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Collaboration powers innovation



• INNOVATION SERIES MELBOURNE DIGEST

• The Innovation Series has been developed by Zernike Australia since 2004 in Perth and Brisbane. Zernike Australia's Brisbane team has, over the past two years, discovered a wave of support for events in Sydney and, this year, Melbourne, where it has found the backing of universities such as RMIT, state and local government departments such as CSIRO and an energetic private sector that embraces innovation.

Guess what collaboration just achieved? Innovation.

At the last Innovation Series in Melbourne, we learned of a seismic shift in the way GE – a company whose business DNA is innovation – has moved away from a culture of secrecy and protection in its research and development and embraces collaboration as its prime driver of innovation.

The result? Breathtaking progress.

In Australia, GE's collaboration with CSIRO and its electric vehicle program with Better Place is a showcase for rapid, positive technological and societal change.

The final Innovation Series Melbourne event in its introductory year in the city provided enlightening insights on the growing realisation among organisations of all sizes that collaboration is a vital driver of innovation and future success.

A profound example is that GE (once General Electric), a company formed in the 19th century that has at its core a culture of business innovation powered by one of the best research and development systems in the world.

While the power of R&D has not changed in the GE corporate culture, the way it is managed most certainly has, with the company benefitting greatly from its fresh, determined approach to embracing collaboration.

Both Innovation Series Melbourne presenters – Ben Waters, director of ecomagination for GE Australia and New Zealand and Alan Finkel, the chief technology officer for Better Place Australia – highlighted how they believed collaboration was one

of the key drivers to facilitate open and sustainable innovation.

Their presentations had particular relevance with the current push for Australia to become a low-carbon economy, in which sustainable development and innovation will play a critical role in shaping the future of Australian business, creating new opportunities.

In fact, the GE-Better Place collaboration is creating a new paradigm in transportation, where electric cars powered by renewable energy are not only the norm, but they positively enhance the electricity grid rather than simply draw from it.

'GE' WHIZ DEVELOPMENT

Ben Waters, director of ecomagination for GE Australia and New Zealand, is happy to announce that collaboration truly is the new driver of innovation for GE.

GE is a company that has thrived through its own creative and R&D capabilities up until recent years, but has over the past decade opened up to new innovative partnerships that have produced staggeringly successful results.

"Being global meant for us selling American stuff everywhere," Mr Waters joked with the Innovation Series crowd.

"Now we are local. We have a performance culture, but we are localizing," he said, and GE achieves this through striking strong local partnerships around the world – especially, and importantly, in Australia, where its major partner is the CSIRO and Australia is a test market for innovation destined to transform the world.

"Australia and New Zealand is, in fact, our third biggest market in the world, after of course the US and followed by the UK. So we are local-

izing in our important markets," Mr Waters said.

GE created the first US industrial laboratory and in 1900, when the company was just eight years old, opened its main research centre in Schenectady, New York on the founding principle of improving business through technology. Today, it is still open and is of the world's most diverse industrial labs.

GE's mission remains the same: it's about bringing great technology to market.

"As an engineer I love technology but as a sales guy and business leader, I love technology even more, because it's what differentiates us from our competition.

"Today, we need to invest in that and we are doing so more than we ever have. We value technology for our customers and shareholders. Innovation has always been the hallmark of GE's progress and will continue to be the primary driver that keeps us going as we go forward."

Thomas Edison's ductile tungsten filament lightbulb was GE's first transformational innovation in 1909, followed by the medical x-ray in 1913 and, with a few Nobel Prizes along the way, GE progressed through the first television broadcast reception in 1927, man-made diamonds in 1955, the semi-conductor laser in 1962, magnetic resonance imaging in 1984, GE90 composite jet engine fan blade in 1994 and the digital x-ray and light-speed VCT in recent years.

"The medical x-ray and the jet engine have grown into multi billion dollar businesses we are still in," Mr Waters said.

GE has four Global Research Centres globally, the original in

Ben Waters, GE Australia NZ, undertaking his keynote presentation at the recent Innovation Series Melbourne event.



New York, Shanghai, Bangalore and Munich. Spread among them are 3000 research employees sporting 1000 PhDs, along with 27,000 technologists worldwide.

"These people sit outside the business and work directly for the chairman in corporate development," he said. "That system has worked well for us in the past and continues to do so."

Australia is an experiment in a new virtual approach to R&D, he said.

"For Australia we will have a virtual research centre for our collaboration with CSIRO."

ECOMAGINATION

Mr Waters' area of responsibility is GE's signature approach to solving sustainability challenges in the modern world: which it calls ecomagination.

Ecomagination is a GE business initiative that began in 2005 "based on an analysis of the climate science," Mr Waters said. Simply stated, GE customers need and are seeking products that are both good for the environment and better for their operating economics. "We choose both," Mr Waters said. Ecomagination today has over 130 products created.

"These products meet both criteria and are best in class," he said. "We now have about 130 products, having started with about a dozen.

"It is a business initiative and in has its own metrics," he said.

Mr Waters said those 'metrics' are based around sales and "around walking the talk. Reducing our own footprint".

Innovation and partnerships are key to the entire ecomagination process, Mr Waters said..

"It needs to be more than your grab bag of products. You need to create solutions that are relevant to solving your customers problems and to do that increasingly you need partnerships."

Mr Waters said ecomagination has been GE's best ever business initiative. Over the five years, it made \$85billion in revenues after having spent \$5billion in R&D in the first five years.

"We reduced our greenhouse gas footprint 24 percent. In intensity terms, GE's emissions are down more than one third. We saved \$130million in energy water and greenhouse gas emissions ... and that is shown in the five annual reports that have covered the period.

"This is the scorecard of 2005-2010. We've done all right.

"It's cost down and revenue up. It is a repositioning of the business from an old way of doing things to a new way of doing things."

Mr Waters said, "We will double the metrics for the next five years ... invest \$10billion ... And halve our energy intensity and consumption."

Such success vindicates GE moving away from its traditional control model to a co-operation model, he said, and GE is now confidently moving towards a future of long term partnership and a medium degree of open source collaboration, Mr Waters.

"We've learned a lot and found we do not have all the answers."

Mr Waters said the new low carbon economy involves "nothing short of a new industrial revolution".

OPENING UP

Mr Waters said a few years ago GE took a close look at its approach to open innovation – seeing what other companies with vastly open approaches, such as Nokia, were achieving.

"We needed to move the needle up towards the middle there (of open collaboration) – we were pretty closed," he said.

"In Australia we needed need a virtual partner and that is CSIRO. It's a broad and deep alliance with one of the world's best research agencies. We align in many key areas with CSIRO."

That has produced a five-year \$20million alliance between GE and CSIRO "at this stage".

High on the in that collaboration agenda are clean coal, smart electricity grids, water treatment for the resources industry, renewable energy and health innovation, such as early detection of Alzheimers disease. CSIRO helps GE



Innovation: Separate the battery from the vehicle at Better Place swap stations.

localise that approach on the ground in Australia, Mr Waters said.

An example is the 'ecomagination challenge' – a \$200million open innovation challenge – which GE and four venture capital partners launched last July. Primarily, ecomagination has been about accelerating and developing next generation power grids through collaboration.

So far, GE has invested \$60million in 12 companies with good ideas as a result of the ecomagination program.

"It's not how we would have done it previously," Mr Waters said. From ecomagination came contact with startups, universities and entrepreneurs in a mix that is the largest ever in size and scope, globally, in seeking out innovative projects.

Mr Waters said 70,000 people submitted more than 5000 ideas and business plans.

"They weren't all good ideas, but many of them were and from this we chose the 12 projects to invest in."

The second phase of ecomagination looked at powering the home. It ran to June this year and GE is now in the early stages of working with new partners to accelerate deployment of their concepts.

Better Place innovation is in providing multiple electric vehicle power systems.



BETTER PLACE

Another key GE partnership in Australia today is with Better Place, with whom GE has a global alliance. This focuses on the transition in the transportation industry to electricity and will also change the electricity industry in the process.

In 2010 GE is now the world's biggest customer of electric vehicles, committing to purchase 25,000 electric cars by 2015 for its own fleet and for its customers.

"Petrol cars don't make much sense," Mr Waters told the Innovation Series gathering.

GE and Better Place Australia's plan is to incorporate electric cars into everyday life and integrate them into the electricity grid, powered by renewable energy.

Better Place collaboration is already taking place in Israel and Denmark but by far the largest program is in Australia.

"Australia is the biggest and is six times larger than those other two," Mr Waters said. "It will be a game changer for transportation and a game changer for the grid."

GE, as part of the collaboration, is focusing on demand management, storage issues and the progress of renewable energy.

A key element of the program is that batteries of the vehicles are also used for the grid, as storage devices while parked and plugged into the grid. It is a masterful piece of innovation.

"Electric cars integrated well are great for the grid. Electric cars not integrated could be a disaster for the grid." Mr Waters said.

"Integrating them and operating them through renewable energy can make one of the most profound changes in transportation history."

Lessons learned in Australia, he said, "will assist our teams in the US and Europe".

In Australia, GE is working with its own Custom Fleet business, part of GE Capital, which is the largest purchaser of vehicles in Australia – and GE can

even use that same business for battery finance.

"So it's a broad alliance," he said. "It's a once in a lifetime industry transition."

In another area of energy innovation, GE is working with airline customers on aviation biofuels. In Australia that collaboration is with Virgin Australia on a malee tree-based oil that can be used to make kerosene.

"There are lots of great ideas out there – we don't have them all ourselves, that's for sure," Mr Waters said.

For example, he said, GE's work with venture capital companies on the ecochallenge program "brought great scale and investment smarts to our R&D knowledge".

"We know that collaboration is the fastest, easiest, most effective way effective way to bring about system-level change. The Better Place alliance a perfect example.

"And our long term research partnership with CSIRO that stated with aviation materials has broadened, and that has transformed over time to meet new and unexpected challenges.

Mr Waters said it boils down to business leadership and in particular using technology better and creating new technologies to help make people and businesses more productive.

"We need that in Australia." ■

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BETTER PLACE AUSTRALIA



Alan Finkel, the chief technology officer for Better Place Australia, is a fellow whose organisation already has the runs on the power board.

He told the Innovation Series Melbourne event that he could put that down to what he saw as the two key drivers of innovation: setting a challenge and facilitating a process.

"If you can get a bunch of really smart people around table and give them a challenge, they will come up with an innovative solution," Dr Finkel said.

"To me it all comes down to challenges and facilitation."

Dr Finkel said in his experience of taking on challenges that have always been resolved by collaboration and innovation, the latest being the Better Place electric car program, "Money turns research into knowledge. Innovation turns knowledge into money."

The innovation in the case of Better Place has been to separate the car from the battery and allow motorists to 'refuel' by calling into a battery station and exchanging it. Other options are also part of the innovative re-charging solution. Better Place also provides for standardized DC charging systems in convenient locations. "Today's challenge is to be able to drive any electric car, anywhere," Dr Finkel said. To deliver on the challenge, Dr Finkel said, the innovation is to deliver a complete set of solutions.

Better Place Australia is collaborating with a range of university researchers and automotive industry leaders to create an Australian electric car, of which GE has committed to buy 1000 and to also assist in financing the battery systems through GE Finance. ■

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