

Speech for Industrial Internet Summit Event: “Maximising the potential of the Industrial Internet for Australia”

By Innes Willox, Wednesday 15 February 2017, SMC Conference and Function Centre, 66 Goulburn Street, Sydney NSW 2000

Before I begin, I would like to thank the organisers for inviting me to speak with you about what the Australian Industry Group considers is important to maximise the potential of the Industrial Internet of Things in Australia.

I also recognise Ai Group members and partners in the audience – some who are also presenting today and I’d like to thank you for your contribution to the work that we do at Ai Group.

Your continuing support enables us to advocate on your behalf as well as for the benefit of the broader industry and community in Australia.

For those who may not be aware, Ai Group is a peak industry association in Australia which along with its affiliates represents the interests of more than 60,000 businesses in an expanding range of sectors.

This includes manufacturing – we’re the leading representative for the manufacturing sector in Australia.

We also represent a number of other sectors that are impacted by the Industrial Internet and part of the digitally enabled economy such as food, mining and energy utilities.

The businesses which we represent employ more than 1 million people.

Our interest is to help build competitive and sustainable industries that are in the long term interests of the community in Australia.

And businesses are at that pivotal stage of trying to understand what the Industrial Internet, this digital revolution and disruption, will mean to them.

After setting the context, I will explain what we are doing to help businesses, what the government is doing and what more could be done.

I especially look forward to answering any of your questions after my presentation.

The fourth industrial revolution

The world is currently going through one of the biggest industrial upheavals in history.

The first industrial revolution, powered by steam, brought immense benefits but also massive dislocation to farmers and craftspeople.

The later revolutions of electrification and computerisation were accompanied by a stronger social safety net.

Today a fourth industrial revolution is underway as physical and digital systems become deeply interconnected.

For example, in manufacturing we are seeing a fundamental transformation of the way businesses operate – there will be a panel today to discuss more about that.

While all industrial revolutions share the traits of increased speed to market, quality and cost effectiveness, there is now an inclination for flexibility and individualisation – a customer-oriented approach.

Such technologies driving the evolution in manufacturing include the Internet of Things (IoT) which I will focus upon shortly, Big Data, human-machine collaboration, and additive or 3D manufacturing.

This transformation will last well beyond 2017, bringing massive change to our industrial structure, the ways we work, and the ways we do business.

Such changes are already receiving a mixture of anticipation, fear and skepticism from business leaders and workers.

How can my business grow amidst such upheaval?

Will my business miss out or even be made obsolete?

Will my job become redundant, replaced by robots or automation?

But there's immense value to tap in to, as well as evolving cyber security threats to manage.

And we need to help businesses and the community transition.

I'm sure this conference will offer a lot of useful insight and different perspectives into the opportunities of this fourth industrial revolution.

The Australian Government certainly has a key role to play.

I cannot speak for Government but I am happy to provide you with my views on what the Government is already doing, as well as further measures that can be taken to help Australia to make the most of the opportunities presented.

Ai Group Australian Performance of Manufacturing Index (PMI®), Performance of Services Index (PSI®) and Performance of Construction Index (PCI®)

In the Australian context, we are still transitioning from the resources investment boom, and businesses are diversifying their investments and activities to remain sustainable and find growth.

Each month, Ai Group releases real-time performance indices for the manufacturing, services and construction sectors.

These national indices are constructed from surveys collected from businesses Australia-wide.

As shown in this chart of our performance indices, business conditions are currently improving in much of the Australian non-mining economy.

Manufacturing has picked up pretty well over the past year, services has also gathered pace while construction is undergoing a structural adjustment from very high peaks in mining-related construction and, more recently, in apartment building.

However, business investment remains weak.

This is as expected in the mining and energy sectors following its recent boom but weakness is also persisting in the mining sectors.

It is in this context that we see the digitally enabled economy as a crucial driver of growth and accelerating change.

So what is happening with use of and investment in digital technologies in Australia?

Ai Group's 2017 Business Beyond Broadband Report

Based on a survey of CEOs, we asked businesses about their use of and investment in digital technologies, as well as barriers to this investment.

Importantly for our purposes today, a large proportion of respondents were from the manufacturing sector.

We will officially release the Business Beyond Broadband report in coming weeks, but today I can give you a sneak preview of what we found.

Business use of digital technologies

Firstly, the **Internet of Things** (or IoT).

IoT is an emerging concept that integrates multiple technologies, including sensor networks and machine to machine communication (M2M), as well as big data and cloud computing.

These technologies produce, communicate and analyse enormous amounts of data; and they use that to connect digital and physical systems and unlock higher performance and new ways of doing business.

But IoT is just one of several overlapping labels, including Industry 4.0 and the Industrial Internet.

To avoid confusion our survey did not ask about the IoT label, but about these proxy technologies.

6% of businesses reported use of sensor networks and 15% used M2M.

Commercial impact from the use of M2M technologies and sensor networks varied.

Businesses that used M2M appeared to experience very little change in their gross profit margins over the year, while those using sensor networks saw growth in gross profit margins 6 percentage points higher than for non-users.

I should note that our data and regression analysis have not tried to establish whether technology investment caused greater profitability, or vice versa – or whether both were caused by a third factor, or entirely unrelated.

But we did find correlations and relationships.

Turning to big data, only 7% of businesses surveyed made significant use of this technology – though those who did also demonstrated profits growing at 17%.

Cloud computing use is much more widespread, with 42% of all businesses.

Growing services on offer, ability to scale quickly and ease of access may be likely reasons for these numbers.

While we can't definitively confirm the productivity benefits of cloud computing, we did find that businesses that use it grew their profit margins by an average of 5%, compared to an average 2% reduction for those that did not.

Broadly, the lower numbers around use of M2M, sensor networks and big data (and the lack of integration) suggest that relatively few businesses are using IoT yet.

Those who are may still be at the early stages of embracing the technological foundations for IoT.

Beyond IoT – though very important to it – is **cyber security**.

Cyber threats are a growing risk management issue for many businesses.

These threats are continually growing and evolving.

Despite this, use of and investment in cyber security technology is a relatively low priority for many businesses.

78% of businesses reported that they did not use cyber security technology and just 13% saw cyber security as a barrier to new digital investments.

This is in stark contrast to trends overseas and is concerning given the demonstrated ability of cyber breaches to damage reputations, disrupt business operations and bring down critical infrastructure.

Overall, though, the findings on current use of technology should not be seen as bad news – they are areas of opportunity.

The opportunity is to drive higher business performance through new investment.

So what's happening to investment?

Planned investment in digital technologies is growing, with an expected increase to 41% in 2016.

Interestingly, manufacturers were less likely than services businesses to invest in digital technologies.

However, manufacturers' investment is growing faster.

The desires for customer service, productivity gains and competitiveness were the clear investment drivers.

Businesses were less likely to be driven by the need to enable collaboration, new markets or new services.

Barriers to digital technology investment

For those businesses that did not plan to invest in digital technologies, the main inhibiting barriers were employee skills, costs, perceived lack of relevance and slow internet connections.

Skills are crucial to make the most of digital investment.

Businesses are digitally upskilling their workforce through training or recruitment.

A minority will be outsourcing digital functions.

Alarmingly, however, 17% of businesses plan to do nothing to improve technology skills.

While this may be sobering news, there is room for improvement.

Businesses can and certainly need to do more.

Government has a role which I will cover shortly.

There is also a role for associations such as ourselves at Ai Group.

What's Ai Group doing?

At Ai Group, we are looking to help our members as well as ourselves to become more informed about the opportunities and risks of the Industrial Internet, and navigate through the obstacles.

Some of these include member forums to hear from experts, case studies and sharing ideas.

While there are a number of activities, I will briefly mention two: the Digital Business Kit and Industry 4.0 Higher Apprenticeships Project.

Digital Business Kit

In partnership with the Government, we host the Digital Business Kit for the manufacturing sector.

This is a collection of information, tips, case studies and advice on how digital technologies can create real benefits for the small to medium enterprises and not for profit organisations within the manufacturing industry.

Industry 4.0 Higher Apprenticeships Project

Relevant to the work of the Prime Minister's Industry 4.0 Taskforce (which I'll discuss later), Ai Group is embarking on a major collaborative project that could reinvent apprenticeships in Australia, working with Siemens and Swinburne University of Technology.

The aim is to create an apprenticeship model that will support the higher skills needed for the emerging fourth industrial revolution.

With Commonwealth assistance, this apprenticeship project will combine the best of university and vocational learning models to improve the STEM skills of technically minded participants.

It also incorporates skills for the new millennium in business and design.

The course will grant a Diploma and Associate Degree in Applied Technologies, with guaranteed pathways for graduates to a relevant Bachelor Degree by 2020.

This initiative will enable a Higher Education qualification to be delivered in apprenticeship mode to the specifications of a highly technology-based company.

Participants will be highly capable post-Year 12 school leavers and will be employed under arrangements with participating companies built upon the apprenticeship model for the duration of the program.

The benefits for employers are obvious: training future technicians with a higher skill level will help meet their increasing needs in the knowledge economy.

The pilot will initially involve 20 participants, and based on its success should lead to a larger initiative.

What's the Australian Government doing?

There are already a number of Australian Government initiatives that support the growth of the Industrial Internet.

I will touch upon three particularly important ones: the National Innovation and Science Agenda, Prime Minister's Industry 4.0 Taskforce, and the National Cyber Security Strategy.

National Innovation & Science Agenda

As you know, the Government launched its National Innovation and Science Agenda (or NISA) in December 2015.

This included many positive initiatives towards creating the economy and jobs of the future, and was a very welcome shift in the mindset of Government to return science, engineering and innovation to the centre of the economic agenda.

NISA highlights include:

- Tax incentives for greater early-stage investment
- Extra emphasis on Science, Technology, Engineering and Maths (STEM) skills and coding

- Encouraging researchers to collaborate with industry by recognising collaboration in the formula for public research funding

We also see the NISA as an important overarching framework to guide the Government when it considers any legislative or regulatory change that impacts on innovation and productivity – this should extend to the Industrial Internet of Things.

I'll come back to this point later.

The challenge for Government is that while innovation is critical for every part of the economy, the issue can easily come across to the public as threatening or exclusive.

The tight 2016 Federal Election demonstrates the difficulties.

Prime Minister's Industry 4.0 Taskforce

Ai Group has a close relationship with the Australian Advanced Manufacturing Council (AAMC) – I am on the Board.

The AAMC is involved in the Prime Minister's Industry 4.0 Taskforce, which was established in April last year, to help drive interoperability through common standards for the Industrial Internet.

This Taskforce directly supports the NISA and is a direct outcome of the recommendations from the Australia-Germany Advisory Group that was co-chaired by Finance Minister Mathias Cormann and German Minister of State Dr Maria Böhmer.

The Group was established to build closer ties between Australia and Germany and identify opportunities for increased trade and investment.

The Taskforce can help Australia build cooperation on global standards for the Industrial Internet of Things.

In March last year, German Plattform Industrie 4.0 group and the Industrial Internet Consortium – two independent international bodies for the Industrial Internet – announced a collaboration to set global standards for IoT.

Standards will be discussed further later today, but suffice it to say that cooperation makes technology choices simpler, broadens accessibility, and allows global interoperability for our predominantly SME market.

The PM's Taskforce is being led by Jeff Connolly, CEO and Managing Director of Siemens Australia and New Zealand, and also a member of Ai Group's National Executive Council.

It also includes other prominent Australian leaders from industry, research, engineering, advanced manufacturing and academia.

Some of these leaders are present today, and I've highlighted some of the organisations involved on the slide. (Apologies if I've missed anyone.)

There are currently four working groups in this Taskforce, which are engaging with their German counterpart in Plattform Industrie 4.0 to determine what Australia can learn from Germany, and recommending areas to advance Industry 4.0.

These working groups are developing recommendations for the Government and we expect to see the outcomes in coming months.

These recommendations are an opportunity to guide the nation on the right path to fully capitalise on the Industrial Internet of Things.

National Cyber Security Strategy

Turning to government action in **cyber security**, the Government released a timely revision of the National Cyber Security Strategy last year.

The Strategy outlines sensible initiatives to encourage cooperation between government, industry and research institutions both to address cyber security threats and promote innovation.

In light of our survey findings, businesses urgently need to increase their cyber security skills, capabilities and investment.

This entails elevating cyber security as a risk management issue for the boardroom and having proper systems in place, including staff training, governance and technology.

The Government's National Cyber Security Strategy initiatives could offer possible remedies and we welcome cooperation between Government and industry.

Cyber security will be an important topic of conversation at this conference and I look forward to hearing from others on this.

What other things should be done?

In addition to what the Government is currently doing to help set the nation on the right path to fully capitalise on the Industrial Internet, I'll offer some suggestions of other things that Government could do to help as a starter.

These revolve around: business capability, education sectors, infrastructure, and regulatory barriers.

Business capability

Businesses may benefit from support to help them realise the potential value of digital technologies.

Many may also benefit from support to understand the longer term benefits of digitally upskilling staff and management.

The existing vehicles for doing this could be better utilised and targeted including Government supported initiatives such as the: Entrepreneurs' Programme; Industry Growth Centres particularly the Advanced Manufacturing Growth Centre and potentially the Cyber Security Growth Centre; Prime Minister's Industry 4.0 Taskforce; and collaboration with Data61 and other research institutions, universities and other industry players.

Education sectors

Ensuring our youth has the necessary skills for the future workforce will be fundamental to industry success.

At the higher education level, improved practices around work integrated learning for both undergraduate and research students and closer connections between universities and business will better equip graduates to be productive in an economy geared to the Industrial Internet.

In many respects the VET sector has not been seen as a player in this arena.

It is clear that the sector can contribute a great deal to the national innovation agenda and it needs to be included when the government is considering support for innovation initiatives.

Within VET, in addition to the changes anticipated through Ai Group's Industry 4.0 Higher Apprenticeships Project, all qualifications

need to be re-examined for their capacity to incorporate both STEM and higher order skills needed across the new economy.

In our schools, we need more coordination of STEM activity with greater industry participation and a bigger workforce of qualified STEM teachers.

Those teachers in turn need to work from a more engaging school curriculum and with pedagogy developed to attract students to STEM.

Ai Group has recently completed a school-industry STEM skills partnership project through the Office of the Chief Scientist.

It is clear from this work that more teacher professional development is required together with assistance for schools and employers to form STEM partnerships for mutual benefit.

Infrastructure

Infrastructure is fundamental.

The NBN will be one of the key platforms for increasing productivity, innovation and use of more advanced technology and ecosystems, including the Industrial Internet.

Despite recent acceleration, the bulk of the NBN rollout remains to be completed in most regions, and our survey found only 8% of businesses had an NBN connection at the end of 2015.

Regional areas remain underserved for high speed broadband compared to their metropolitan counterparts.

Australia also remains far behind in global broadband speed rankings, and may be slipping further.

A significant 59% of businesses that we surveyed are willing to pay for faster internet services, suggesting that strong business uptake is likely as NBN availability expands.

This means that continuing to accelerate the NBN roll-out will be critical to meeting business needs and customer expectations, bridge the digital divide for underserved regions, and bring down barriers to global competitiveness.

The deployment needs continuing scrutiny against benchmarks including easing regional constraints, meeting business demand, affordability, and business benefits and use.

Further work will be needed to improve communication about the rollout and the real business benefits of the NBN to encourage business uptake.

Regulatory barriers

As I mentioned earlier, the Government's NISA can promote innovation and productivity that enables industrial success.

Which brings me to my final point today.

The industrial internet not only challenges existing ways of doing business, but also how it is regulated.

This may present new areas of regulation or require changes to existing regulation.

Regulatory systems need to strike the right balance between the regulatory costs for doing business, and addressing legitimate public concerns such as around safety, privacy and security.

One example is drone technology.

Drones are becoming more ubiquitous in society and it plays an important role as part of the Industrial Internet ecosystem for observation and data gathering, and increasingly for logistics.

Gartner predicts it will reach mainstream adoption in five to 10 years.

And Goldman Sachs estimates that total spending on commercial drones in Australia will be around \$3.9 billion USD over the next five years.

It is therefore no surprise that the Civil Aviation Safety Authority recently amended and modernised outdated regulations around commercial drones.

Two weeks after those streamlining amendments commenced, a Senate inquiry was called to investigate the case for further regulation to ensure the safe use of drones.

Now this has inspired responses – not least from us – that emphasise both the public and industry benefits of drone technology.

Related to this is a need for government to manage the social risks and disruptions associated with new technology.

We have been through similar experiences before with other technological advances like automobiles, telephones and cameras, and more broadly industrial revolutions.

History of these revolutions has shown that, if factors related to social inequality are not appropriately addressed, there is a risk that Australia will be one of the unlucky countries that will fall behind.

Public policy around government inclusiveness, education, and housing affordability contribute to the social divide as well as digital divide.

We cannot advance as a nation divided.

And we are already seeing the effects of poorly managed countries that are contributing to this division around the world.

We, as a community, need to re-examine how change is managed.

We should neither hold back the tide nor be indifferent to change.

The ultimate benefits of technological change don't erase the transitional costs to disrupted industries and displaced workers.

Government and businesses have responsibilities to recognise and respond to transitional costs, not just the benefits of an exciting new direction.

So with these thoughts, I look forward to your comments and questions.

Thank you.