

THE FACTORY OF THE FUTURE

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FACTORY
OF THE
FUTURE

BAE SYSTEMS

Maritime Australia



Flinders
UNIVERSITY



**Government of
South Australia**

THE FACTORY OF THE FUTURE

Our vision strongly supports the Federal Government's desire to accelerate the growth of high value manufacturing industry and jobs and advances its ambition for Australia to become one of the world's Top 10 global defence exporters.

We have the foundations for success already in place at the Tonsley Innovation District.

Investment in the Factory of the Future will connect industry sectors of strategic economic importance, facilitate cross-sector innovation and develop sovereign capability.

It will help develop Industry 4.0 technologies, research and training – and contribute to the creation of thousands of highly skilled jobs.

It will provide access to industrial scale test labs to de-risk investment in new technologies and capabilities.

Ultimately, the Factory of the Future will advance Australia's manufacturing sector and strengthen the nation's economy.



Professor Colin J Stirling
President and Vice-Chancellor
Flinders University



Craig Lockhart,
Managing Director,
BAE Systems Maritime Australia

SHAPING AUSTRALIA'S FUTURE

The Factory of the Future at Tonsley Innovation District will:

- Accelerate the growth of advanced manufacturing companies and jobs by leveraging the Commonwealth's record \$90 billion investment in naval shipbuilding;
- Connect strategic industry sectors;
- Help develop sovereign capability;
- Advance manufacturing and strengthen the nation's economy;
- De-risk investment in new technologies and capabilities;
- Provide a nexus for world leading education including the world first digital diploma in shipbuilding.





GLOBAL LEADERSHIP OPPORTUNITY

Australia has the opportunity to take a place at the global table of advanced manufacturing – through the Factory of the Future collaboration between BAE Systems Maritime Australia, Flinders University, the South Australian Government and our network of industry partners.

The United Kingdom and Germany have proved the strategic and economic value of investing in large scale 'factories of the future' where testing and trialling technologies and modern manufacturing processes have played a key role in accelerating the growth of advanced manufacturing and increasing the global competitiveness of those nations.

Inspired by the European experience, the United States has funded its own network of 'manufacturing institutes' linked to universities.

The innovation accelerator capabilities under development at the Tonsley Innovation District provide Australia with a strong foundation for the establishment of a world-class facility similar to the UK's High Value Manufacturing Catapult centres. Already, we are adopting their experience and are collaborating with both the University of Sheffield Advanced Manufacturing Research Centre and the University of Strathclyde's Advanced Forming Centre in Glasgow.





SUPPORTING STRATEGIC NATIONAL GOALS



The Factory of the Future collaboration led by BAE Systems Maritime Australia and Flinders University will accelerate the growth of Australian manufacturing industry and jobs, boost exports and play a major role in developing sovereign capability in critical areas.

JOBS AND EXPORTS

The Factory of the Future will incubate and promote the involvement of over 250 Australian SMEs in domestic defence manufacturing programs and help them secure lucrative export opportunities.

Collaboration will also help to deliver outcomes in other priority sectors, particularly space, energy, mining and marine bio-products.

This showcase of innovation will be a core objective, and will scale with size.

Over the next five years, it is estimated that the facility will engage with 250 Australian companies and assist in achieving \$100 million in exports.

In addition, the Factory of the Future will help to generate between 4500 and 5500 jobs and an economic growth dividend of between \$650 million and \$800 million.



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NEXT GENERATION EDUCATION, SKILLS AND STEM

The Factory of the Future will play a key role in developing workforce capability through education and training programs, particularly in the areas of digital and advanced manufacturing technologies in naval ship building.

It is estimated that 500 students will benefit from these programs over the next five years – during which period more than 5000 visitors will also experience the Factory of the Future.

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DEVELOPMENT OF SOVEREIGN CAPABILITY

The Factory of the Future will make a major contribution to building Australian Sovereign Capability in defence – across land, sea and air.

It will act as a magnet for future sovereign investment by the Commonwealth, both in research and in on-shoring capability Centres of Excellence that require a suitable location.



ADVANCING INDUSTRY, INNOVATION, EDUCATION AND THE ECONOMY

The Factory of the Future collaboration between BAE Systems Maritime Australia and Flinders University brings together education, industry and government to facilitate the implementation of Industry 4.0 - bridging the valley between research, development and innovation to boost the national economy and support sovereign capability.

It will deliver a world-class, reconfigurable advanced manufacturing test bed, training and industry growth facility – the first of its kind in Australia.

It will connect industry with enabling technologies, research capabilities and training to modernise and transform manufacturing, with advanced robotics and customised

technology allowing partners to integrate i4.0 tools into production.



Photography by: Simon Cecere

BUILDING CAPABILITY

The Factory of the Future at Flinders University will increase the number of companies involved in testing, automation and robotics technology through access to cutting edge capabilities and equipment. The Federal Government's \$90 billion investment in naval shipbuilding is providing a unique opportunity to accelerate this process, supporting expansion and modernisation of the supply chain.

The facility will greatly lower the barriers to entry that many companies face when considering adopting advanced manufacturing technologies, playing a brokerage role to connect companies to key enabling technologies and research capabilities – at a time when support for businesses to grow and prosper is critical.



"Having that ability to scale up from the laboratory-based work out into the Factory of the Future and then out to the shipyard is actually a crucial part of testing our technology."

Sharon Wilson,
CONTINUOUS NAVAL
SHIPBUILDING STRATEGY DIRECTOR,
BAE SYSTEMS MARITIME AUSTRALIA





BRINGING BUSINESSES TOGETHER

Based in Australia's leading innovation district, the Factory of the Future will bring business together with leading researchers and students to test and trial applications of advanced technologies and processes in support of the modern manufacturing agenda in Australia.



"The Factory of the Future will be placed right at the heart of developing sovereign industrial capability... we're bridging the gap between industry, smaller businesses and academia, and we're looking to get that accelerator effect."

Craig Lockhart, MANAGING DIRECTOR, BAE SYSTEMS MARITIME AUSTRALIA

The Factory of the Future will work with international and domestic businesses to deepen understanding of the growing importance of digitisation and advanced manufacturing technologies, and to identify opportunities for industry-leading applications.

It will work with business to test and trial robotics and automation, including cyber-physical systems.

It will also assist with the development of digital roadmaps to help sustain the uptake and diffusion of advanced technologies.







JOBS GROWTH ACROSS INDUSTRY

The Factory of the Future is committed to accelerating the growth of advanced manufacturing industry and jobs, leveraging the opportunities arising from major investments in shipbuilding by the Australian Government.

The Factory of the Future will enable the generation of between 4500 and 5500 new jobs in participating companies over a decade.

In addition, it will employ dozens of researchers and industry experts dedicated to its core operations, and harness the expertise of leaders in disciplines spanning engineering, science, psychology, economics and business. The facility will be capable of hosting up to 200 industry personnel working collaboratively on multiple projects at any given time.

The Factory of the Future at Flinders University aims to apply the capability of leading researchers and provide companies with access to industrial-scale test labs to offset the risks associated with investments in new technologies and capabilities.





"The Factory of the Future will deliver a world-class, reconfigurable advanced manufacturing test bed, training and industry growth facility – the first of its kind in Australia."

**Professor John Spoehr, DIRECTOR, AUSTRALIAN INDUSTRIAL TRANSFORMATION INSTITUTE
FLINDERS UNIVERSITY**



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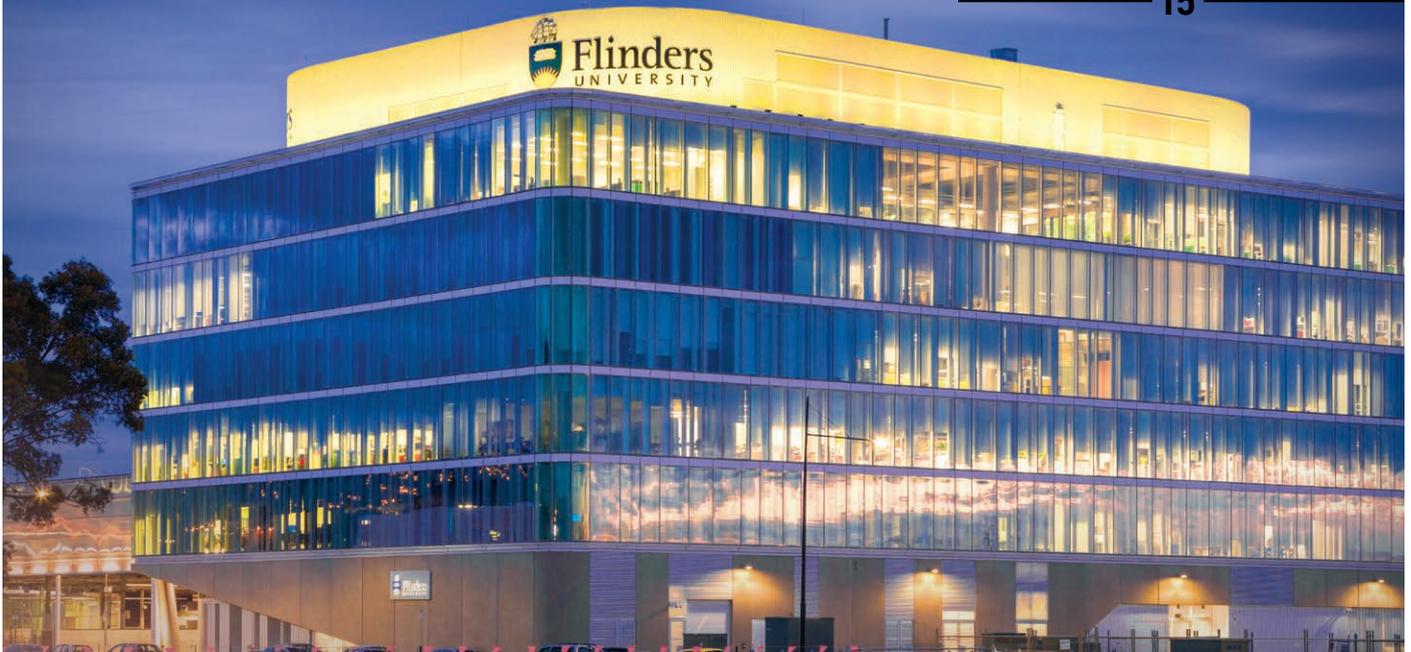
EDUCATION IS CRITICAL

The Factory of the Future will play a key role in education and training in support of the vision of establishing world class digital shipyards in Australia.

It will build on the joint Flinders University/BAE Systems Maritime Australia award winning Diploma of Digital Technologies that is training the digital champions of tomorrow.

The Factory of the Future will also provide training in support of industrial transformation including lean manufacturing, agile management, human factors and technology, digitisation, robotics and automation.





HARNESSING INDUSTRY 4.0

Over the next five years Flinders University's Factory of the Future collaboration with BAE Systems Maritime Australia will provide opportunities for companies involved in shipbuilding and other industries of strategic importance to the national economy to test and trial the application of advanced technologies in support of the growth of high-value manufacturing.

Industry 4.0 technologies are poised to transform sectors, including shipbuilding and defence. These technologies include advanced robotics and artificial intelligence, sophisticated sensors, cloud computing, the Internet of Things, data capture and analytics, digital fabrication, software-as-a-service and advanced navigation tools. The rapid advancements in technology and the way industries are embedding these applications into the global supply chain

is becoming integral to manufacturing and advancing economies.

By supporting the accelerated uptake of advanced technologies, the Factory of the Future will be able to significantly increase the innovative capabilities and performance of companies, leading to the establishment of deeper productive collaborations with researchers and world-class facilities.

Access to Industry 4.0 technologies, processes and expertise is essential to enable businesses working across many South Australian industry sectors to compete on a global stage. The Factory of the Future aims to substantially increase the number of companies involved in testing automation and robotics technologies to help our state and our nation prosper.

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