

# Industry 4.0: Unpacking the Skills Challenges – Conference Summary

## Background

In late 2017 IBSA completed work on a cross sector project on the need for digital skills across a broad range of Australian industry sectors. Details of the project and a copy of the final report is available [here](#).

The Case for Change includes a research report which highlights the fundamental changes that digitisation (often referred to as the fourth Industrial Revolution or Industry 4.0) is having on the manufacturing sector and across other industries, as well as on the skills needed by workers. The research involved both desktop analysis and interviews with more than 40 employers in manufacturing and related industries, as well as stakeholders in the VET sector.

Many of the individuals involved in the consultations raised questions about how well the VET sector was prepared for the substantial digital changes impacting on the workforce, and in particular, on the manufacturing sector. They questioned whether the VET sector was sufficiently flexible to meet the needs of the manufacturing sector as it responds to growing levels of digital disruption.

One of the recommendations of the cross-sector project was a national conference to examine the changes occurring in the manufacturing sector in Australia as a result of digitisation/Industry 4.0 – and the consequent skills challenges.

## Conference: Industry 4.0 – Unpacking the skills challenges

The conference took place on Tuesday 10 July 2018 in Melbourne and was attended by more than 100 delegates from manufacturing and related sectors, Commonwealth, State and Territory government agencies, leading education providers and other industry leaders.

**IBSA Chair John Vines** opened the conference and shared the results of a pre-conference survey of delegates.

When asked how big the challenge of technology was in their industry – 88 percent described it as either significant (48%) or very significant (40%).

When asked what kinds of challenges technology posed – almost two-thirds (62 percent) noted some type of skills or training challenge. Common responses included:

*“People not being trained in some of the emerging technologies”*

*“Developing the skills of the workforce to underpin the successful deployment of new technology”*

*“Skilling to meet the challenges”*

Other identified challenges related to the costs of new capital equipment and successfully anticipating customers’ needs in an increasingly digital environment.

***When asked whether or not the VET sector was keeping up with changing technology - 72 percent said ‘no’***



**Assistant Minister for Vocational Education and Skills, the Hon Karen Andrews MP**, addressed the conference and outlined the government's engagement with digital change and the accompanying skill requirements. The government's response includes the leadership of the Australian Industry and Skills Committee and particularly its Chair – John Pollaers, the new Industry Reference Committee focussed on Digital Transformation and the newly introduced Skilling Australians Fund.

**Professor Aleksander Subic**, Deputy Vice-Chancellor for Research and Development at Swinburne University of Technology and Deputy Chair of the Prime Minister's Industry 4.0 Taskforce made the argument for changes to both VET and higher education to meet the needs of employers in an Industry 4.0 environment. He also outlined the work of the Prime Minister's Taskforce and its close links to Germany, as well as the Test Labs being established as a result to trial and test Industry 4.0 Developments. Professor Subic also discussed the work of the Australian Industry Group's Industry 4.0 Forum which includes representatives from AiGroup, the Advanced Manufacturing Growth Centre, the Department of Industry, Innovation and Science, Engineers Australia, SAP and Siemens. He updated the conference on the Industry 4.0 Advanced Apprenticeships collaboration between Swinburne University, Siemens and the AiGroup.

**Dr Jens Goenneman**, CEO of the Advanced Manufacturing Growth Centre (AMGC), commenced his presentation with an analysis of the Australian economy, its current reliance on the extractive industries, and its opportunity to transform itself through increasing the complexity of its manufacturing outputs. Already the manufacturing sector in Australia involves a lot more skills than purely those involved in production.

***Future skill needs in manufacturing will involve more technical leadership roles, more higher-skilled production jobs, and more sales and service jobs.***

The opportunities Industry 4.0 offers to manufacturers were also identified by Dr Goenneman.

**Dr Mariagrazia Squicciarini** Senior Economist at the Organisation for Economic Co-operation and Development (OECD) was the conference keynote speaker. Dr Squicciarini works in the Directorate for Science, Technology and Innovation – and oversaw the OECD's 'Going Digital Project'. Dr Squicciarini's wide-ranging address outlined the focus of the Digital Skills Project (including identifying the jobs and skills required as a result of digital transformation, and the policy responses needed to support this shift). The measurement challenges, and international benchmarks, being used in the Going Digital project were examined, as well as the differential impact of automation in different OECD countries. Dr Squicciarini's analysis also

***identified the changing work undertaken in the manufacturing sector, a shift to servicification, and the success of new business models involving intangible capital.***

The importance of different types of skills (cognitive versus task-based) was discussed, along with the returns from different skills in digitally advanced industries. Dr Squicciarini ended her presentation by focussing on the 'distance' between different occupations based on their skill requirements – and how this analysis can be used to help workers transition to new roles when their occupation/industry is threatened by automation.

The afternoon comprised of two informal panel sessions with an opportunity for delegates to interact with the panellists. The panel sessions were facilitated by AMGC Director, Mike Grogan, which allowed the exploration of real-life examples of dealing with digital change and the associated skills challenges from both an employer perspective and a training provider perspective.



The employer panel involved **Anthony Kittel**, CEO, REDARC and **Tania Montesin**, Regional Manufacturing Operations Manager, Asahi Beverages. Anthony explained how in just three years Industry 4.0 had become a drive for change and growth in his company. He outlined the benefits REDARC had attained thus far and the process they had embarked on to change their approach as a manufacturer and fully embrace the benefits of real time information, process consolidation, production sensors, and collaborative robots. He also outlined the benefits of 'design for manufacture' and what it means in a digital environment.

Tania outlined that Asahi in Australia and New Zealand was focussed on digital transformation according to the following ethos: "Strategically integrating people capability with emerging technologies to build a smarter value chain". She described their current operations and the role of the connected technician who "knows more, earlier and acts pro-actively" and how smart systems are now providing technical assistance – with routine actions occurring automatically. The accompanying skills challenges were also shared and a new partnership with TAFE NSW was described.

The Training Provider panel session involved **Karen Humphreys**, Head of Innovative Manufacturing, Robotics and Science Skills Point, TAFE NSW and **Melanie Sorensen**, GM Organisational Services, South Metropolitan TAFE (WA). Karen gave an outline of the changes occurring at TAFE NSW as they undertake a major statewide organisational restructure and a simultaneous modernisation program. During these changes TAFE NSW is continuing to upgrade their current courses and offering transitional skills, as well as promoting upskilling. In addition, they are providing specific courses/initiatives to address the challenges of digital transformation. Karen outlined offerings in networking, cyber security, a facility for intelligent fabrication, and the STEMShip program offering pre-employment STEM skills.

Melanie outlined the 'co-production' approach being taken at South Metropolitan TAFE (WA) which involves working with stakeholders to design solutions to the digital transformation challenge. She also pointed to the challenges of managing confidentiality in a competitive environment (as firms compete to be first in different technologies and processes) and gave examples of work being undertaken with the University of Western Australia to support skills for Industry 4.0 in the oil and gas sectors, the defence industry and with Rio Tinto in relation to automation.

The conference was wrapped-up by IBSA CEO **Patricia Neden** – who was acknowledged for her ten years of service to IBSA and her wider career in the sector.

A survey undertaken at the conclusion of the conference asked delegates for the three most valuable lessons learned from the conference. Many delegates highlighted the need for collaboration in addressing the challenges of digitisation, the uncertainty around what Industry 4.0 is and the consequent skills challenges. Just under half said the conference had changed their views on the impact technology will have on their business or industry. Examples of how their views had changed included:

*"(Digital change will be) much broader and more integrated than I originally thought."*

*"We need to be developing a strategy NOW for Industry 4.0.. while we are already in this space, we haven't yet developed a strategy and done any forward planning as an organisation."*

*"My views have become more informed and broader and heightened towards the need for collaboration and engagement so that sectors work together as we head towards this new area."*

