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*“The Digital Revolution and the Future of IT in Australia”*

University of Technology, Sydney

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**Strictly Embargoed until 12.01am, Thursday 23 July 2015**

## Introduction

Good evening everyone.

I would like to acknowledge that this event is being held on the traditional land of the Gadigal people of the Eora nation and pay my respects to elders both past and present.

Thankyou Glenn Wightwick, Deputy Vice-Chancellor and Vice-President UTS for inviting me to speak tonight on the digital revolution and the future of IT in Australia.

Frankly right now, the future of IT in Australia is looking very cloudy to me. I believe that without significant changes and action to increase the talent pipeline in Australia, we could miss out on the biggest opportunity for growth and prosperity that the world has seen since the industrial revolution.

But it is not all doom and gloom. In fact, I believe there is endless opportunity for Australia if we can educate and train people – and lots of them - to help power the digital revolution.

I’m here tonight to talk to you about how, by working together, we can turn a cloudy future into a bright future and ensure that our lucky country continues to prosper and grow during the digital revolution.

I’d like to share my thoughts on:

- The digital revolution happening right now in every corner of the world that is disrupting the way we live and work;
- The challenges facing Australia that may prevent us from realising the benefits of this revolution; and
- The actions I believe Australia must take to grab the opportunities of the revolution with both hands to create a bright future for our economy and for the IT sector in this country.

## The digital revolution

Firstly, let me give you some context to help explain how we got where we are today.

Numerically speaking, the history of humankind is pretty boring. In fact, it’s not until 1775 that things start to get really interesting – and by interesting I mean millions of people moving around the world, building new cities and establishing new businesses, all leading to a surge in economic activity.

So what happened?

It was the invention of the Watt Steam Engine, the technology that powered the Industrial Revolution. Watt increased the capacity of the steam engine three-fold, allowing humans to generate massive amounts of useful energy at will and overcome once and for all the limitations of human and animal muscle power.

This led to mass production of goods and increased movements of people and products all over the world via railways. It was the birth of modern life. So great was the impact it had on the way people lived and worked that some say it “bent the curve of human history”<sup>1</sup>.

Skip forward to 1965 and a man by the name of Gordon Moore – the founder of Intel - predicted that computing capacity would double every year. This doubling phenomenon would result in the computers becoming so powerful that they would tip the balance once again, just like the Watt steam engine, and again bend the curve of human history.

We’ve hit the new tipping point – a “second machine age” as many are calling it these days and life as we know it is changing every day thanks to the ever increasing power of computers and those inconspicuous-looking devices we call mobile phones.

Just last month the Committee of Economic Development of Australia (CEDA) announced that 40 per cent of Australia’s workforce – more than five million people – could be replaced by computers within the next 10 to 20 years.<sup>2</sup>

Forrester recently found that 93 per cent of executives at Standard and Poor’s top 500 companies believe that digital technologies will disrupt their existing business model in the next year, and only 15 per cent of those executives believe their company has the skills to succeed in this new digital world.<sup>3</sup>

The Australian Computer Society claims 75 per cent of the fastest growing occupations in Australia will require science, technology, engineering and mathematics skills<sup>4</sup> – STEM in the current vernacular.

I want you to think for a moment about how you start your day.

For me I wake up, turn on my tablet and after a quick check of what’s happened with our banking systems overnight I start scanning newspapers from around the world online, check my work and personal emails and maybe even my bank balance, all before I get out of bed.

Like 91 per cent of all adults in Australia, I have my mobile phone within arm’s reach every hour of every day.<sup>5</sup>

Please raise your hand if you don’t have your mobile phone with you?

Across the globe more people own a mobile phone than own a toothbrush.

A mobile isn’t just a phone these days. It is device we all use to digitally organise, plan and run our lives.

At Westpac we’ve seen the way our customers’ needs have changed since the rise of the smart phone. Where once people visited a branch to bank a cheque or withdraw cash, these days the majority of banking transactions are done online. Each month Westpac customers log into our online, mobile and tablet platform Westpac Live 30 million times. They’re banking on the bus on their way to work or applying for a credit card while watching *The Voice* at home on the couch.

But this behaviour isn’t specific to banking.

Every industry is impacted by the digital revolution and the rise of the mobile device.

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<sup>1</sup> Erik Brynjolfsson and Andrew McAfee, “The Second Machine Age”

<sup>2</sup> Committee for Economic Development of Australia (CEDA), “Australia’s Future Workforce?” report, <http://www.ceda.com.au/research-and-policy/policy-priorities/workforce>, 16 June 2015

<sup>3</sup> Forrester Research

<sup>4</sup> Australian Computer Society - [www.acs.org.au/news-and-media/media-releases/media-releases/media-release-its-time-to-reshape-australias-digital-future](http://www.acs.org.au/news-and-media/media-releases/media-releases/media-release-its-time-to-reshape-australias-digital-future)

<sup>5</sup> Morgan Stanley

The impact is being felt in different ways. Those that can't keep up with their customers changing needs in the digital age get left behind – think Kodak and DEC. Professions that have long been seen to be the territory of our brightest scholars are now the most likely to be disrupted and replaced by machines – think doctors and lawyers.

### **A cloudy future – the challenges Australia faces**

From where I'm standing Australia is not yet prepared for this revolution.

The need for change in Australian education is urgent. If we want the next generation of Australians to succeed in the digital age, we need to pick up the pace through our education system, in the way we're raising our kids and in the way we run our businesses.

For example this year China alone will have produced 3.5 million of its own degrees in science, technology, engineering and maths – that's what we're competing with.

Despite the fact we know that the jobs of today will be replaced by machines tomorrow, we still have the highest number of graduates in medicine and law. The number of law students has doubled in the past decade, with more than 12,000 graduates now entering a job market<sup>6</sup>. Our best and brightest are graduating into these areas, particularly young women.

I am a firm believer that everyone should follow their dreams and pursue the career they want, but why is it that smart year 12 students who aren't sure what they want to do are more often than not funnelled into law and medical degrees?

Now please don't get me wrong, I think medicine and law are very important professions, but they are two professions clearly being impacted by the digital revolution.

In the world of cognitive computing we could look at IBM's Watson, which has made huge strides in its medical prowess. In 2011 IBM had already trained Watson to have the knowledge of a second-year medical student.

I've also learnt all about the computing systems that can now search thousands upon thousands of legal cases, collate the information and mount a case based on only a few search terms.

Contrast this to IT graduates – since the first iPhone hit stores in 2007 we've seen a drop in the number of Australian students studying IT at university. In the last decade the number of young people starting IT courses at university has fallen by over 50 per cent; however there has been a 31 per cent growth in industry employment – which tells us there is broken supply/demand equation.<sup>7</sup>

In short we have a talent drought at a time when we need skilled people – lots and lots of them – to power the digital revolution.

I believe there are a number of contributing factors:

1. Young Australians, and particularly young women, aren't encouraged to study technology at school or university. The curriculum could do more to engage our children and teenagers and harness their passion for technology. Let's not forget that kids born after 1995 are digital natives. They live and breathe technology, so why don't they want to study and work in it? I acknowledge the \$12 million commitment by the Australian Government to improve the focus on science, technology, engineering and maths in primary and secondary schools, but I think there is still more work to be done.

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<sup>6</sup> 2012 The *Australian Financial Review's* analysis of university course data.

<sup>7</sup> Australian Computer Society - [www.acs.org.au/news-and-media/media-releases/media-releases/media-release-its-time-to-reshape-australias-digital-future](http://www.acs.org.au/news-and-media/media-releases/media-releases/media-release-its-time-to-reshape-australias-digital-future)

2. Australian parents don't understand what the future holds for their children. What jobs will they have when the traditional sectors are replaced by machines? What skills do they need to learn now to prepare them for jobs that most likely don't even exist? As a parent of two teenagers, a 16 year old son and a 14 year old daughter, I get this. But I think it is up to us as parents to help guide our young people through this time of change.
3. When we do have talent coming through the pipeline we often let it slip away overseas. I just recently returned from a trip to Silicon Valley where I met dozens of young Australian entrepreneurs who are making it in the United States after failing to get support in Australia. Or even worse, they didn't even try to establish their businesses here but jumped immediately on a plane with their amazing ideas. While I think we've made inroads into supporting start-ups in Australia and keeping some incredible innovations in our backyard, both business and government have more work to do in supporting this growing sector of our economy. At Westpac we've invested \$50 million in Reinventure, an organisation that identifies and supports start-ups that have the potential to completely disrupt the way we live and work. I'm also proud that we recently invested in Quintessencelabs, a Canberra-based quantum security start-up that will help us take our security to the next level.

Looking at the current IT workforce in Australia we struggle in particular to attract and retain women.

There is nothing that supports that one sex is better than the other when it comes to IT, however only about a quarter of the Australian IT workforce are women.<sup>8</sup>

Yet the world's first computer programmer was a woman, Ada Lovelace, daughter of the great Romantic poet Lord Byron.

Powerful women leaders in tech like Yahoo's CEO Marissa Mayer and Facebook's COO Sheryl Sandberg have also been vocal about the need for more women in tech and for a corporate environment where they can succeed.

In my technology team at Westpac we're doing better than most companies – about a third of my workforce are women. I'm really proud of these numbers but I know we can do better. Many of you would know that at Westpac we've set ourselves a target of 50 per cent women in leadership roles by our 200<sup>th</sup> birthday in 2017. It's one of the reasons I came to work at Westpac and I really want to ensure we achieve it.

I'm looking to hire the best of the best. If you educate and train them, then I'll hire them. And I know I'm not alone when I say that. Ask any of the CIO's from Australia's leading companies and they'll tell you they are itching for more young talent, and in particular more women in their workforce.

### **Taking action to make Australia's future bright**

Australia is a smart country and we've got a long history of innovation. But to thrive in the digital revolution we need to get smarter, more productive and more innovative.

#### *Industry & Business Actions*

From an industry perspective we need to do more to attract and retain the best talent.

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<sup>8</sup> Australian Computer Society

We need to be more collaborative and cohesive if we're going to succeed. Just this afternoon I had the privilege of sitting down with industry leaders, including Tim Ebbeck, CEO of Oracle Australia, Craig Dunn, CEO of Stone & Chalk and Kerry Purcell, CEO of IBM Australia to name just a few, to discuss this very topic – what do we need to do to help make Australia's future bright? It's by taking time out of our day jobs and putting our heads together that we can create solutions. I'm calling on leaders from across Australian corporates to do the same. The more people thinking about this, the sooner we'll have solutions.

It's no accident that Westpac established its Bicentennial Foundation. We've invested \$100 million to fund 100 scholarships a year, forever. At UTS alone we'll fund 4 scholarships per year for young technologists, and across the country by April 2017 (our 200<sup>th</sup> birthday) we will have 82 Westpac young technologists. This is just one example of how corporate Australia can play a role in getting young people engaged and interested in a career in IT.

We also need to use our size and influence to create scale. We can hire more graduates as they come through the pipeline, and more importantly, ensure there are challenging and interesting roles for them so we don't lose talent overseas. For example, this year Westpac hired 44 graduates and undergraduates and next year we will take on 60 to work in my team alone.

We also need to be inspiring leaders. Research conducted in the US on behalf of Microsoft found that half of the young women who chose to study STEM did so because they wanted to “make a difference”.<sup>9</sup>

My commitment I'm making today to inspire the next generation of Australia's technologists is to take the top four students from Westpac Bicentennial Foundation technology partner universities on an international study tour next year.

The students will be selected based on their performance and aptitude throughout their undergraduate degree in their penultimate year, as well as their passion for Australia's technology industry.

The study tours will include attending international conferences on the four topics most relevant to the digital revolution – social and mobile, analytics, cloud and cyber security.

I hope that by offering this opportunity I can set a bench mark for my colleagues not just in the banking and finance sector, but across the IT industry, in taking real action to inspire, attract and retain talent.

### *University Actions*

The university sector must also step up and do more to encourage young students to study STEM and IT degrees. One way could be creating new degrees tailored towards the jobs of the future. UTS's Bachelor of Creative Intelligence and Innovation is in its first year and a great example of a cutting edge new course.

Gone are the days where an IT graduate gets a job as a programmer. The jobs of the digital revolution are things like data scientists, cloud architects, gamification designers, and cyber security specialists. These are also the jobs that current curriculums are not preparing our students for. Why don't we have an undergraduate or postgraduate degree in cyber security?

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<sup>9</sup> STEM Perceptions: Student & Parent Study. Commissioned by Microsoft Corp.

### *Community/Parent Actions*

As I said earlier, I think parents, other relatives, friends and teachers also play a big role in influencing the careers our young people choose to pursue. For example we must engage children in IT long before tertiary education, preferably starting in primary school. While our young students gain basic computer literacy, the focus is too much on using computers, and not enough on innovating through them. We must also provide opportunities for girls to experience the creative side of IT, highlight role models and diverse career paths. I challenge each and every one of you to learn more about the jobs on offer in Australia's IT industry and to share this information with the young people in your lives and connect with them.

### *Government*

It's positive to see the Government developing a vision in this area and consulting with business.

Governments influence the number and types of people that live in Australia and their skillsets, they determine our regulatory policy, build the infrastructure and set the educational standards.

Business creates value, takes risks, innovates and pursues growth and builds a resilient, skilled and innovation driven workforce.

But our first collective job is to have the same vision and be pulling in the same direction – a smart, innovative, and productive Australia.

### **Conclusion**

In conclusion, the digital revolution is changing the way we live and work, and new technologies and industries are emerging every day.

New skills are required for workers at all levels and at the core of almost every job is a focus on technology.

But to thrive in the digital revolution we need to get smarter, more productive and more innovative.

We need the right skills to address the challenges we face as a country, and to ensure we can maximise our opportunities in a rapidly evolving and increasingly competitive global economy.

Other countries have been putting actions in place to ensure STEM can lift them to a globally competitive position and we must do the same!

Simply put, if we are to keep up with our global competitors, we had better step up our commitment to improve technology education, as these jobs are vital to just about every sector of the economy, not just financial services. I'm calling on business and industry to take the lead on this. We must act now to create a bright future for our economy and for the IT sector in this country.