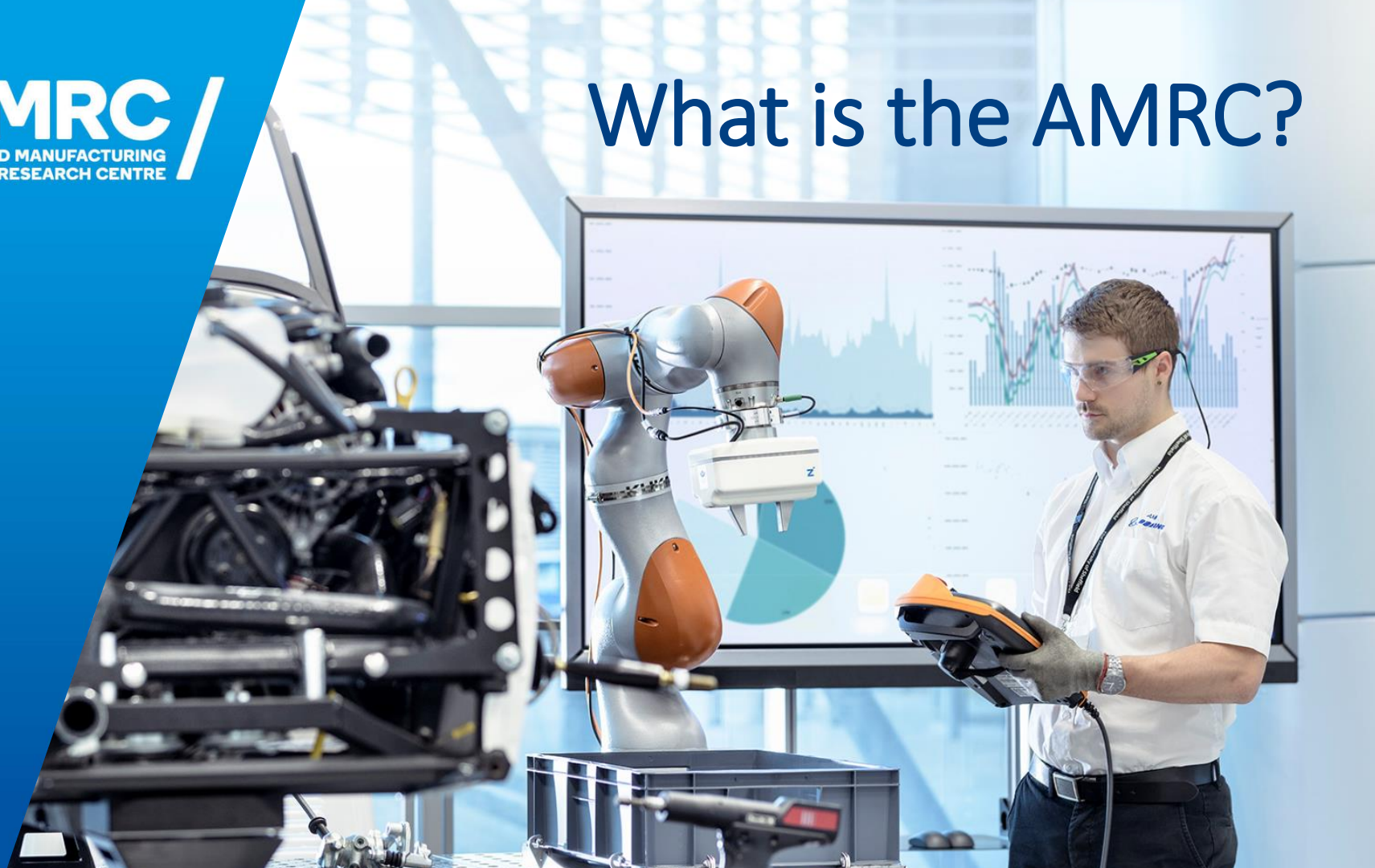


Impact through research partnerships

Professor Keith Ridgway

What is the AMRC?



A world-class centre for advanced manufacturing

Established in 2001 as a collaboration between Boeing & University of Sheffield, the University of Sheffield Advanced Manufacturing Research Centre (AMRC) with Boeing helps manufacturers of any size to become more competitive by introducing advanced techniques, technologies and processes.

We specialise in carrying out world-leading research into advanced machining, manufacturing and materials, which is of practical use to industry.

Manufacturing Readiness Level (MRL)		
Phase	MRL	State of Development
Phase 3: Production Implementation	9	Full production process qualified for full range of parts and full metrics achieved
	8	Full production process qualified for full range of parts
	7	Capability and rate confirmed
Phase 2: Pre production	6	Process optimised for production rate on production equipment
	5	Basic capability demonstrated
Phase 1: Technology assessment and proving	4	Production validated in lab environment
	3	Experimental proof of concept completed
	2	Application and validity of concept validated or demonstrated
	1	Concept proposed with scientific validation





South Yorkshire Centre of Excellence

SYCOE

Applied research & development in to
next generation machining technologies.



AMRC Culture



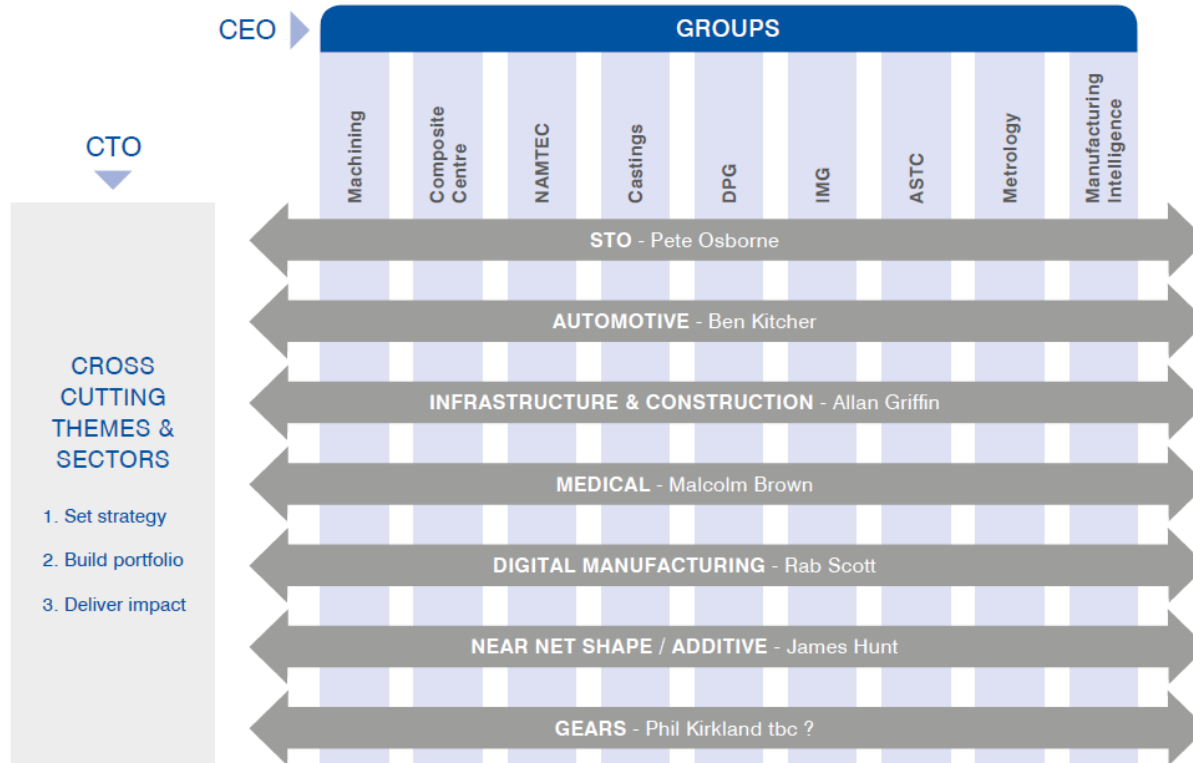
AMRC Advanced Manufacturing Park



AMRC Advanced Manufacturing Innovation District



Groups & Sectors

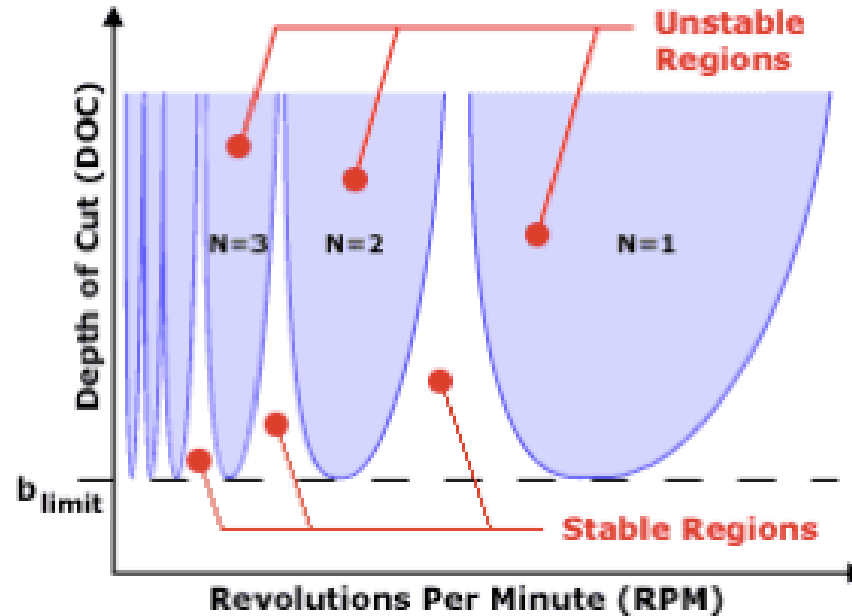




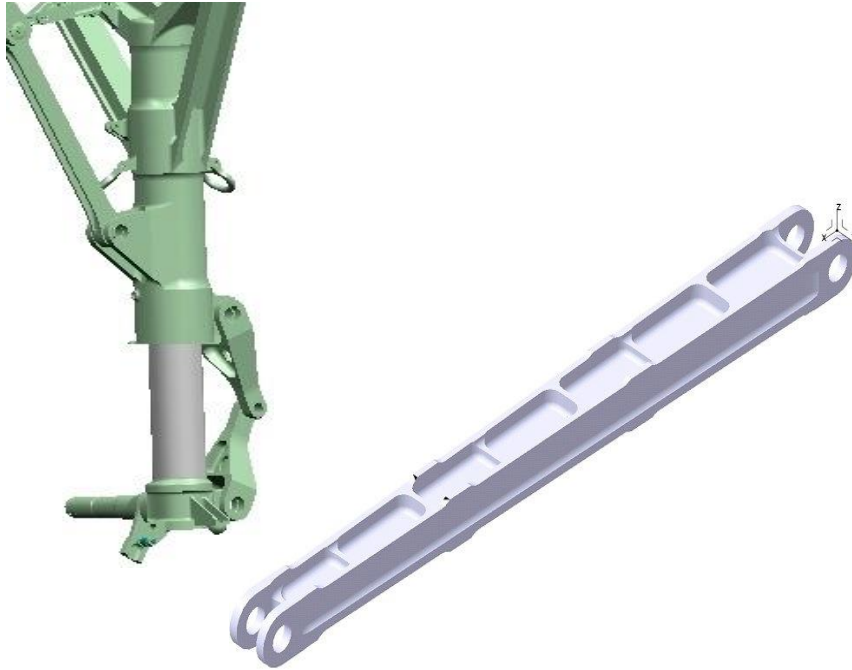


Machining

Machining Dynamics



Case Study: Titanium Landing Gear



- Project as part of collaboration of between Messier-Dowty and AMRC
- Simple Prismatic part similar to Boeing Design
- New material: Ti-5553
- Study in specific machining time to extrapolate overall cost of Ti parts on 787 gear
- Representative design-for-manufacturing features

Our groundbreaking manufacturing techniques are helping Rolls-Royce transform the production of components for some of the world's most advanced passenger jets.



AMRC have reduced the time
it takes to manufacture each disc by 50%

High Performance Disk Machining



- Operations down 40%
- Hours down 50%
- Productivity up 100%
- Quality up 15% (RFT)
- Underpins new factory investment

Fan Disc



HPDM will to halve the current value added time, double the productivity at zero consumable cost difference and achieve 6-sigma process capability

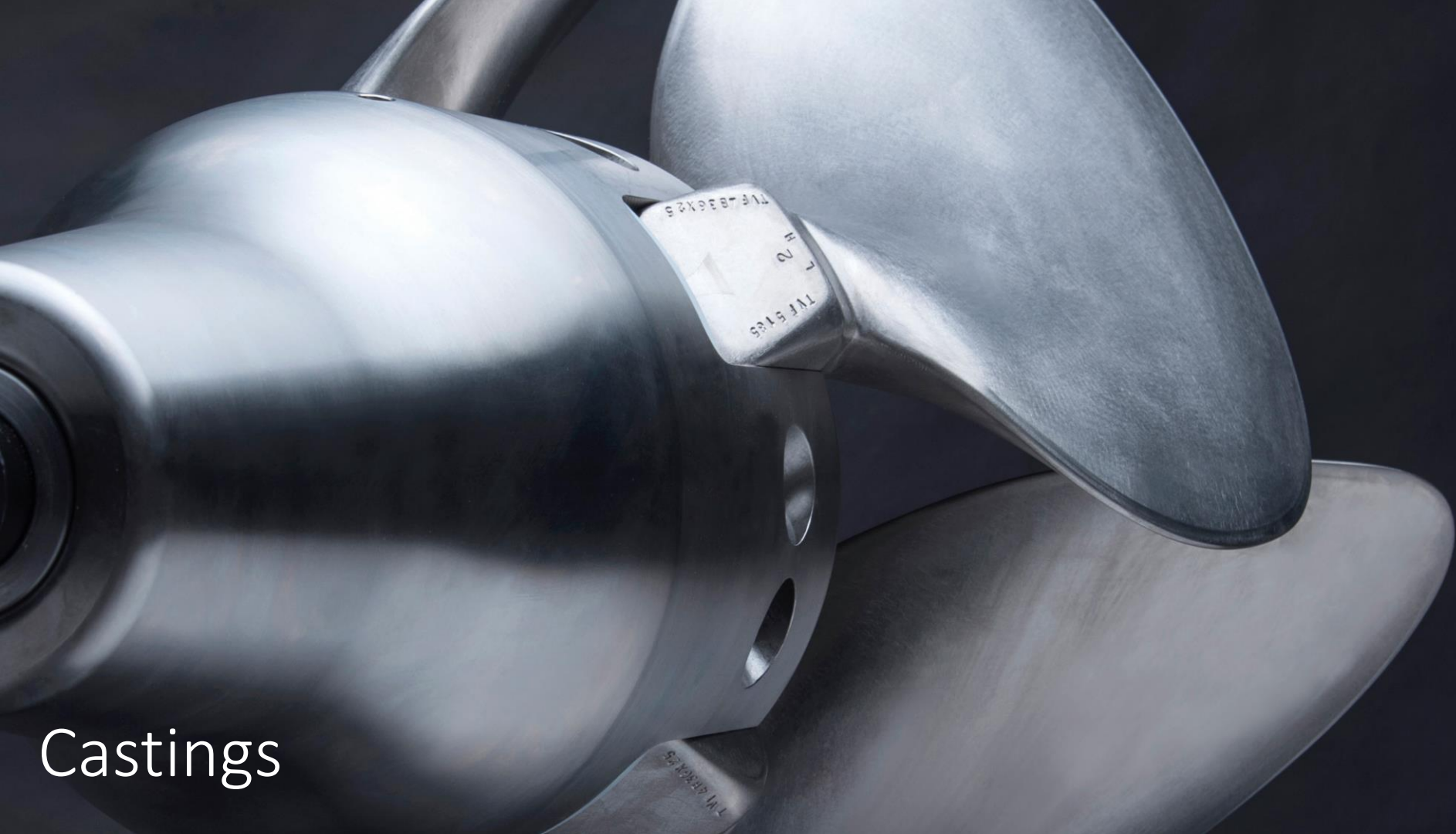


Integrated Manufacturing



Composites





Castings

- More than 1,000 apprentices trained in 4 years
- Employed by more than 250 local companies
- Pioneering degree apprenticeships



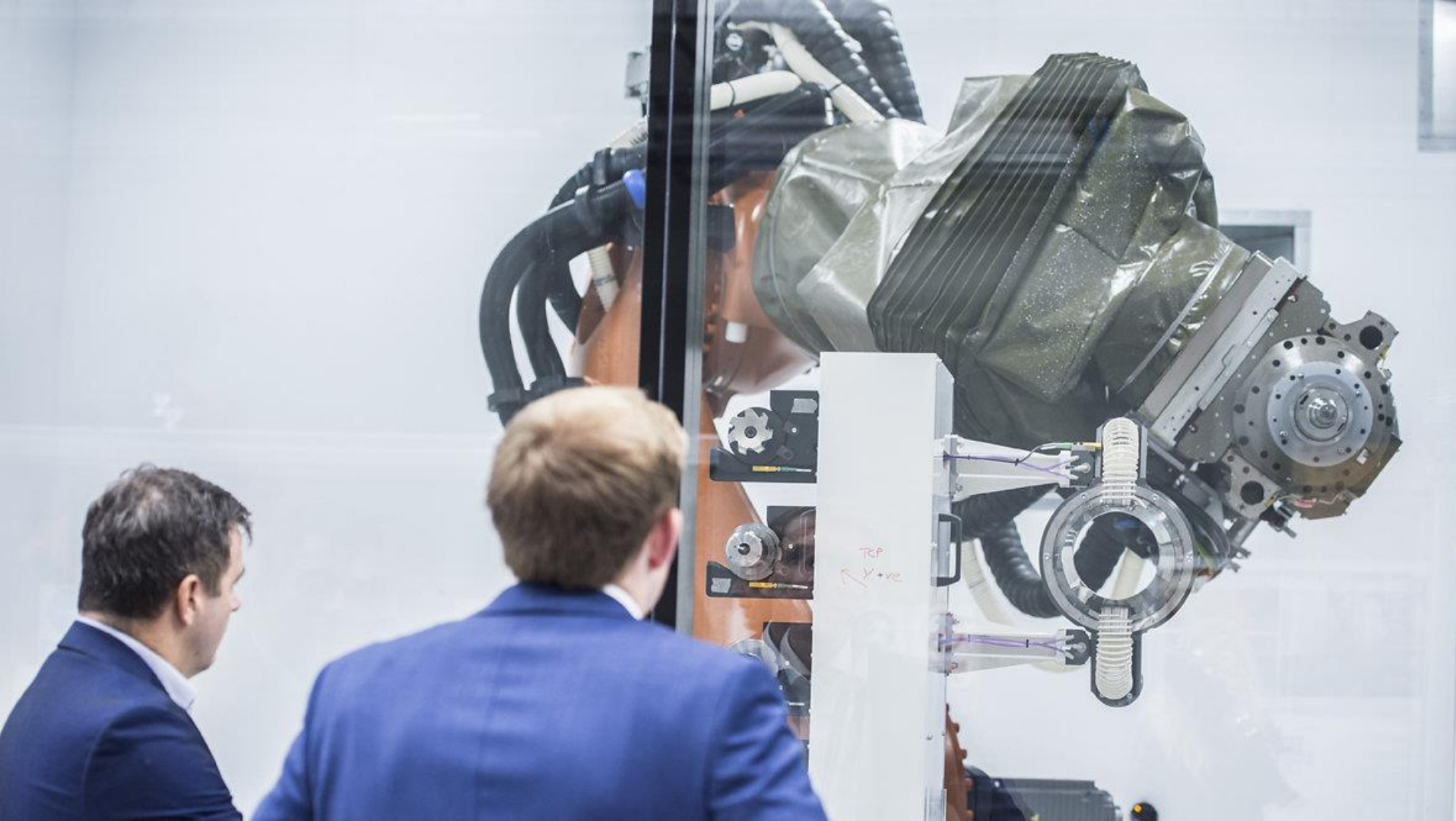






Factory 2050: The place where digital meets manufacturing









Advanced Manufacturing Innovation District

- 
- An aerial photograph of an industrial complex, possibly a refinery or chemical plant, featuring numerous storage tanks, distillation columns, and large industrial buildings. The entire image is covered with a semi-transparent blue filter. On the left side, there is a bulleted list in white text.
- £1 per acre
 - £750,000 per acre





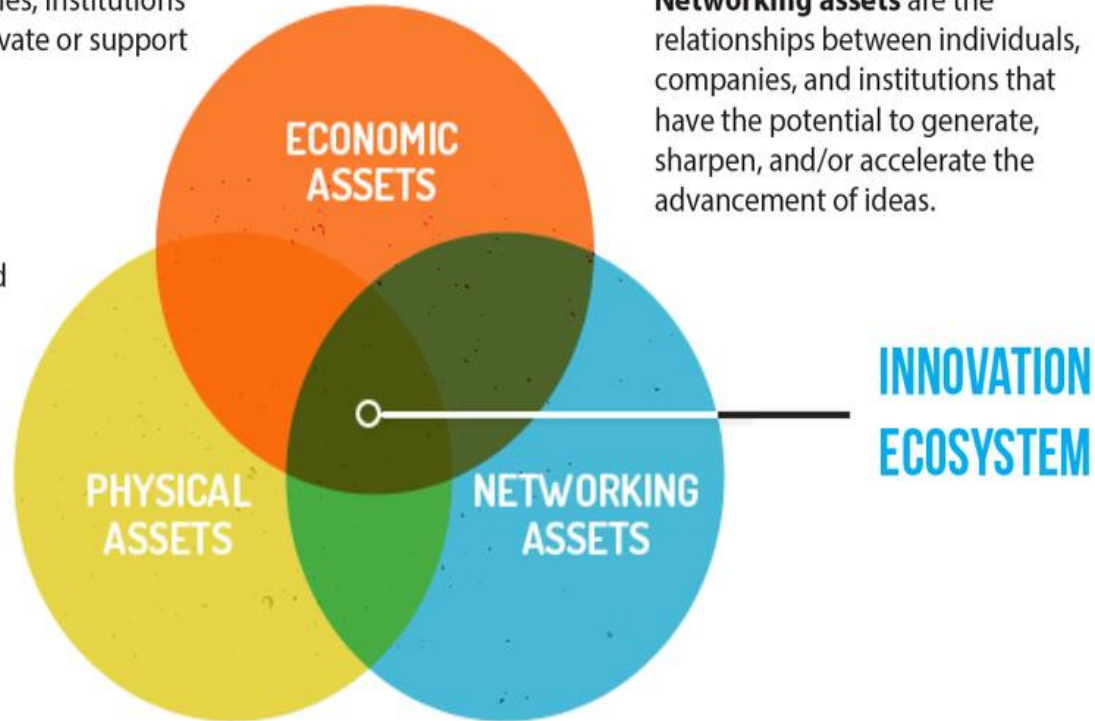
“Advanced Manufacturing Innovation Districts are being developed at each end of the proposed corridor (Sheffield/Rotherham boundary and Salmesbury), and there is a need to connect the two. The North West AMRC, which links to the University of Central Lancashire’s Engineering Innovation Centre, is the first substantial project which will begin to achieve this, and will formalise the link between the two Innovation Districts as it represents a formal partnership between Lancaster and Sheffield Universities.”

Innovation District

Economic assets are the companies, institutions and organizations that drive, cultivate or support an innovation-rich environment.

Physical assets are the public and privately-owned spaces designed and organized to stimulate new and higher levels of connectivity, collaboration, and innovation.

Networking assets are the relationships between individuals, companies, and institutions that have the potential to generate, sharpen, and/or accelerate the advancement of ideas.



from Katz and Wagner, The rise of Innovation Districts



Bond Street
Architects
AMRC North West





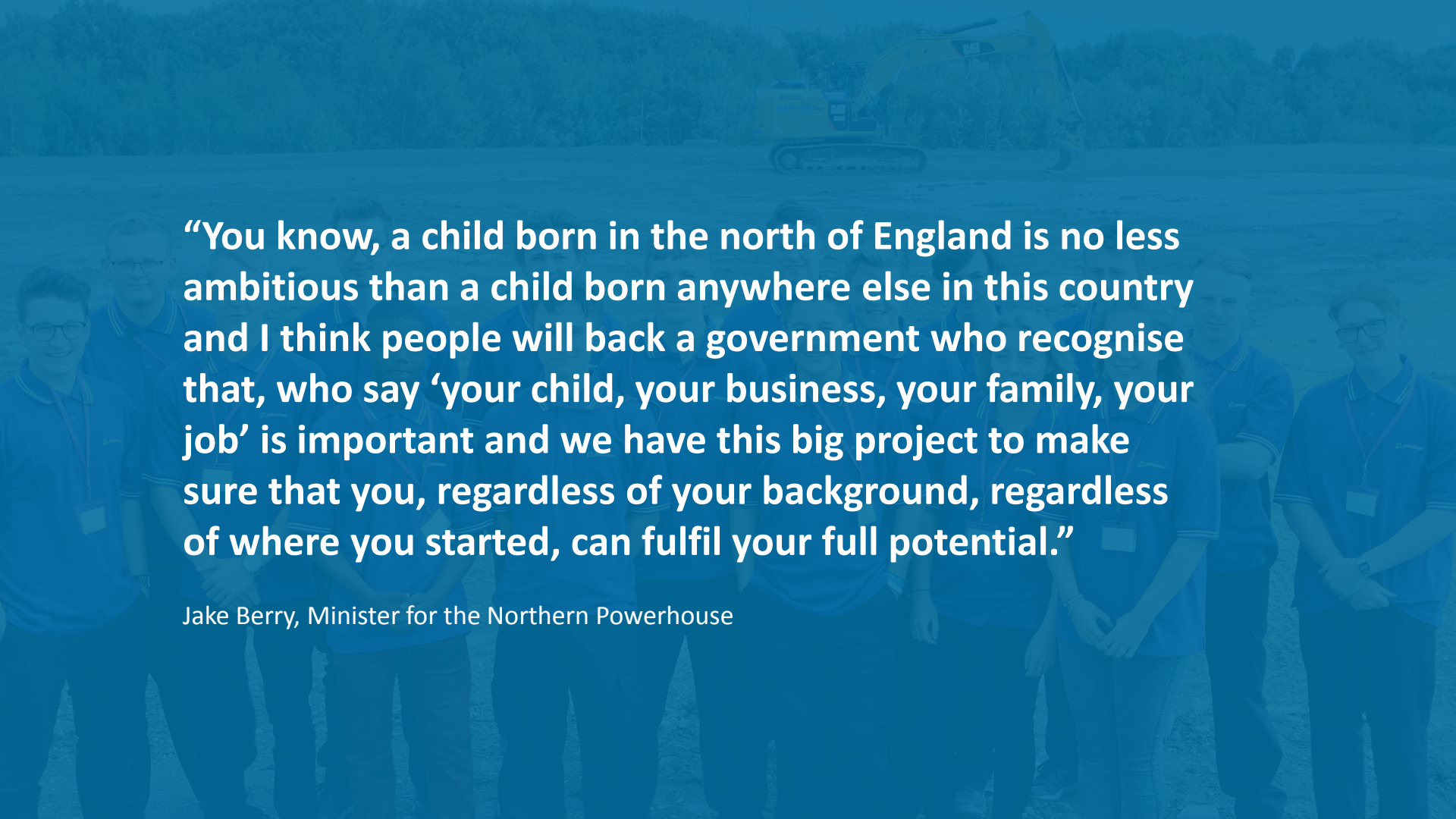
Advanced Manufacturing Research Institute: Deeside



National Manufacturing Institute of Scotland



National Manufacturing Institute of Scotland

A group of approximately ten young people, likely students or apprentices, are standing in a line on a construction site. They are all wearing blue polo shirts with a small logo on the chest and dark trousers. In the background, a yellow excavator is visible on a dirt mound, with trees and a clear sky in the distance. The entire image has a semi-transparent blue overlay.

“You know, a child born in the north of England is no less ambitious than a child born anywhere else in this country and I think people will back a government who recognise that, who say ‘your child, your business, your family, your job’ is important and we have this big project to make sure that you, regardless of your background, regardless of where you started, can fulfil your full potential.”

Jake Berry, Minister for the Northern Powerhouse



AMRC-Creating a future for our young people