I acknowledge the Wurrrundgeri people of the Kulin nations, the traditional custodians of the land on which we are gathered today. We pay our respects to them for their care of the land.

I am delighted to welcome you this 2015 careers practitioners seminar and to our beautiful Burwood campus. If you’ve not been on campus for a while you’ll have noticed some major changes.

Our new Burwood Highway frontage building provides an imposing front door to the campus and includes a corporate centre open to community and industry partners.

There’s iconic new signage; the Deakin Cube combines bold and exciting art installations to create a striking gateway to Deakin day and night. ‘Meet you at the cube’ has become part of Deakin vernacular.

Most importantly though, we’ve been transforming our Deakin campus spaces, with libraries and outdoor spaces refurbished to create natural extensions of the classroom – technology-rich, flexible and stylish discussion spaces that encourage students to connect with their university and with each other.

Very few university students today are either solely ‘on-campus’ with no access to the cloud, or solely ‘off-campus’ simply receiving and absorbing learning resources online.

When students travel to a university site whether that be a campus or a learning centre, they want technology-rich learning spaces with ubiquitous Wi-Fi. And they want stylish and flexible discussion spaces to meet with peers and lecturers. Of course a critical component of campus life now, as it was when you and I were at university, is good food and excellent coffee and you’ll see we’ve worked hard to create some fabulous eateries on campus.

When students access cloud learning they want personalised and seamless single sign on access to a wide range of resources ... just in time and just for me.

Our new DeakinSync integrated communication and collaboration platform enables students to create, store and share documents and files on multiple devices. They can videoconference with peers and lecturers, jointly work on documents, book a computer or order a coffee from the caf – anywhere, anytime, from any device and with no hassle.

It’s personalised, provides the information THEY need, when they want it and where they want it. DeakinSync is currently used by over 50,000 Deakin staff and students, and in time we plan to have it available throughout the learning lifecycle from the moment of offer through undergraduate, postgraduate and alumni, continuously tailored to students’ changing needs.

**Impact of technology and the opportunities of big data for learning and in research**

However you look at our ever-evolving technology landscape, the rate, pace and depth of change over the last decade is breathtaking. Technology has changed forever the way we interact, engage
and communicate with each other; our thumbs are stronger, our attention span shorter and we can always be mentally and digitally someplace other than where we are.

In an age when vast quantities of information are available instantaneously and outdated almost immediately, the ability to deal nimbly with complex and often ambiguous knowledge is far more important than an accumulation of facts.

Eric Schmidt the chairman of Google, claimed in 2010 that every two days we create as much information as we did from the dawn of civilization up until 2003. The world contains an unimaginably vast amount of information, much of it user generated through tweets, Facebook and Instant Messaging.

In this era of big data and analytics we can segment, target, predict and describe information in ways unimagined a few short years ago. Big data has given us new ways of collecting and thinking about information and new ways of linking data sets to generate new insights about learning.

Learning analytics doesn’t just measure progress, it can shape it, giving students opportunities to improve and develop while a course is in progress. In future, the challenges for learning analytics will be to build ever-stronger links between data, teaching and learning and to maintain a focus on developing the skills and knowledge that we value as a society.

The evolution of cognitive computing has moved into areas previously believed to be uniquely human. Last year Deakin University entered a world-first partnership with IBM Watson. IBM Watson will give us the capacity to surf the mega trends of automation, big data and customisation.

Cognitive analytics will enable Deakin students to receive personalised and seemingly prescient answers to their questions 24/7, 365 days a year. It is a partnership that will enable us to personalise the student experience in ways previously unimaginable – just in time, just for me, anytime, anywhere and on any device. For the first time in history, machines can learn from experience – as Watson learns, so will Deakin.

Researchers at Deakin’s Centre for Pattern Recognition and Data Analytics (PRaDA) have developed an artificial intelligence program that can accurately predict the mental health patients most at risk of suicide. Using over 9,000 hospital electronic records for they can analyse large of chunks of data at a rate three times more accurately than previous risk detection systems. Using big data quite literally – to save lives.

And tomorrow’s business leaders and decision makers will no longer be confronted by a plethora of excel graphs and spreadsheets thanks to a Deakin and SAS research collaboration which is harnessing the power of big data and visualisation technology. The Analytics Collaboratory housed in Deakin’s Faculty of Business and Law on Elgar Road uses gaming, motion capture and 3D visualisation and will help business analytics professionals bridge the big data skills gap.

Visual analytics not only has the potential to bring complex data to the understanding of everyone, it makes eminently interesting and engaging ... and absolutely relevant to individual business needs.

Preparing for the jobs of the future in the machine age

The United States Department of Labour reported last year that 65% of primary-school aged children in America will end up in jobs that haven’t been invented yet and it’s a pattern replicated globallyi. A study by US researchers Frey and Osborneii suggests that almost 47 per cent of jobs in the United States will be computerised within one or two decades.
Many of the jobs universities are preparing graduates for today, were unheard of a decade ago – think back just five year, who had heard of app developers, data scientists and social media managers yet today Deakin is preparing students for careers in these new fields.

Deloitte’s 2014 report on global human capital trends suggests skills will have a half-life of from 2.5-5 years – the career of a lifetime no longer lasts a lifetime.

Universities are no longer the gate-keepers of knowledge, Google has made knowledge accessible to anyone with access to the internet and that’s around 40% of the world. The first connected billion was reached in 2005. The second billion in 2010. The third billion in 2014. Essentially, except for the very poor, the very isolated indigenous populations on each continent, and possibly children under 2, everyone is connected.

In a flat, connected world, graduates will need the cultural awareness, global contacts and skills essential for a global market place. Most graduates will either work in an international company or spend part of their career overseas – to be global business savvy – to be worldly, is no longer a nice to have, it’s a competitive advantage.

Often described somewhat pejoratively as soft skills, leadership, cross cultural communication, problem solving, and teamwork are all highly valued by employers and must be a critical element in preparing graduates to compete in the global war for smart talent.

We also need graduates with a firm grounding in science, technology, engineering or mathematics (STEM). The recent report from the Chief Scientist suggests that 75 per cent of the fastest growing occupations will require STEM skills and knowledge. A particular difficulty for Australia given that Australia’s performance in mathematical literacy is falling and participation in science subjects is at record lows.

In a fast evolving technology landscape, the connection between work and learning has become closer and work-based learning opportunities have a critical place in preparing students for the jobs and skills of the future. Certainly at Deakin, increasing WIL opportunities locally, nationally and even internationally is a core part of our learning strategy.

**CISR and the opportunities of robotics**

To reflect on just some of our industry partnerships and their implications for learning opportunities.

The Deakin Motion.Lab and the Centre for Intelligent Systems Research partnered with Arts Access Victoria to develop a proposal to create a new haptics system to provide access to dance for people who are blind or vision impaired.

And CISR’s haptically-enabled robotic system, which gives operators a realistic ‘grasp and feel’ of remote objects, could become a vital capability for the Australian Defence Force to investigate or disarm explosive devices with reduced risk to our soldiers and defence personnel … taking humans out of danger, but still providing the right level of dexterity to manage complex tasks.

The process modelling and analysis carried out by CISR researchers is now being used to find efficiencies in virtually any process whether manufacturing, logistics networks, healthcare or defence.

**In conclusion**
The ubiquity of the internet and the growth of big data and cognitive computing have advanced on the world almost by stealth. Cognitive computer IBM Watson now diagnoses diseases and advises students, Google’s driverless car is a reality – and 3D printing, the internet of things and wearable computing have become part of our lives.

We are preparing students for the jobs of the future in a machine driven world; they will need to be prepared to meet the challenges of a complex and often ambiguous future where accelerated change and risks are managed with high performance agility.

Certainly the education sector has had its own taste of ambiguity and uncertainty in recent times, the protracted uncertainty over the Government’s reforms to Higher Education has made it very difficult for universities to plan for current and future students and for students to know the conditions of enrolment.

Deakin believes passionately that students deserve to have a clear understanding of the cost of their degree and studies. Deakin was the first Australian university to freeze fees last year.

And Deakin remains committed to making education accessible for students from disadvantaged backgrounds, those who might otherwise not have access to a university education. It was enshrined in our Act of establishment and it has been part of the Deakin DNA from our beginnings over 40 years ago.

Finance is a major barrier to access for those with a disability, for Indigenous students and for those from educationally disadvantaged backgrounds … accessible education is affordable education.

If fee deregulation continues to be linked to 20% cuts in Commonwealth grants, the Government will make it very difficult indeed for universities to keep their course costs down.

And the Scholarship scheme meant to assist those who are less able to finance their education in no way manages the issues around how education is funded in Australia or how the nation achieves the skill base it needs to be competitive. It is random, rather than strategically targeted, with those who are economically disadvantaged contributing to a scheme that will benefit economically disadvantaged students – it appears to be a circular argument.

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iii Ibid