

National Press Club Address

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SYNOPSIS

Towards a smarter economy

When people have more information, they make smarter decisions.

In Germany, 6 million households are reducing their electricity bills, because an intelligent energy grid gives them enough information to do so.

In Sweden, an intelligent road system gives Stockholm’s commuters enough information to reduce traffic congestion by 25% and carbon emissions by 40%.

If Australians had more information about the impact of their decisions – on their pocket, on the environment, on their quality of life, on GDP – they would act very differently.

Glen Boreham will contend that – as we invest billions in building infrastructure through the stimulus package – Australia has a unique opportunity to embed intelligence into every road, building, city and utility grid.

In his view, the information this would generate would empower our citizens, businesses and governments to get behind the issues that affect us all.

Mr Boreham will look to a future where the sum of millions of smarter decisions help us to use less energy, make far more efficient use of our water resources, unclog our congested cities and boost our GDP – creating a smarter, sustainable economy.

Thank you and greeting.

As the leader of Australia's largest IT Company, I'm sure you're expecting me to speak about technology. And I certainly will.

However, the heart of my message today is actually about people, and my belief that – given the right information – the vast majority of people will make smart decisions: for themselves, their families, and for their future.

I believe we urgently need to Make Australia Smarter. And I'm not talking – as you might expect – about education.

Last time I spoke here education was one of my themes, I talked about the importance of preparing Australians for work in a global economy.

But today – two years on – we are faced with an even greater challenge – the Global Financial Crisis.

Having spent many years living and working overseas, my concern is that our Australian way of life, while good, isn't as great as it could be.

Our cities are increasingly congested; our farmers are battling drought and flood; we need to find cleaner sources of energy; unemployment is climbing; and, our economic growth is under threat for the first time in nearly two decades.

And, we can't use the Global Financial Crisis as the only excuse.

According to the World Economic Forum, in 2001, Australia was the world's 5th most globally competitive country. Today, we rank 19th¹.

¹ World Economic Forum, Global Competitive Index 2007-2008

5TH to 19th in the course of this decade.

So my question is: What are we going to do about that?

And when I say 'we', I don't just mean 'the federal government', I mean every government, every business, and every Australian.

We all need to work together to help fix the issues that face us.

Because that's what Australians do.

When real challenges emerge, we pitch in; we mobilise in our hundreds of thousands.

Look at the extraordinary way we respond to natural disasters. Look at Australia's response to the bush fires earlier this year. People were amazingly generous with their contributions of time and money. Whole communities and organisations mobilised to help. Ordinary people become heroes and found solutions to challenges.

And it doesn't just take a disaster to tap into that energy.

Look at Australian Surf Lifesaving. For over a century, hundreds of thousands of volunteers have been keeping our beaches safe.

Look at the way Sydney mobilised in the run up to the Olympics.

Remember how much we changed – and what we achieved. Government, businesses and individuals came together and made things happen.

My point is, when challenges are thrown at us – when we can see a way to address a crisis – Australians invariably step up.

But the problem with many of the issues we're facing now, is most of us don't know how to help.

This is not because we have a crisis of leadership – far from it.

It's because, as individuals or businesses, we don't have enough information to make smart decisions.

What do I mean by that?

Well, no one deliberately wastes water, no one chooses to sit in traffic, no one wants to pay a bigger electricity bill.

And yet we allow those things to happen every day – because we don't know how to avoid them.

But what if we did?

What if every Australian had the information they need to make smarter decisions?

What if you knew for sure that switching your pool pump to run at night would save a considerable amount off your electricity bill?

What if your dishwasher knew exactly when electricity was at its cheapest – and turned itself on to take advantage of lower prices?

What if a farmer knew how much water his crop needed, instead of just guessing and over-flooding the field, and the water system delivered the right amount at exactly the right time and place?

What if you were notified the minute your train or bus was cancelled, and were immediately given suggestions about the best alternative?

What if you knew the freeway was blocked before you left for work because you were sent a text message suggesting you leave an hour later?

If we had that sort of information, I believe the vast majority of us would make better and smarter decisions?

And, if we did, what sort of difference could the sum of those smarter decisions make?

At an individual level, it would undoubtedly improve the quality of our lives. We wouldn't sit in traffic jams, our suburbs would be less polluted, we'd have a more sustainable electricity supply, we'd stop wasting so much water, and we'd save money along the way.

Now take that up to an industry level. What if every business leader had better information? Wouldn't they use that information to make better decisions, to increase productivity, reduce costs and prices, and make their organisations more successful?

Now what about if we take that to a national level? If every Australian and every Australian business was making smarter decisions, what would that mean collectively to our country? We could grow our economy, better protect our precious environment, make our country more competitive.

If we had enough information to understand the real impact of our actions on air pollution, or dam levels, or on inner-city congestion, wouldn't we choose to act differently?

Imagine what would happen if we could see our own personal environmental impact, and that of our family or our business.

Imagine if we knew which were the most energy-efficient schools, businesses or suburbs, and which were the worst offenders.

All of this may sound like science fiction, but everything – absolutely everything – I've talked about today is possible.

The technology exists to deliver exactly that sort of information, in a meaningful way.

Think about it: we already have sensors, in the form of transistors and computer chips, built into most aspects of our lives.

Your car, mobile phone, your camera, fridge, passport, the goods you buy at the supermarket, many of our pets, they all carry computer chips.

And it's not just in these things, there are also chips in everything we build: in our pipes, our bridges, our houses. Or we add them as we install security and air-conditioning systems.

The scale of this digital build out is phenomenal: by just next year there will be one billion transistors per person on the planet. Within 2 years there will be 30 billion electronic tags tracking virtually everything: from letters and parcels to livestock. In fact, Australia today has the largest animal tracking system in the world.

But, so far, these chips have been put there for a single purpose:

Car manufacturers put chips in vehicles to help with maintenance. They roll your car into a bay, plug it in, and the chip reports what needs fixing.

And, these days, a new car can contain 20 million lines of computer code. I recently read the new Mercedes has as many electronic control units as the new Airbus A380².

But that's just the car industry, the same thing is happening in almost every commercial sector.

Retailers use chips to track product on their shelves and in their warehouses.

Builders put sensors into pipes so they can easily locate breaks once the pipe is buried underground.

But think about the potential of this at a higher level.

The chips that manufacturers put in your car for one purpose, can help it become part of a much more powerful and beneficial intelligent transport system.

Let me give you an example, through GPS and wireless technology, your car can communicate with the road, the bridge, the tollways, and this can be used to create a smarter transport system that can not only sense, but respond to problems.

A smart transport system that can warn you about traffic jams before you're in them, suggest the best alternate route, and divert you away from trouble spots.

In retail, chips literally embedded into products could bring you the things you want to the right place at the right time. Today, many retailers are estimating inventory levels and customer needs, and they don't always get it right.

² (Excluding the entertainment system) *This car runs on code*, IEEE Spectrum, February 2009

As a result, every year the world's retailers stockpile \$1.5 trillion in excess merchandise. At the same time, those retailers lose over \$120 billion in missed sales, simply because they don't have the right products on their shelves.

Imagine how much waste we could avoid, and how much better it would be for consumers, if retailers better anticipated the products we wanted.

It's the same story with the sensors in pipes. They are the starting place to build out a smarter water system. A water system that notices when a pipe bursts and automatically sends maintenance to fix it. A water system with ground sensors to monitor soil moisture and plant growth, that can be connected via mobile technology to computers that can forecast rainfall, and direct water, exactly when and where it is needed.

Frankly, we've been presented with an opportunity that really wasn't planned. The build out of smarter infrastructure started on a case-by-case basis. But these individual projects can now connect and be part of much larger systems.

We can make our roads, rail, our utilities, and our cities digitally aware.

And, when whole systems are digitally aware the potential is enormous.

In Australia, we're already in the first phase of developing smart electricity grids with Energy Australia and Country Energy. From the perspective of these companies, an intelligent grid will make distribution far more efficient.

But a smart grid will also give us information: it can put a smart meter in your home, so you can see, or perhaps more importantly your children

can see, how much electricity is being used; it can connect with your appliances, so they can use electricity during low-cost times; and it will allow you to generate your own power from solar panels and then sell it back to the grid.

All over the world, smart systems are helping communities to make better decisions.

In North Carolina, in the US, some families are halving their electricity bills by using solar panels in this way. North Carolina only has 126 days of sunshine a year – compared to 240 in Sydney and nearly 300 in Brisbane. I was surprised that even here in Canberra we have 220 sunshine days a year! So you can imagine the potential benefits for Australians once the electricity grid can work two-ways.

6 million households, in Germany, are lowering their electricity bills, because an intelligent grid gives them the information to do so.

In Sweden, an intelligent road system gives Stockholm's commuters the information that has reduced traffic congestion by a quarter and carbon emissions by nearly a half.

Hospital patients in Chicago benefit from a smart health system, which gives doctors immediate access to their medical records. The system sends test results and medical images straight to a display so doctors get them the second they are available, allowing treatment to start immediately.

And, in Denmark, hospital patients are going home earlier, or avoiding admission altogether, because nurses can monitor blood pressure and other vital signs, remotely.

Even natural eco-systems that you may not automatically associate with being digitally aware, can be. For example, in Galway Bay, Ireland, scientists are digitising the sea bed, gathering data on water temperature, currents, wave strength and marine life. And they're using that information to accurately forecast everything from wave patterns to the right time to harvest mussels.

All over the world, intelligent systems are helping individuals, businesses and governments to make smarter decisions.

And this must be a national priority for Australia.

So how do we seize this opportunity?

I applaud the government's stimulus package, and the budget's support for innovation, but we still need to look harder into the future.

The government has addressed the past, by needed investment in roads, rail and schools.

It has addressed the present with direct cash payments to stimulate the economy, here and now.

But we are still writing the chapter on the future.

Of course, the National Broadband Network is an important instalment in that chapter.

Broadband is absolutely key to enabling smarter systems.

When the Prime Minister announced the National Broadband Network, he said it was the equivalent of building the railway network for the 21st Century.

And he is right. But, to stay with the railway analogy, we must remember that the broadband network is only the tracks, it does not include the rolling stock, the trains themselves.

If we only invest in the tracks – the network – we will miss the real value.

The network is the track that smart services will run and depend on – services that will revolutionise the very way we live our lives.

Australia is not spending tens of billions of dollars on a broadband network just so people in the bush can play online games faster. We are doing this to improve critical services which touch all of our lives.

Like education services: so Australian students wherever they live can participate in high quality, virtual classrooms.

Like electronic health services: as used in Denmark, with data from a heart rate or blood pressure monitor sent to your doctor, so they can be alerted and act on irregularities.

Like safety devices for the aged: with movement sensors that can warn you, or a carer, if your elderly parent takes a fall.

Even teleconferencing services, perhaps from your home: with no need for a special room or expensive equipment, so small businesses can present themselves professionally to a global market, and large numbers of the population have the opportunity to work from home.

Imagine the carbon emissions we could avoid if people met via teleconferencing, rather than always driving or flying. Imagine how much you'd save on petrol or fares, not to mention the travel time saved.

Take that up to a business level. When British Telecom implemented video conferencing to replace nearly one million face to face meetings in a year, the company saved almost half a billion dollars. Its environmental impact was the equivalent to taking 18,000 cars off the road.

Six weeks ago, I led a Forum of over 40 public and private sector leaders discussing the next steps in developing digitally aware infrastructure. Going into that Forum, I remember wondering whether we would be able to reach consensus.

We had environmental leaders side-by-side with big industry, regulators sitting next to the regulated.

What astonished me in those discussions, was everyone agreed that smarter infrastructure was essential for Australia's growth and prosperity. The only issue was how to develop it as quickly as possible.

At the Forum we reached three important conclusions about this.

The first was that Australia can no longer view physical infrastructure – roads, rail, ports, concrete, metal and steel – as being completely separate to our digital infrastructure – broadband, data centres and devices. We must consider the two together when we plan our transport, energy and water needs.

And when these leaders were asked "where should we start?" I was expecting the energy companies to call for an intelligent electricity grid, and the transport industry to argue for smarter roads.

But everyone said: it's all important, because it's all interconnected.

One of our speakers, the distinguished environmentalist, Tim Flannery, highlighted the interdependent nature of our world. He pointed out that each system influences and depends on the others.

For example, desalination might boost our fresh water supply, but it has an impact on our electricity system.

Even commendable environmental efforts like using rainwater tanks can impact other systems. Australia has the widest use of rainwater tanks in the world, and that's great. But research³ shows that using an electricity pump to get the water from rain tanks is more energy intensive than getting it from the regular water mains.

I'm not suggesting we shouldn't have rainwater tanks. But it's important to understand the whole picture, we don't want to create an electricity issue while trying to solve a water problem.

To avoid that, we have to be able to see how the systems connect, so we can figure out the real impact of a water saving, or an energy saving, idea.

Look at electric cars, they might solve the issue of shrinking oil reserves, but ultimately they have to be powered from our electricity grid.

In Denmark, they've already figured out how to deal with that issue. One of the energy companies is building an electrical version of petrol stations, where you can exchange your car's empty battery. And the energy

³ CSIRO

company then recharges the batteries overnight benefiting from off-peak wind power.

So, the second important conclusion from the Forum is that we need every system to be digitally aware, and we need them to be able to communicate with each other, so we can see how a change in one system affects another.

Of course, the creation of these interconnected systems, and all the information travelling across them, requires us to think about important issues such as privacy, data security and information exchange standards.

And one thing to remember here is that technology can be the solution to these issues.

For example, following 9/11, the United States put in place new passenger information requirements for travellers landing in their country. The US requirements were in conflict with the European Union privacy laws. A technical solution was found that satisfied both parties with the US provided with the passenger information they required and the Europeans comfortable that this information was automatically destroyed so it couldn't be used for any other purpose.

Technical solutions can be developed to deal with very complex challenges.

The third major conclusion from the Forum was around how to start the ball rolling.

And the delegates were clear, while we've made some progress; the time for talk is over. Wherever existing physical infrastructure is being refurbished, we must embed digital intelligence.

And we need to get started in as many places as possible: in homes, towns and businesses.

Australia already has many terrific trial projects underway, in roads, energy and water, but we need more. Because we run the risk of being left behind the rest of the world.

As I speak, the country of Malta is building a smart grid that links its power and water systems. The grid will automatically detect leakages, allow for lower pricing when there is less demand, and give consumers the information to use electricity at those lower prices. Ultimately, it will enable Malta to replace fossil fuels with sustainable energy.

Malta's a great example of a country that's making its physical infrastructure smarter and much more efficient. And we have a lot of systems in Australia that will benefit enormously from this type of improvement.

But that's only one part of the equation. For Australia in particular, with our services-led economy, smarter systems have a huge potential to boost exports.

We may think our economy depends only on resources, but last year, services exports were more than the value of iron ore and coal exports combined. And, because services exports are usually provided electronically, smart systems will help us grow this increasingly important – and sustainable – export industry.

Australia is already a world leader in exporting education services, but there's so much more potential. With smarter digital infrastructure, we could supply our excellent financial and accounting services; our legal

services; our engineering and architectural services, throughout the Asia Pacific region, opening up new opportunities for our local businesses.

On the domestic front, according to new research by Access Economics, intelligent technologies have the potential to increase Gross Domestic Product by up to \$80 billion and create hundreds of thousands of jobs over the next decade.

Other studies in the UK and the US, lead me to believe that those Australian figures are not just very well grounded, but also conservative.

In assessing whether to invest in smart infrastructure, we also need to look at the considerable cost of NOT doing it.

In Australia, estimates put the cost of time wasted sitting in traffic at over \$11 billion per year. And that figure doesn't include the cost of the petrol, or the negative impact on our environment.

And congestion is just one of the many issues smarter systems will help us to address.

So there's a lot at stake here, so much we can save, so much we can do better, and so many opportunities that, quite frankly, we haven't even thought of.

Personally, I am particularly interested in the solutions we will come up with when we can see the whole picture. Right now, we typically look for solutions through a very narrow, traditional lens.

For example, when we see traffic congestion, we immediately think the solution lies in the physical road system, that we simply must build more lanes, a four lane highway becomes a six lane highway. But, if we pulled

back and saw the bigger picture, we might realise that the problem isn't just the number of lanes, it's the fact that most of us want to use the roads all at the same time – during peak hour.

So perhaps, the answer isn't just to build more roads, the answer is to smooth out our use. We could do that by taking a wider view and including a different system in our thinking, in this case the broadband network. If the broadband network enabled more people to work from home, we could reinvent the way we work, avoiding such pronounced peak hours.

Technology offers many different ways of solving our problems, and that's why we must consider its possibilities before we start building traditional infrastructure.

Heather Ridout from the Australia Industry Group gives a great example of this. She says, in the ship building industry, the hull used to be the big thing, but then the ship's systems became more important. Today, they start with the systems and build the physical ship around them.

I believe that's an excellent approach for Australia's physical infrastructure projects, we need to think about the systems at the same time as we talk about the concrete and the metal.

For years, Australia has coasted along as the 'lucky' country. Now we need more than luck. We need to be a Smart country.

In this time of financial crisis, smarter systems offer us all a realistic, practical opportunity to tackle some of the major challenges facing Australia.

The way we travel, the way we work, the way we power our homes, the way we manage our health, the way we educate our children, can all be improved by the rapid deployment of smart infrastructure.

But this will not happen, unless everyone plays their part.

We need the government to integrate intelligent technology into every infrastructure build, as is the vision of Senator Conroy.

We need business to collaborate with government and universities, to fund pilot projects to demonstrate in Australia how successful we can be.

We need communities to demand to be given better information.

And while I'm here at the National Press Club, we need the help of the media to tell the story of the importance of this to Australians.

Because I have great faith that if we give people better information, the vast majority will make the right decisions, for their families, their community and their country.

And the sum of those decisions could launch Australia into a far more prosperous and sustainable future. A future that personally I'm very excited about, where together we can energise our economy... tackle climate change... and create new jobs for the next generation.

Thank you