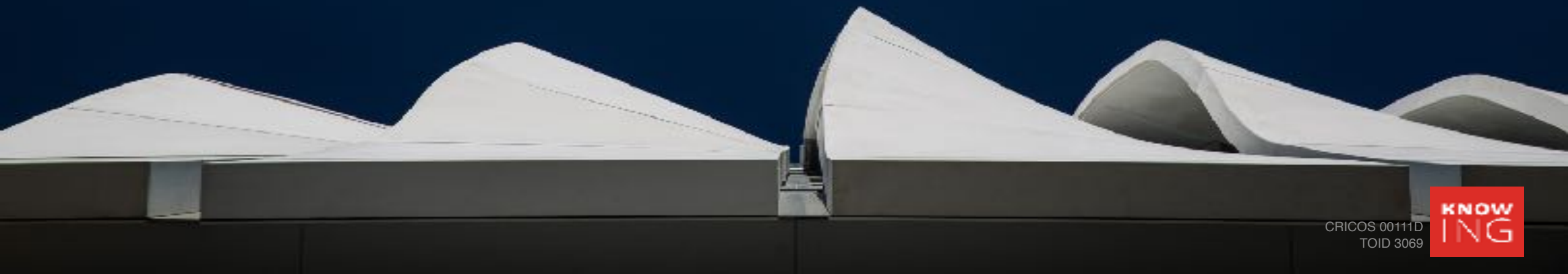
Swinburne University of Technology & Siemens Australia Higher Apprenticeship in Industry 4.0 Partnership



CRICOS 00111D
TOID 3069

Swinburne University of Technology's 2025 Vision

A world class university creating social and economic impact, through science, technology and innovation.

Siemens Australia

- Siemens focuses on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, they are a leading supplier of systems for power generation and transmission as well as medical diagnosis.

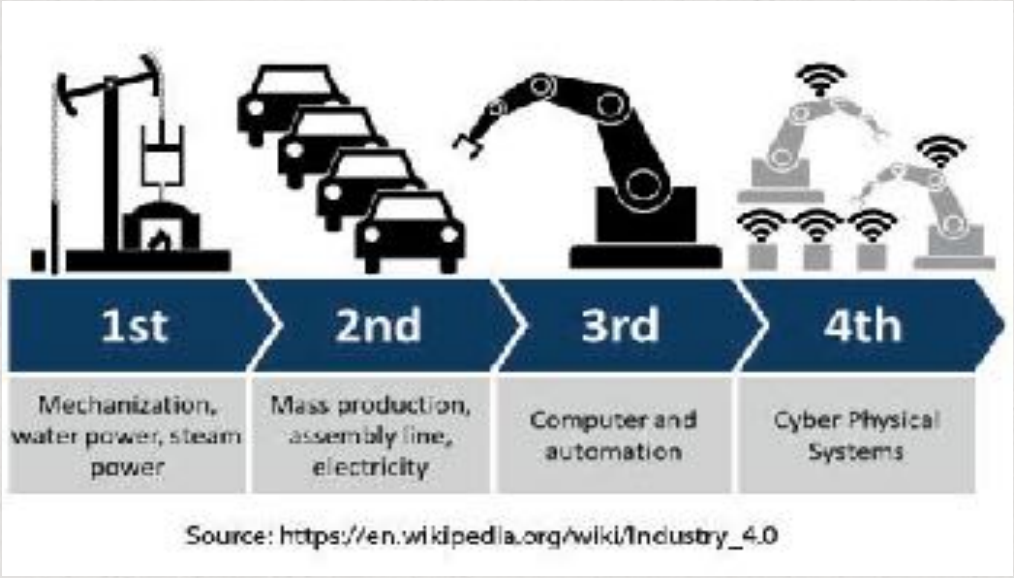
Context for program development

- Swinburne University of Technology is a nationally and internationally recognised dual sector University
- We have a history of providing high quality vocational education for over 100 years.
- Pathways and Vocational Education division established in response to the 2012 funding and policy changes.
- Set about rebuilding a TAFE operation that had lost 50% of its top line.
- Focused on building programs, partnerships, people, property, profitability.
- Leveraging and connecting the University's research, higher education and vocational education capabilities identified as key to success.
- Focus for development to be external – industry led and not just demand driven.

KNOW ING

What is industry 4.0

- Industry 4.0 is the fourth industrial revolution, bringing together computing, automation, robotics and machine learning into cyber-physical systems. Industry 4.0 aims to see significant production and efficiency dividends and to ultimately deliver improvements in quality of life and environmental outcomes.



Program background

- Developed out of a recommendation from The Australia-Germany Advisory Group.
- Recommended collaboration between government and industry in both countries on Industry 4.0, including initiating a collaborative approach to the development of global Industry 4.0 standards.
- Developed with funding support of the Federal government.
- Partners included the Australian Industry Group and Siemens.
- Development of the program commenced in October 2016, with approval and international validation received in January 2017. Delivery commenced in February 2017.

Partner roles and responsibilities

- Siemens Australia
  - Expertise in Industry 4.0
  - Linking Swinburne internationally for content of curriculum, Siemens Academy Germany, Stuttgart University, Festo and others
  - Employer of higher apprentices – 20 in first year, 7 in second year
- Orora Packaging
  - Employer of higher apprentices – 4 in second year
- CSIRO
  - Employer of higher apprentices – 2 second year

Partner roles and responsibilities

- Swinburne
  - Negotiation with industry stakeholders for curriculum design and the employment of higher apprentices
  - Accreditation of curriculum
  - Associated research and innovation in Industry 4.0
  - Ongoing development of new curriculum and streams such as construction technologies including BIM, energy, cyber security and other emerging areas impacted by digitalisation

About the Associate Degree in Applied Technologies project

- Developed through extensive industry consultation in order to meet needs of industry.
- Research component included to provide evidence to inform policy and VE Diploma development.
- Course design allows for a range of pedagogical approaches, including a mix of on-campus, workplace-based and e-learning and has the potential for international experiences in the final project.
- Student recruitment based on 'learning potential' rather than evidence of educational success.
- Designed as an engineering 'higher apprenticeship' program topics include the machine to machine communication of Internet of Things, advanced manufacturing processes, automation and robotics, cloud computing, advanced algorithms, smart sensors and cyber-physical systems.

Observations to date

- Program development challenged all University and State program accreditation processes and timelines.
- Developing graduates for jobs that (largely) don't yet exist challenged the demand driven model of student recruitment.
- Requirement to invest significantly in staff capabilities, technical infrastructure and deliver the program using agile methodologies.
- Review and refinement continually required.
- Required parallel development of a VET Diploma and 3rd year Bachelor degree.
- New initiatives and collaborations have grown, including interstate industry collaborations.

Going forward

- Ensuring our programs remain relevant and respond to the known and anticipated impacts of disruptive technologies is core to our program renewal process.
- We are investing in new technologies to build workforce capacity and graduate future job readiness; Applied Technologies Lab, Industry 4.0 test lab, and digitising our Advanced Manufacturing Design Centre.
- We have also launched a new research centre – The Centre for the New Work Force. This applied research centre is embedded in our vocational education program development and delivery and is primarily a resource to industry. Through the Centre we aim to prepare new and existing workforces for the fourth industrial revolution.