

## Address to Vic ICT Annual Dinner – June 3<sup>rd</sup>, 2010

<b>Event</b>	WIT Annual Dinner
<b>Date</b>	Thursday June 3 <sup>rd</sup> , RACV Club 500 Burke St

Good evening ladies and few brave gentlemen.

Thank you Greg for the introduction.

And thank you for this wonderful opportunity to speak to the subject:

### **A SMART PLANET NEEDS SMART WOMEN**

My intention tonight is to address three topics:

- 1) the evolution of IT and the impact it is having on our world
- 2) the consequent opportunities & career options this presents
- 3) my view on how women need to respond to this changing landscape

Throughout the speech I will interweave a little of my own career history.

And I will be happy to take any questions at the end.

My career in IT started somewhat by accident.

My mother had given me an expectation that I could be anything and could reach beyond the traditional careers for women. However, she did not coach me as to what these could be. My father was a plumber, as was my oldest brother.

My ambition was to work in roles and in a profession that were different to those chosen by my family ..

and ... I recall telling my school mates .. that I intended to marry a man who wore a suit to work rather than overalls!! I did that .. in fact I did that twice. Rob, my wonderful, fantastic, 2<sup>nd</sup> husband, is one of the brave men here with us tonight.

I started my working life in a law practice, but discovered that the world of Law was an extremely sexist world and one in which I did not think I could exist long term.

So after 2 years of working in that law practice I fell into studying a degree in Business and IT at Swinburne here in Victoria, and then successfully joined IBM as a graduate trainee.

Before joining IBM I was courted by Coopers Lybrand. As is the way of business, I suspect that if I had joined Coopers in all probability I would have ended up with IBM anyway following the merger of Coopers with Price Waterhouse and IBM's acquisition of PWC Consulting 8 years ago.

***Now let me see a show of hands of those of you who have moved into the world of ICT having come from another discipline ???***

***OK. XX %***

***Now let me see a show of hands of those who kind of fell into ICT rather than setting about pursuing an ICT career from the outset ?? ?***

***OK. YY%***

***Hold onto that thought .. XX % have come from another discipline and YY% are accidentally pursuing an IT career. I will come back to this later.***

As you heard in the intro, I have spent quite a number of years living and working overseas. Having returned relatively recently, I have a concern that our Australian way of life, while good, isn't as great as it could be. Our cities are increasingly congested, our transport systems are behind those of Tokyo, Shanghai, Beijing, New York and London – the cities where I have lived - and they are also behind those in many of the developing countries in the world. Our farmers are battling drought and flood. We need to find cleaner sources of energy. And our economic growth is under threat. And not just because of the GFC nor the resources tax . we in Australia need to lift our productivity – across the board. We have gone backwards in our world ranking over the last 10 years.

In the years spent with IBM – I am now in my 32<sup>nd</sup> year – it is simply astonishing the difference technology has made to the world. But in many ways and in many areas the systems that manage our world are still dumb or unaware.

Dumb systems can't sense what's going on, they don't tell us very much, they can't respond and fix the problem when something goes wrong. We have invented computers that are self correcting, but we have many systems that are not that smart.

So, if you leave the lights on when you go out – the electricity grid will continue to power them. It doesn't have the intelligence to know you aren't home and the electricity isn't needed. There is so much focus on the debate about how we generate electricity.. but what gets far less air play is the fact that every year, 10% of electricity generated is then lost in transmission .. and .. another 11% is wasted because consumers lack the information on how to use it more efficiently. If we could solve these problems we would have a major impact on the electricity industry's carbon footprint, regardless of how that electricity is generated.

AND the good news is, WE CAN !

Our water system happily pumps thousands of litres out of a broken pipe onto a road. Last year, leaks and burst pipes cost Melbourne 50 billion litres of water (1) - enough to supply the city for more than a month.

And households are only a tiny part of our water system. Irrigated agriculture accounts for 70% of Australia's freshwater use. Currently, the Murray Goulburn irrigation system wastes more water than Melbourne uses in a year.

In the area of transport by 2020 the Government estimates congestion will cost us over \$20 billion PA if we do not change.

And in IT, the amount of energy currently wasted by computer servers around the world, would power all of Australia (2)

So what's the answer?

Well this brings me to IBM's vision for the future...

### **A Vision for a Smarter Planet**

The fundamental idea of this vision is to make all of those systems **smarter**... to embed technology – computer chips, sensors, RFID tags (Radio Frequency Identification) – into our electricity grids, water networks, roads, buildings and cities

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<sup>1</sup> Listening for underground leaks in Melbourne water system, *Herald Sun*, 27 August 2008

<sup>2</sup> Energy [r]evolution: A sustainable global energy outlook: Greenpeace, October 2008

Infusing intelligence into the systems and processes to make our businesses, our cities and our country work more effectively and efficiently.

This is already happening in an adhoc way: The scale of the digital build out is phenomenal.

As you walk down a street sending text messages the very street on which you are walking is also sending out data ..

- Sensors in some of the water mains – registering blockages
- Taxis – broadcasting their position and fare status back to dispatch
- Trains and busses - updating their locations in real time

This year there will be one billion transistors per person in Australia.

There are already chips in your car, your phone, your camera, your fridge and every electronic device. They are in your passport, in building materials and even in your pets. In 2005 there were 1.3B RFID tags around the world. By the end of this year there will be 33B of them tracking virtually everything from letters and parcels to livestock. In fact Australia has the largest animal tracking system in the world. All of those individual pieces of technology were originally put there for a particular reason .. but today they offer us a new opportunities.

Because now with wireless technology and the internet those things can talk to each other and communicate back to us if we set it up that way. Every time a system or device reports back to us - it gives us a chance – a chance to do something better – to prevent a failure or wastage and to be more productive & efficient – to make SMARTER decisions.

And now we have supercomputers that can analyse all of that information and use it for the first time to make those smarter decisions.

But the challenge is to make all this technology work together .. to deliberately build it into our systems and structures to make Australia - and the Planet - **Smarter.**

This is already happening in some places around the world.

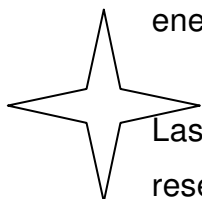
In Stockholm, where traffic was growing by 18% every year, a smart transport system has cut traffic by 25% and reduced carbon dioxide levels by 40%.

Denmark's largest energy company has already built an intelligent grid that is halving outages. In Germany 6 million households are reducing their electricity bills because an intelligent energy grid gives them enough information to do so.

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. Treatment plans can be shared and co-ordinated between doctors and surgeries.

And you will like this one – in Taiwan's intelligent rail network, 99% of trains run on time. And we know about Japan's precision rail system.

What is abundantly clear from all of this work is that we can no longer view our 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 medical, transport, energy & water needs.



Last year IBM commissioned research by Access Economics. The findings of that research indicated that there are significant benefits to be gained by Australia investing in smart systems and new technologies in all of the areas I have mentioned.

The report shows that investing in smart systems will quickly grow GDP by 1.5%, over the first ten years, and create hundreds of thousands of jobs.

Australia **has** made a start. Country Energy and Energy Australia are building intelligent electricity grids with smart metres in the home and in businesses. Right now the electricity meter outside your house is checked once a quarter.

In future it will send back information every 10 minutes helping energy providers respond to surges in demand and spot network problems.

The University of Melbourne is developing a smart water system for farmers in the Murray Goulburn area to improve water efficiency.

In addition we have

- \$43 billion set aside to build the NBN
- A \$100m investment in Smart Grids.
- A Smarter Infrastructure Enquiry
- And genuine government commitment to eHealth.

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

But there is an Interconnectedness here - Systems impact each other.

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 research (3) shows that using an electric pump to get the water from rain tanks is more energy intensive than getting it from the regular water mains.

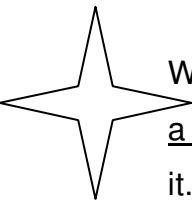
I'm not suggesting we shouldn't have rainwater tanks. But it's important to understand the whole picture, We don't want to create an electricity issue while trying to solve a water problem.

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.

That means we need all of our systems to be digitally aware not just some of them.

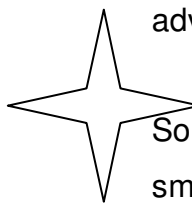
This has implications for all of the systems on which our economy operates: transport, water, electricity, health... the opportunity exists to improve all of these **systems**.



While we have 2 billion people connected to the internet... the net also connects over a trillion things – all able to sense their environment and broadcast information about it.

You can imagine the amount of data that will make available – it will be unprecedented. Already we've reached a point where each day our world creates another 15 petabytes of new data .. For those who don't know a petabyte is ...well it's a LOT. It is the equivalent of 15 years of high definition video each and every day.

All of this data – the knowledge of the world, the flow of markets, the pulse of societies – can be turned into intelligence... because we now have the processing power and advanced analytics to make sense of it.



So, what skills does Australia need to prepare us for the digital economy and a smarter planet? What are the implications for us as ICT professionals ??  
And as women ??

Smarter infrastructure will create thousands of jobs, directly, indirectly and tangentially. There will be new jobs – completely new industries with export potential... made possible by a broadband delivery platform. We've already seen the emergence of telemedicine, e-commerce, online education and social networking.

However, I believe two areas of new job creation are likely to be explosive ... one is business analytics – which I'll touch on in a moment. The other is life sciences – with huge potential to open up the global market.

Earlier this year, IBM announced a **Research Collaboratory** in Melbourne, containing a Blue Gene supercomputer – the first supercomputer dedicated to life sciences in the Southern Hemisphere, located in the Parkville Precinct. This is being done in conjunction with Melbourne University.

This facility will enable collaboration between the 10,000 world-class life sciences and medical researchers in Victoria, and IBM's computational biology experts around the world ... working together enabled with the supercomputing power to accelerate improvements in medical care and health outcomes. One of their aims is to shorten the time taken to conduct research into medical conditions such as the Parkinson's

disease, Hendra Virus and HIV and. With the use of supercomputing, research analysis that previously took months & years, can now be done in minutes, hours & days.

And it is for areas like this – for the new industries and new capabilities that smart infrastructure will enable – that our companies **and we ourselves** need to plan.

Now, let's look at business analytics... I can see that Business Analytics will be a massive growth area in the IT industry. Since 2005, IBM has invested \$9 billion in acquiring analytics companies while we sold off our PC company and other less relevant product divisions.

Why is that ? IBM does not make those kind of decisions on a hunch !

Well as I said earlier, the sensors in all of these instrumented systems will throw up mountains of data... so you need analytics software to make sense of that data – to find patterns and identify opportunities and risks. Companies have always had access to a lot of data – many of us would argue that there is too much data. But it wasn't always easy to get hold of and it has often been impossible to analyse it all.

Once you start delving into all this real-time data, you discover a whole new raft of intelligence – intelligence you didn't know that you didn't know:

Take Kraft...

- Kraft is pioneering data analytics in the consumer goods market...
- In one project they scanned through all the blogs, message boards, and online news sources that used the word 'vegemite'...
- And the analysis threw up an outlier in Japan...
- On investigation, the team discovered – totally unknown to Kraft – a well known Japanese chef was using vegemite in his restaurant...
- Based on this single discovery, Kraft developed a new product and has opened up a whole new market in Japan – a country with a population six times that of Australia.

This new area of analytics won't just grow the market for a new type of software – it will also create demand for a new type of skills.

Because you need someone who can take the results of the analysis and translate it into better business practices... better government policy and more targeted management.

That's the hard part – it's the high value part – and it's where I see we in Australia can play an important role... helping people make sense of the explosion of information.

Many of the new jobs being created will be multi-disciplinary... they will require skills such as business forecasting, business intelligence, problem solving, teaming and critical thinking.

Already, in the IT industry, we are seeing increasing demand for hybrid jobs...for technologists with backgrounds in science, languages and social sciences.

For example, at IBM, we have people who specialise in online fraud detection: at their core these people are software developers but they also have the skills to get into the mind of a hacker – psychology, criminology, accounting and finance.

So, Australia needs to develop people with the right skills for a smarter future and that will require a big focus on IT, Engineering, Science and Maths.

But more than that - we also need these people to have hybrid skills in other disciplines – and we need them to have rigorous training in critical thinking and problem solving

But how should we plan for them?

This brings me back to the question I asked at the beginning .. many of you in this room are already multidisciplinary .. you started in one area and then moved into IT. But was it planned or did it just happen ?

We need to make this kind of accident a planned outcome.

In our own small way, for the last decade, IBM has been proactively encouraging technical skills – starting at the pre-school level and following up in high school – particularly with girls.

Every year since 2001, IBM has held EXITE Camps (Exploring Interests in Technology and Engineering) for high school students to encourage young women to pursue studies in mathematics and science. The camps are run by IBM's female leaders and our up and coming talent, and showcase the career opportunities available in technology and provide young women with valuable role models.

But it's not enough– we also need to change our curriculum to teach hybrid studies. To that end IBM is also collaborating with Australian universities to create a totally new academic discipline – the discipline of Services Management.

Services Management brings together computer science, operations research, industrial engineering, business strategy, management sciences, social and cognitive sciences, and law.

Its goal is to create multidisciplinary thinkers.

IBM is supporting the process by providing pre-built lecture content, notes, reading materials, guest lecturers and advisors.

The Services Management courses – which are now being offered by 6 Australian universities – are highly successful...massively over-subscribed... with strong attendance.

And IBM has just helped Fordham University in the US to launch the world's first business analytics curriculum

Business must play a role in the building of our future skills.



And then there is also the subject of workforce utilization and workforce diversity.

Despite discussion over more than two decades, there are still vast numbers of Australian organisations that are not doing enough to improve workforce utilisation and diversity.

Diversity policies and practices are not just aimed at women. Business needs to get better at making the workplace attractive to people for whom 9-5 doesn't work: older workers... mothers and fathers... Gen Y... It also needs to attract people with a disability - today less than half of the 4 million Australians with a disability actually work. We need their skills. And we also need to encourage cross cultural and cross generational diversity.



### **Conclusion**

So what does this mean to us as women shaping our careers in the world of IT, industry and business:

Clearly the explosion of instrumented, interconnected and intelligent devices and components is presenting terrific opportunities to evolve our systems to be smarter and consequently to consume less resources and create greater efficiency.

The consequent opportunities and career options this presents for people who can build multi-disciplinary skill sets and who can learn and apply skills in business analytics will be explosive.

We know that many women bring strong systemic approaches to their existing jobs and have a great ability to think broadly and laterally. Women can bring new insight and new intelligence & creativity. They also have a greater proclivity for taking time out and sabbaticals. During these periods we have the opportunity to build adjacent hybrid skill sets.

This should be encouraged and planned for.

Despite the focus on diversity policies in the last two decades we have seen that women have not made a lot of progress when it comes to cracking the top jobs of companies or in the boardroom. You have all seen the recent KPMG Report

commissioned by EOWA (Equal Opportunity for Women In the Workplace Agency) that clearly highlights the boardroom issue. And the gap between average weekly earnings of men and women is widening. It is now at 18% and getting worse.

The pace at which companies are really adopting flexible work practices – including executive job sharing, work from home and flexible working hours - so that parents and carers can fully participate - is glacial.

**But will history of the last 2 decades just repeat itself ? It will if we let it !!**

At IBM I am pleased to say 98% of the women who take maternity leave return to the workforce. 31% of our population are women and 15.5 % of our female workers work part time. We do measure this stuff !

So, how do we ensure that women do participate in equal numbers in the leadership roles – in the power and the spoils – of the top jobs ?

1) Well, I am a firm believer in quotas, metrics and numbers. We clearly do not live in a meritocracy where women will make it because they are smart and skilled. If we did then they would have !

So when this debate on quotas is happening, engage in it. Do not just wait for and expect equality .. it is not happening !! Ask your company what are their targets? Are they meeting them ? You are all probably shareholders. Go to the shareholder meetings and ask the questions about female participation rates at all levels. Ask questions also about the salary levels of women. Ask for proof of equality !!

2) Vote with your feet. The data says that women **are** voting with their feet in that they are either starting a Small Enterprise, or are working for Small Enterprises. This is clearly the way many women are addressing their needs for flexibility and worklife balance. But this is not what I advocate. SMEs are not changing the shape of our society when it comes to making the big decisions about infrastructure, water, transport. These decisions are mainly influenced by big business, and of course government. So rather than move to an SME, think about

moving to a company that has real policies for flexibility and diversity.. real policies that translate into real practices.

3) Progress is a key to success

In addition to having an eye on those companies that offer greater flexibility options we also need to add the dimension of “progress” to our selection when searching out the companies and entities for which we should work. To enable us to keep our skills on the right side of the future we need to select those companies that are moving rapidly and aggressively into new fields of technology and business integration. One of my strongest pieces of advice in career management is to select the right company .. one that keeps you engaged, challenged and constantly changing. One that presents options for real skills growth. And put your hand up for those new areas of opportunity early and often. Do not stand still. The world is not standing still so why should you expect to do so.

4) And my last piece of career advice is to select your life partner wisely !!

Having the right partner can dramatically impact your self image, your confidence and the level of encouragement you receive.

So Ladies and gentlemen, A SMART PLANET NEEDS SMART WOMEN.

I have given you a point of view on the evolution of IT and on the career opportunities that this will present for us .. and also on my views on what we as women need to do differently.

So let me finish with a story... I am told it is true !!

A farmer named Blue was overseeing his herd in a remote mountainous pasture in NSW when suddenly a brand-new BMW advanced toward him out of a cloud of dust.

The driver, a young man in a Brioni suit, Gucci shoes, RayBan sunglasses and YSL tie, leaned out the window and asked the farmer, "If I tell you exactly how many cows and calves you have in your herd, Will you give me a calf?"

Blue looks at the man, obviously a yuppie, then looks at his peacefully grazing herd and calmly answers, "Sure, Why not?"

The yuppie parks his car, whips out his notebook computer, connects it to his cell phone, and surfs the Internet, where he calls up a GPS satellite to get an exact fix on

his location which he then feeds to another NASA satellite that scans the area in an ultra-high-resolution photo.

The young man then opens the digital photo in Adobe Photoshop and exports it to an image processing facility in Hamburg, Germany.

Within seconds, he receives an email on his Palm Pilot to tell him that the image has been processed and the data stored. He then accesses a database through an Excel spreadsheet on his Blackberry and, after a few minutes, receives a response.

Finally, he prints out a full-color, 150-page report on his hi-tech, miniaturized LaserJet printer, turns to the farmer and says, "You have exactly 1,586 cows and calves."

"That's right. Well, I guess you can take one of my calves," says Blue.

He watches the young man select one of the animals and looks on with amusement as the young man stuffs it into the trunk of his car. Then Blue says to the young man, "Hey, if I can tell you exactly what your business is, will you give me back my calf?"

The young man thinks about it for a second and then says, "Okay, why not?"

"You're a political aid to a politician in Canberra", says Blue.

"Wow! That's correct," says the yuppie, "but how did you guess that?"

"No guessing required." answered the farmer. "You showed up here even though nobody asked you to come; you want to get paid for an answer I already knew, to a question I never asked. You used millions of dollars worth of equipment trying to show me how much smarter than me you are; and you don't know a thing about how working people make a living - or about cows, for that matter. This is a herd of sheep ...

Now give me back my dog.

**Ladies and gentlemen, are there any questions !!**

## Other facts

CEO Study : the new economic environment is substantially more volatile, much more uncertain and increasingly complex. An astounding number of CEOs told us they feel ill-equipped to cope with this drastically different world. 84% expect the level of complexity to grow significantly over the next 5 years. But only 39% believe they know how to deal with it successfully. ANZ CEOs face a “complexity gap”.

### City Population sizes:

Tokyo	9M
Shanghai	17-20M
New York	8.3M / 20M including outer boroughs
London	8M

### Ballarat Uni

#### Earn as you Learn program

There is huge potential for business to partner more with universities – beyond curriculum development – to our mutual benefit... An example of this is our collaboration with Ballarat University, which generates 1 in 20 employment positions throughout the whole Ballarat region and provides the students with the opportunity to Earn as they Learn which brings students into the real world of work during their studies. It also brings IBM and IBMers into the world of education planning and delivery.

Since its partnership with IBM, Ballarat’s IT School has gone from struggling to attract enrollments to a globally recognized institution...

In 1995, the School ran six courses and had just over 100 students... A decade later, it was running almost four times the number of courses with a 15-fold increase in students – making it one of the largest IT schools in Australia.

And the Services Centre which was jointly constructed in 2008 has also gone from strength to strength – with additional new facilities opened last December, creating more than 300 additional local jobs...

### Exports

ADL:	600 staff engaged in expertise and technology exports
Qld Call Centre:	400 Staff – multi lingual – Japan, Korea, China, Thailand, Singapore, Malaysia, India – because we can