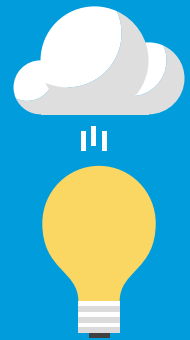# KPMG

CeBIT – The Internet of Things Discussion Summary

June 2016

As part of the CeBIT Internet of Things (IoT) conference, KPMG hosted a panel session 'Creating a sustainable framework for IoT'. Chris McLaren, National Sector Leader, Technology, Media and Telecommunications, KPMG Australia, was joined by specialists representing CISCO, The Yield, UTS and UNSW. The panel discussed Australia's strategies for competing in the current technology race and for turning Australia into a successful knowledge economy.

The race is on. Australia and the new IoT knowledge economy

The OECD projects that IoT will contribute around $11 trillion to the global economy by 2025. That represents about $120-130 billion for Australia – if we get it right.

Grabbing our piece of the IoT pie means entering a fierce competition of skills, ideas and market profile. It demands we produce IoT technology and applications the rest of the world wants. Australia missed substantial opportunities with previous technology revolutions so how can we do better this time?

Understanding what IoT is and is not

Our world is being shaped by a massive and accelerating divergence between what computing power can do and what the human brain can do. Whether it's traffic or healthcare, we're moving into an era where decisions and analysis are performed not only with our brains but by computers. They can augment our decision making process or eliminate the human completely in terms of closed loop automation. To do these things, computers need to be fed masses of data. And that means instrumenting and measuring the physical world. This whole process is what we call the Internet of Things and it forms the fourth Industrial Revolution.

So how well is Australia doing in the race to own this space? Not too well according to Ros Harvey of agri-solutions company The Yield. "Australian commercial-grade IoT solutions are still rare. People are hacking together prototypes or installing data loggers and calling it IoT. It's not. To me, IoT means you have an end-to-end solution with edge computing and IPV 6 to the sensor level, you're harnessing smart analytics and solving a business problem with it.

Missing pieces of the IoT stack

Kevin Bloch, Chief Technology Officer at CISCO (Australia and New Zealand), adds that Australia is missing the distribution clout needed for commercialising technology. "The formula is basically: $1 into R&D, $10 into production and $100 into taking it to market. And that is where you need multinationals," he says. Bloch compares Israel's successful technology start up ecosystem that includes multinationals in its core with Australia's more isolated model and concludes that we can't easily scale up from our current base to compete globally.

This poor understanding of the IoT technology stack within government and industry is stopping many Australian IoT services from producing products that genuinely support end-users. Mike Briers, Industry Professor of IoT and member of The Knowledge Economy Institute at UTS, cautions

Left to right: Mike Briers (UTS), Ros Harvey (The Yield), Kevin Bloch (CISCO), Sam Costello (UNSW) and Chris McLaren (KPMG).

that "In the US, UK and elsewhere, governments are investing hundreds of millions of dollars to kick start collaboration and gain a foothold in the IoT economy. We're a smart, innovative country but that collaboration space is missing."

Smart cities is perhaps the one bit of the technology stack that does impact public consciousness. However, as Sam Costello, Strategic Portfolio Lead on World-class Environments at UNSW, points out, "It's difficult to have an effective conversation without including the technology, culture and capability conversations that go with it. Where is the big value statement for connecting up a smart city?"

Playing to strengths

Given that it makes sense to export to our strengths, the panel looked at where Australia's research focus should be. Ros Harvey admits that in the agriculture and food sector, IoT use is very low. This represents a lost opportunity on a number of fronts. Not least because Australia is a wonderful test environment, with characteristics such as an open agriculture system, high labour costs, less arable land and a dry continent to overcome.

Harvey notes that on the plus side, we are well endowed with IoT in oil and gas and some areas of transport. "The poster child is Rio Tinto, which has shipped hundreds of millions of tonnes of ore with fully autonomous trucks and trains." She adds that it would also make sense to invest in Freight and Logistics. "As an island, we should be really good at getting stuff to market – and it is a huge global pain point."

A lot of venture capital is going into home IoT but commercial viability won't be there for a long time. Monetisation today is coming from Rio Tinto having safety issues that cost up to $40 million to fix. That is an urgent pain point you'll pay to resolve immediately.

Do we have a pain point if our electric toothbrushes aren't connected? Probably not."

While consumer markets might not be the first business choice, there is still a lot we can learn from them. Consumers demand intuitive interactive experiences and that mindset is still missing in many industrial contexts.

Is STEM enough to create a knowledge economy workforce?

Australia is currently lagging at 13th place in OPEC STEM graduates. It's nationally agreed that we have to rapidly increase the quality and scale of STEM (science, technology, engineering and mathematics) teaching from Kindergarten to Year 12. But Kevin Bloch reminds us of Moravec's Paradox*. "We have to acknowledge what humans are doing that is uniquely different to a computer. That's why creativity and critical thinking are most important.

At a university level, Sam Costello has noticed some recurring weaknesses regarding data visualisation and data analysis skills. "Researchers are excellent at examining a particular problem and generating masses of data. But they don't have the skills to deal with it in a way that gives value," she explains. "Technology is just part of the way we do things, but it's the ability to think creatively and do something meaningful with it that's most important."

Mike Briers adds that since IoT is a perfect example of multi-discipline transferring and training, the need for more generalists is growing. "It can be really hard to get one specialisation talking to another in a common language," he says. "The thrivers are good at communicating across groups."

From an industry perspective, Ros Harvey agrees that communication skills are key. At The Yield, they look for

technologists who have a deep expertise in engineering as well as communication and collaborative skills. "We lost $38,000 in building our first oyster solution because two people – our mechanical and software engineers – understood "systems responsibility" differently. It was that simple."

The winning scenario

In order to compete, Australia has to become a knowledge economy fast. So what do the panel think are our main objectives for the next 5 years?

Mike Briers wants to see us focused on our areas of economic strength and have a complete technology stack in place. "We'll have strong agriculturists working alongside strong technologists, for example. And we've got a government that really understands the importance of IoT, not just for the economy but for society and an improved quality of life."

Ros Harvey expands on the ideal ecosystem saying "it includes start-ups, scaling up businesses, researchers and multinationals dynamically creating IoT solutions together."

Sam Costello underlines the importance of accelerating the university learning experience towards real world problems and real world solutions. "From the moment they set foot on campus they are part of a global community, working for social good and global impact. In doing that, they're coming out as graduates who are not going into a job, but into a series of either entrepreneurial or consulting activities."

Kevin Bloch believes the imperative is to have "shifted the culture to one that truly appreciates what the knowledge economy is and the supply chain it needs."

Bringing it all together

The key themes that emerged from the panel session were clear: collaboration, prioritisation and talent. Collaboration featured prominently in the discussion. Specifically, the need for startups, multinationals and government to work together to create the new IoT technologies that will position Australia to become a leader in IoT. This has a number of aspects including corporates actively supporting and working with startups to government incentives to encourage innovation. Second, as a nation, we need to decide where we want to be a world leader and focus our energy, attention and investment on that area. AgTech, Smart Cities/Smart Campus and Connected Transport & Infrastructure are examples where we have thriving start up communities and great potential to excel. Third, developing, harnessing and retaining the right talent is crucial. This means ensuring that we have the right programs in schools and provide an environment so that motivates people to pursue careers in IoT that are well paid and rewarding. Added to that it's crucial to make Australia an attractive place to develop a career, start a business and live in so that we attract and retain the right talent and investment. It may sound a tall order, but in this globally competitive race, winning means thinking big and acting fast.

*__Moravec's Paradox__ is the discovery by AI and robotics researchers that it is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception and mobility.
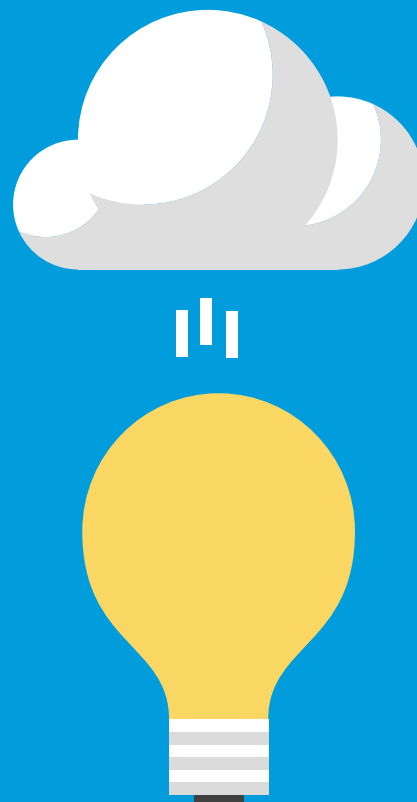
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