next for ecobee?

World domination! [laughs] We're in a market that's growing very rapidly. It's really at an inflection point and we're trying to manage the growth. We've doubled our employee base over the last year, which is a big challenge, and we want to make sure we deliver a great experience to our customers. That's what we're focused on right now.

What are the major trends or changes in the sector that you've seen in the last couple of years?

I think the biggest change is consumer perception. When I left my position with a venture capital firm to start a company that makes WiFi-connected thermostats, people looked at me like I was crazy. What's really exciting and gratifying is that the public perception and the market perceptions have gone from "are you nuts?" to "wow, that's kind of cool" to "hey, I've got an ecobee in my house." That's just really, really cool to see.

valta

About the company

Founded in 2011, Liricco has developed an energy management platform called Valta that consumers can use to automate their devices to fit their lifestyle. Users plug the control hub into their router and plug the socket into an outlet, and then they can connect to any device they want to control and monitor. Users gain instant total control of their devices, and within 24 hours, the Valta cloud server identifies savings opportunities.

One of the features of the Valta platform is called Geofence. Users can set up Geofence to operate within a certain distance from their home (200 m to 1 km) so they can automate their devices to behave in a certain way depending on whether the user is at home or away.

Liricco is now launching European and UK sockets as well as a new lighting solution. As Jeff Lin, one of Liricco's co-founders, tells us, "our light bulb is the most efficient light bulb. It only consumes 9 W of power for 800 lumens. Also, we can check the energy use of every light bulb. So if you dim the lights, we can show you how much energy you're saving." The company plans to incorporate a sensor to the lighting system that will be able to measure ambient light, motion and air quality.

We interviewed Jeff Lin, co-founder (the man on the left in the photo above, standing beside co-founder K.C. Li) to learn more about Liricco.

How did the company start?

Two of my partners and I went to the CES conference, probably around four years ago, and started thinking about the next big thing. The Internet of Things was gaining momentum. And we were seeing the basis of a huge energy crisis throughout every market in the world.

We quickly realized that probably 35% to 40% of our overall energy usage in a household is wasted. Standby power consists of around 20% of your overall usage. On top of that, we leave a lot of things turned on when we leave a place, such as the lights in our house or office.

We thought about connecting the Internet of Things to an energy management platform, in terms of connecting devices. There are many smart home solutions out there right now, but they are just fancy remote controls that turn things on and off and have a schedule on top of it. We are trying to use that as a foundation to achieve something tangible, to allow people save energy in a way they can

How long has Liricco been in business?

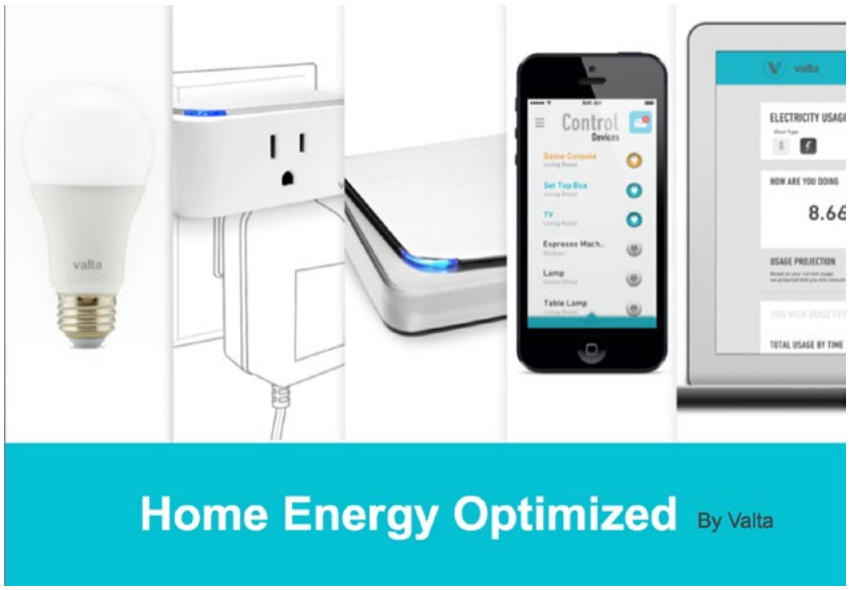
Since 2011. And I think we have accomplished a lot in a short time. Our solution is a platform solution, which means it's infinitely scalable. Our control hub is pretty cool. Right now, on top of the energy management functionality, it is probably the best and most functional socket out there. It's the smallest in size and the best in class in terms of range. We're not using WiFi or ZigBee. We're using a proprietary RF [radio frequency] that enables us to reach a range of 45 m, with the lowest energy signature of any socket system, at 0.5 W. It's proprietary, so your information is secure.

What are the company's milestones?

We have five patents in various jurisdictions, including the United States and China, which enables us to get patents for the rest of the world. In 2014, we won the Good Design Award in Japan, and the gold medal in invention in Geneva.

What distinguishes Liricco from its competitors?

We have better range. With WiFi and ZigBee, you're talking of one to one, from the socket to the router. It covers probably 10 m, and, after that, if you don't have a repeater or an enhancer, it gets a bit iffy. Our range is 45 m and counting. We also have the lowest energy signature at 0.5 W, and the best security. Our installation process is super easy. It is basically plug and play. Our cloud analytics use the energy information to achieve something tangible. It helps you save energy and, therefore, money. It is automation with a purpose.



Who are your competitors?

Our biggest competitor is Belkin, but I believe we have a better product. Function-wise, we have better range (45 meters/150 feet), better in-building penetration, better security, lower energy consumption (0.5 watt), and much sleeker design that fits seamlessly into the user's environment. In addition to that, we enable connected devices to achieve something tangible, that of energy savings. There are other energy management solutions out there, like ThinkEco, but we think their solution is extremely complicated, difficult to set up, and hard for the average end user to disseminate. Valta is a simple plug& play system that brings clarity to energy savings.

Who are your customers?

We're selling on Amazon. And we are about to go into a pilot program with the three biggest utilities in California: SCE (Southern California Edison), based out of Los Angeles; PG&E, which is in San Francisco; and San Diego Gas and Electric. California is having trouble convincing people to, for example, do their laundry at night. Right now, even with the peak rates, users are not changing behaviour. So with our app, we could show them the benefits in terms of dollar and cents. We are changing behaviour by providing information that's relevant to the end user.

Our app is very consumer-centric. Our set-up process is plug and play. But at the same time, it is very scalable. Our Middle East distributor is looking at our product as a B2B solution, as their primary customer base is small and medium businesses. We'll adjust depending on the market, although right now it is a B2C. The starter kit that you can buy on Amazon, with one control hub and two sockets, cost US$149. Each additional socket is US$49.

What are Liricco's main challenges?

I'm a bit frustrated being in Canada because our power is so cheap. We've invested so much in power generation that we are probably only region in the world that actually needs to pay others to take our excess power. Being energy efficient from the demand side is not looked at as an important issue. For example, Californians are becoming a lot more energy conscious, as they are turning down numerous nuclear power plants after the Fukushima disaster in Japan. They are facing a supply crunch. In Germany, they have realized that they need to focus on renewable and their utility rates are a lot higher to reflect that change. Thus, a product like ours carries a lot more appeal abroad because the payback is a lot quicker.

When I talk to a hydro utility in Ontario, the conversation is harder. I want to be successful in Canada, but the environment doesn't really allow us to be. Therefore, I have to look to California, and to CLP Power in Hong Kong. I have to look to the Middle East, where even in Dubai there's a lot more conscientiousness about energy spending.

What do you see as your main market barriers?

I think it's about awareness. The way we're doing energy right now is not sustainable. We can all see the impacts of climate change, so we need to figure out renewable energy and conservation. High energy production, which leads to one of the lowest energy costs in the world, does not help. We would love to work with the energy commissions here in Canada to foster a more sustainable energy policy—one that is more mainstream in relation to the rest of the western world. Upping production infinitely is not sustainable.

What's your market opportunity?

For our product, the market opportunity's quite big. For example, in Germany, where utility rates are four times that of Canada, a product like mine installed in the right devices could pay for itself within six months. California is a ready market with huge potential. Many countries in Asia are looking at whole scale connected solutions to optimize new developments and urbanization plans.

I just signed a distribution deal with a distributor in the Middle East and I'm about to sign a similar deal with the biggest electronic distributor in Brazil.

How much have you invested in the company so far?

My two partners and I have spent a bit over US$1 million over the past two and a half years. It has been quite an expensive science project.

Where do you see Liricco in six months or a year from now?

We're going through a round of fundraising right now. We have talked to BDC [Business Development Bank of Canada], and a lot of venture capitalists in Hong Kong. Once the round of fundraising is done, I see the company doubling to tripling in size, both in Toronto and Hong Kong. Then we're going to expand to at least 10 different markets.

energent

About the company

Energent Inc. provides state-of-the-art energy management information system solutions, or "in-depth energy informatics," as Jill Clark, Energent's Marketing Specialist, explains it. The company collects all energy data associated with a site, either through electronic transfer, on-site integration to control systems, or metering infrastructure. Then, through mathematical models that incorporate a wide range of variables such as weather, occupancy levels, production and facility operations, Energent baselines the energy profile, providing a reference point for continuous improvement. Approximately 5% to 10% can be saved through low or no-cost actions, simply by having this level of analytical insight.

On top of the analytics, Energent offers the assistance of "energy analysts" who aid customers in interpreting the data, while providing "energy coaching." Energent today focuses on the commercial, industrial, retail and institutional sectors. However, Jill points out that "we are conducting a research project in partnership with the University of Waterloo, Milton Hydro, the OPA [Ontario Power Authority] and Hydro One on energy optimization technology that is also applicable to the residential sector. The Energy Hub Management System, or EHMS, is a transformative project in energy funded by the Ontario Centres of Excellence."

We spoke to Jill Clark to learn more about this rising startup's next steps.

What is the company background?

Energent started in 2007 and was previously named Northern Dynamic. There were a number of products and services that ND provided, but after solving a problem related to energy management systems at GM Canada, the company focused its efforts on commercializing that solution and taking it to market for other companies. In late 2007, the company was renamed Energent, to put an emphasis on the *intelligent* use of energy.

Can you talk about your team?

The Energent team is made up of people who are truly passionate about energy management and sustainability in general. Currently the team is about 10 to 12 people. We're a small team, but very dedicated and hard working— a wonderful group of people to work with.

What distinguishes Energent from its competitors?

With recent attention to the rising cost of electricity, and energy in general, many more companies have entered the energy management information system market. There are also initiatives such as Green Button making the process of energy data collection easier, particularly in the residential and commercial sectors. But the modelling and analytics that turn this raw data into information is where Energent stands apart from most other companies.

Energent was early into the market and is considered a pioneer and industry leader. Energent also understands that a good-looking dashboard with reams of data being displayed is not the answer. So coupling our software with "energy analyst services" differentiates us from our competitors. Our clients have said that they really value this service. We have a customer-focused approach—we don't just provide really cool graphs that you may or may not have time to review. Our EAs [energy analysts] engage with our clients to ensure they get the maximum benefit from what the software reveals.

Could you explain your product development cycle?

At Energent we made talking to our customers one of our biggest priorities. As such, this is how we really prioritize our development efforts. We talk with our customers and understand what they need from our software and services to make the management of energy easier for them. Our business model is SaaS, or software-as-a-service, so it enables us to develop new functionality and immediately make it available to all of our subscribers.

As a technology company in a fast-growing market that is important to the province of Ontario, we have directly benefited from Ontario's focus on the smart grid and the energy sector. We are very active with the development of smart grid technology through a research project called the "Energy Hub Management System." We have about 25 homes in Milton and a number of homes in Kitchener and Waterloo that are piloting how to optimize energy consumption, production and storage "behind the meter." In the future grid world of conventional generation, distributed renewable generation, smart appliances and electric vehicles, this technology will be invaluable in aiding utilities and consumers alike to optimize their use of energy and reduce their greenhouse gas emissions.

Who are Energent's clients?

Our clients are in diverse industries. Since our software system is scalable and flexible, we can address applications ranging from small footprint retail all the way up to large industrial. Principally we work with Fortune 500 industrials, large commercial property management firms, retail chains, and portfolios in the MUSH sector [municipalities, universities, schools and hospitals].

Through the power of the analytics and the consultative guidance of our energy analysts, we assist clients to identify opportunities such as peak demand management, operational procedural change, equipment upgrades and other changes. We can also be invaluable as an independent measurement and verification capacity when customers enter into a large, performance-based ESCO [energy service company] program. Since the Energent solution easily reports on energy projects in financial terms, it provides a level of assurance on large capital-intensive projects. Specialized reporting requirements such as the Ontario 397/11 regulation for public-sector buildings are also included within our system, making life a lot easier for our MUSH-sector clients.

What are your main challenges?

As an industry, the number one challenge in North America, ironically, is that energy prices are still relatively cheap in comparison with other

regions of the world. So telling clients "you should reduce your energy consumption" sometimes doesn't resonate with them, as they don't always see a great financial benefit in doing so, at least in comparison with other initiatives competing for both management funding and attention. But this is changing. The continued rise in energy prices is inevitable, and in order to meet long-term predicted energy requirements in electricity, conservation and demand management are going to be instrumental.

There is also the prospect of a true carbon market through legislation, and the greenhouse gas reductions that must come with that. This will also force continued reduction in energy use from fossil fuel generation.

Where do you see Energent a year from now?

Energent will continue to focus on innovation in energy modelling and data analytics, providing these innovations to our customers through our EMIS [energy management information systems] solutions. We also want to continue to leverage Ontario's focus on the smart grid in our Energy Hub research collaboration—maturing and eventually commercializing that technology and bringing it to the market in Ontario and beyond. A year from now Energent will again have grown both in terms of revenues and staffing, and will continue to partner with other key players in the energy space. There is also a lot of consolidation underway in the energy modelling and data analytics space, so who knows? The landscape is continually changing.

About the company

Eyedro's goal is to help customers track their electricity usage and costs in real time. The idea for Eyedro started in 2011 when one of the partners, Nick Gamble, started investigating his father's electricity bill, which was close to $700. Nick, who was a home inspector at the time, had the idea of helping home builders and new home buyers understand their electricity use. Trevor Orton, one of Eyedro's co-founders and CEO, was completing an MBA at Wilfrid Laurier University at the time. He liked the idea and decided to write a business plan. Gamble and Orton took it from there.

We spoke to Trevor Orton to learn more about the Eyedro's solutions and future challenges.

Can you tell us a bit about your product?

The initial vision was to help homeowners. But it has evolved. Eyedro is a real-time electricity monitor: a piece of hardware that customers can install in different places. In factories, it can be installed on a machine. Landlords can install it for tenants. And homeowners can put it in their home. Clients can see the electricity usage at a building or machine level. Our product connects to the Internet, so clients can use it through our website. Eyedro is a real-time monitor, which also includes free access to the MyEyedro.com cloud service solution.

Eyedro's monitor can provide one-second resolution in real time. Consumers can turn their lights on and see the difference on their cellphones instantly. It's that quick. Whereas with a smart meter, you can turn things on and off all you want, but you're still going to see the average for a 30 minute-period—24 hours later.

What is Eyedro's competitive advantage?

Smart meters are useful, but they stop at the wall of the building. If you want to measure at the machine level, you need something inside the smart meter. This is one of our differentiators.

The other thing that differentiates Eyedro from its competitors is the ease of installation and low cost. We also offer a wireless version, which is the most popular one because customers don't need to connect a network cable to whatever they're monitoring.

What have been your major company milestones?

We launched our products in 2011. Since then, we have been selling both our hardware and our cloud service and they are fairly mature now. The focus right now is around sales. There is a huge market in front of us. The next major milestone is to land additional projects.

Who are your customers? Describe the different customer segments you have and who you are targeting.

We look at different verticals. The large industrial customers are an excellent fit for Eyedro. These companies have an energy manager who needs to understand where the energy is going. The commercial segment has a similar model, with energy managers who want to understand where the dollars are going from piece of equipment to piece of equipment. Until now, all they've had is the electric bill that stops at the wall.

The other segment is residential—a very exciting space. But the most compelling value lies with commercial and industrial customers. Their electric bills are so high that there can be hundreds of thousands of dollars' worth of savings.

What do you think is needed to open up the residential market?

There are political, economic, environmental and social factors. I think continuing to educate the public on how we can be smarter about our energy use is important. The fact that renewable energy is growing is great, but it also increases the price of electricity. As the price increases, it helps motivate the public to care. Projects like Green Button are going to be of huge benefit for Ontario. It's going to help educate the public and it's going to give customers a no-cost channel for their smart meter data. We're participating because we think it's the right thing to do—but also because as customers become better educated on their energy usage, they are going to want more details. And smart meters will only give them so much detail. Eyedro can take them to the next level.

What would you say has been your biggest challenge to date?

Fundraising in the early stage, which is a very common problem for startups. It takes time and energy to build something from nothing and we developed this product from scratch. We have a second challenge with staffing and bandwidth. I would love to have a team of ten instead of five, but I need to generate more revenue to hire more people and I need more people to generate more revenue.

And the challenges of bringing your product to market?

Bringing the product to market is actually pretty easy. It's more about the sales. The product has been for sale for a while and customers love it. So it's a marketing challenge. How do we get access to more customers? How do we build our brand? How do we make everyone aware?

How much capital have you raised? Is it from investors or banks?

We have raised approximately $800,000 from investors. These days banks are probably the last place where a startup would get money. Just last May [2014], we had a major investment from Waterloo North Hydro.

Is there anything you can share with us about Green Button?

The Green Button pilot with London Hydro, Hydro One, MaRS, the Ministry of Energy, Eyedro and a few other vendors is exciting because it's all about providing consumer electricity usage information at no cost. We expect that once consumers get a sample of what it's like, they will be encouraged to adopt a real-time device like Eyedro. Although we have an advantage to being first, there is also a disadvantage. It's a lot of work to set it up. We have a responsibility to help test it and to make sure that the next round of apps can participate easily. We're paving the way.

Is Eyedro providing that real-time capability?

A Green Button customer has access to their smart meter data. So when they use our cloud service they have access to that specific information. But they can also purchase an Eyedro device to get that real-time capability. We don't control smart plugs today, but our newest version of the product moves us towards load control capability.

Are you looking at building relationships with complementary companies throughout this value chain?

Absolutely. We are already working with competitors and partners. We allow our hardware competitors to use our cloud service and to private-label our cloud service as their own. We also sell our hardware to our software competitors. We are happy to work with everyone. This is a huge market, so there is no reason not to work together.

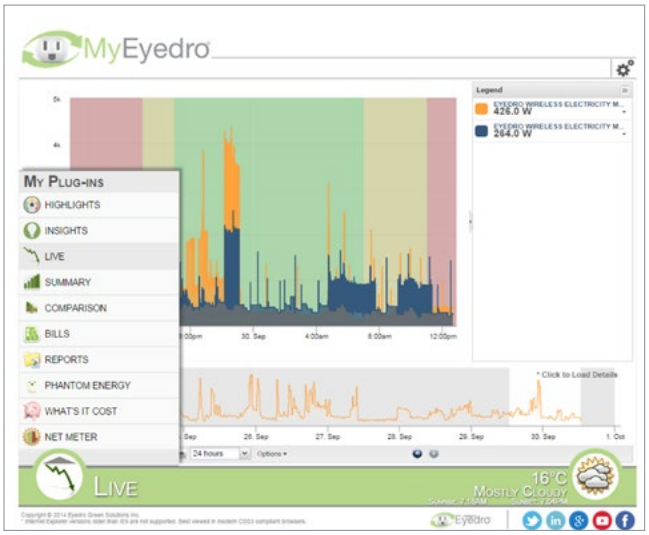
In the last couple of years, what major trends or changes have you noticed in the sector? Where do you see it going?

It's definitely growing. Some of the statistics I have show that there is a multi-billion dollar market for home energy management systems and building energy management systems. And the market is continuing to grow.

The biggest change I've seen is in the increase in renewable energy and the talk about electric cars. What is good about it for Eyedro is that it drives the price of electricity and increases demand for products like Eyedro.

What are the next steps for Eyedro?

Currently, the basic web service is free. As we continue to grow, we will be adding value-added features for a fee. We look forward to rolling out premium services in early 2015.



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