

# High Value Manufacturing Catapult

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CEO

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10th Anniversary High Value Manufacturing Conference

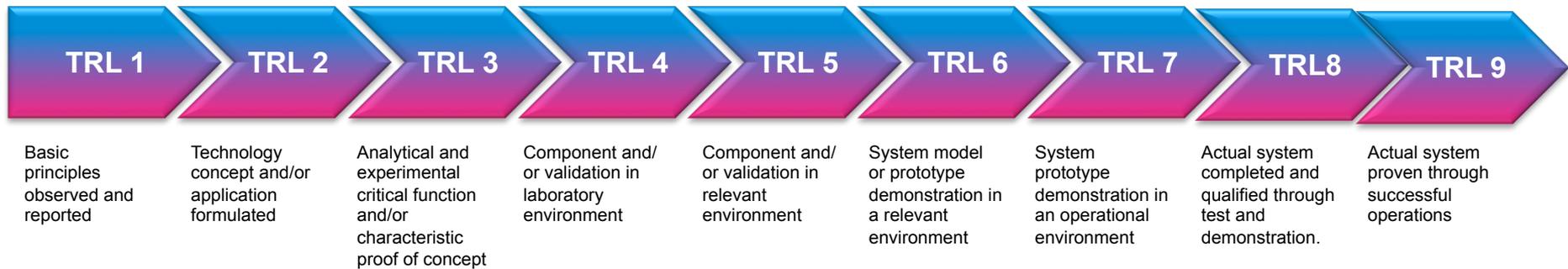
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# Commercialising Innovation

Market readiness (Technology Readiness Level)

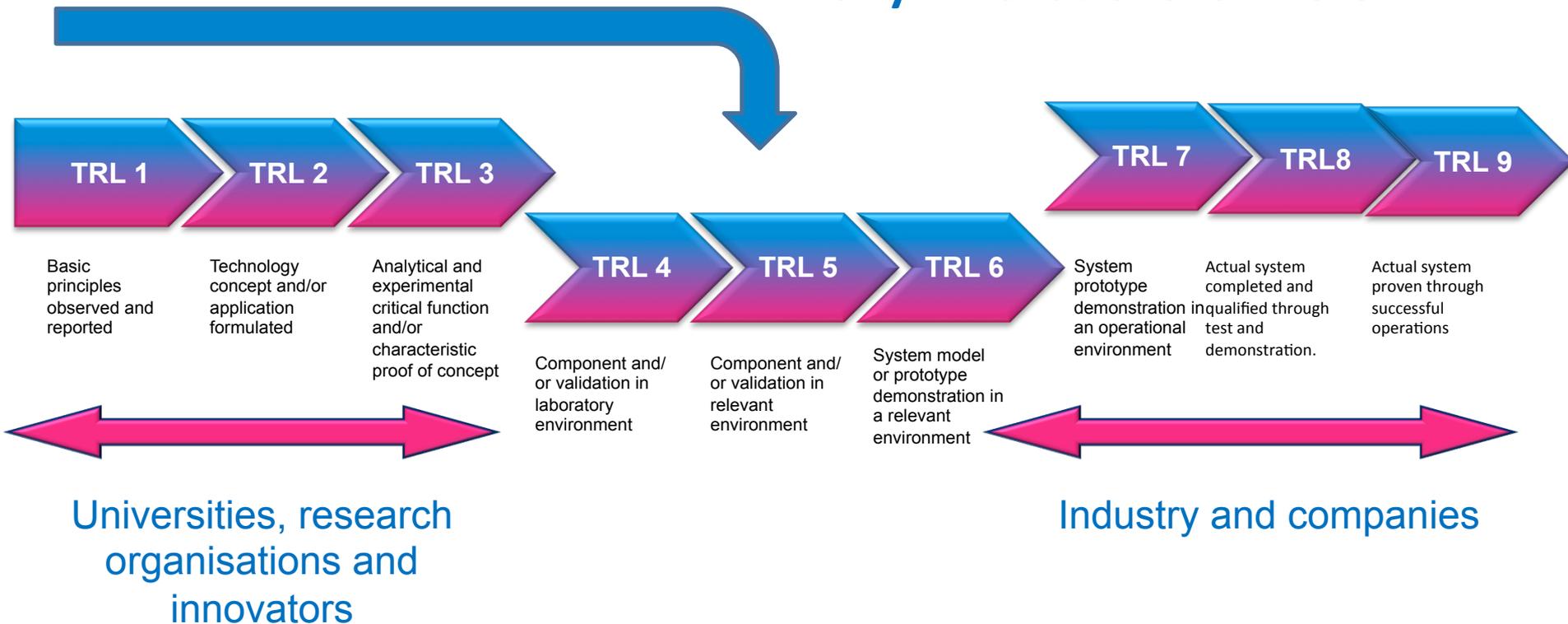


Universities, research organisations and innovators

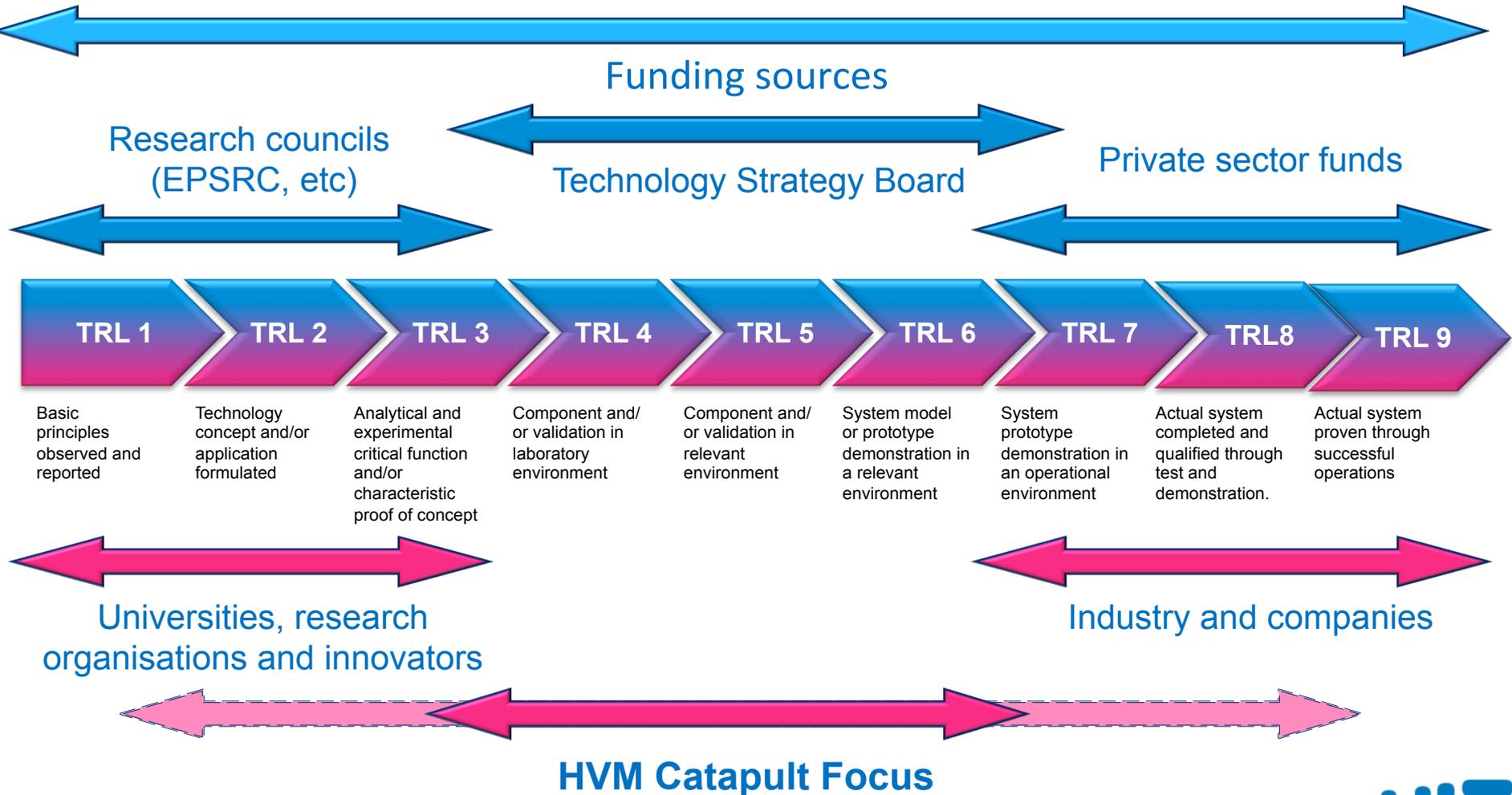
Industry and companies

# Commercialising Innovation

Many innovations fail here



# Catapult Role in Commercialising Innovation



# What is the HVM Catapult?

**Business-focused consortium of centres that makes world-leading technical capability available to businesses to address their manufacturing challenges**

- Access to world-leading manufacturing technology & expertise
- Capability to undertake collaborative R&D projects
- Capability to undertake contract research
- Access to the knowledge base for world-class science
- A professional delivery ethos with a strong business focus
- A critical mass of activity
- Skills development at all levels

# Overview

NCC



MTC



WMG



## HVM Catapult

- £350m invested to date
- £140m+ over next 5 yrs
- 160+ industry partners
  - 700 staff

AMRC



CPI



NAMRC



AFRC



# National Composites Centre



## Key Competencies

- Composite design and manufacture
- Rapid accurate deposition of composites materials of complex geometries and architectures
- Thermoplastic processing
- Full material testing, including CT, electron microscopy scanning and thermal analysis
- Advanced 3D composite modelling and analysis

## Location - Bristol

- Provides integrated design and manufacturing capability.

## Key Resources

- Expert team of research engineers
- Dedicated private manufacturing cells
- State-of-the-art materials laboratory, large curing ovens and 450°C hotpress



# Manufacturing Technology Centre



## Key Competencies

- High integrity fabrication
- Advanced tooling & fixturing
- Intelligent automation
- Net shape manufacturing
- High integrity electronic systems
- Operational efficiency and process modelling

## Location - Coventry

- Improving business performance through well developed manufacturing technology solutions

## Key Resources

- Research partners: TWI and the Universities of Birmingham, Loughborough and Nottingham



The University of Nottingham



UNIVERSITY OF BIRMINGHAM



# Advanced Manufacturing Research Centre



Advanced Manufacturing Research Centre



## Key Competencies

- Focus on advanced machining and materials research for aerospace and other high value manufacturing sectors
- High performance machining
- Materials and components testing
- Hybrid and metallic composites
- High value assembly
- Process simulation



## Location - Rotherham

- World class research facility for collaborative research

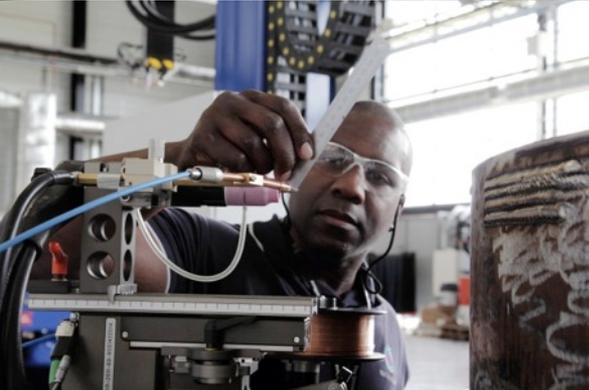
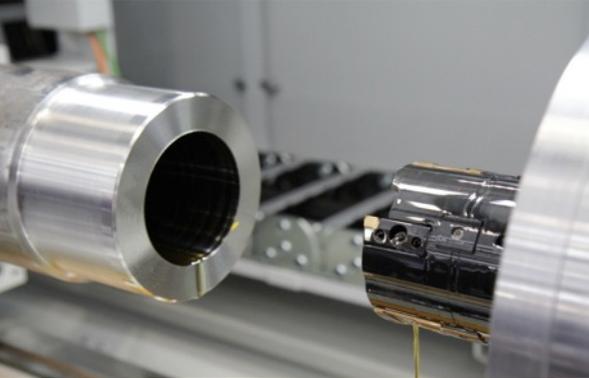


## Key Resources

- Employing around 180 highly skilled researchers and engineers
- 2 purpose-built centres



# Nuclear Advanced Manufacturing Research Centre



## Key Competencies

- Fabrication of civil nuclear components
- Large-scale welding and cladding
- High speed machining & machine tool optimisation
- Automated / robotic machining using advanced metrology
- Near Net Shape (NNS) manufacture of nuclear components

## Location - Rotherham

- The focal point for the UK civil nuclear manufacturing industry

## Key Resources

- Purpose built 8000m<sup>2</sup> facility with heavy lift capability
- Industrial scale machining, welding and materials fabrication equipment



**NUCLEAR AMRC**  
ADVANCED MANUFACTURING RESEARCH CENTRE

**MANCHESTER**  
1824

The University of Manchester



The  
University  
Of  
Sheffield.



**CATAPULT**  
High Value Manufacturing

# Advanced Forming Research Centre



University of  
**Strathclyde**  
**Glasgow**

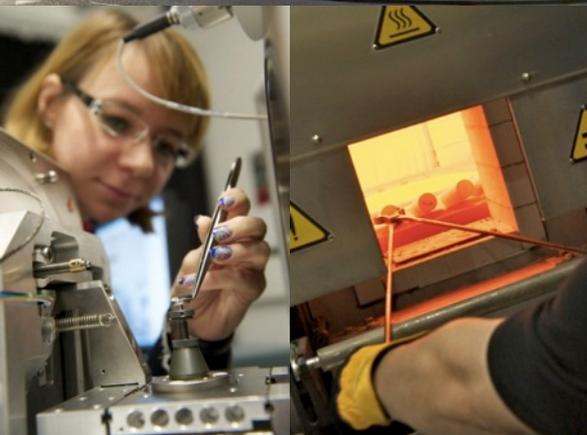


## Key Competencies

- Bulk sheet forming
- Superplastic forming
- Incremental sheet forming
- Billet forging
- Precision forging

## Location - Glasgow

- World class research facility supporting fundamental and applied research in forming and forging
- Supporting global industry-leading partners



## Key Resources

- Industrial-scale forming and forging equipment
- 2100 tonne screw press, Sheet forming machine, SPF press
- Mechanical and materials characterisation laboratories
- Skilled workforce: Engineers, Metallurgists, Modellers and Technicians



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# Centre for Process Innovation



## Key Competencies

- Printable electronics
- Smart Chemistry
- Thermal Technologies
- Future technology scouting;
- Industrial biotechnology
- Anaerobic digestion



## Location – Wilton and Sedgefield

- Combines assets, market knowledge and technology understanding to develop and prototype products and processes
- Serves the Chemicals, Pharmaceuticals, Food & Drink, Biotechnology, Printable Electronics & Energy industries



## Key Resources

- Team of 170 people with £55m of open access assets
- Pre-production prototyping facilities for printable electronic materials, processes and devices



# Warwick Manufacturing Group



THE UNIVERSITY OF  
**WARWICK**

## Key Competencies

- Digital validation & verification
- Energy storage and management
- Lightweight product / system optimisation



## Location - Coventry

- World class collaborative applied research & development in technology driven sectors



## Key Resources

- Partnership with companies – application and impact is cornerstone
- Access to unique R&D facilities and specialist staff
- Network of international satellite centres
- Dedicated SME and supply chain programmes



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High Value Manufacturing

# How are Centres funded?

**The Funding model draws equally from three sources:**

1. Business funded R&D contracts (i.e. contract research) won competitively
2. Collaborative (applied) R&D projects funded jointly by the public and private sector, won competitively
3. Core public funding for investment in the capabilities, know how, expertise and skills and long term capital assets of the centre.

Supported by a 5 year business plan

# What does HVM Catapult seek to deliver?

- **Accelerating technology commercialisation**
  - combined skills and equipment helping new and existing businesses give commercial life to great ideas.
- **Cohesion**
  - partnership binds together the 7 consortium centres
  - potential synergies can be fully exploited
- **Economic drive**
  - manufacturing has a huge impact on the economy
  - the balance of the economy needs a new stimulus

**The result will be a thriving UK manufacturing industries built on world-leading technology and invention**



# What are the benefits of working with the Catapult?

- **Lowering risk:** investment risk reduced through collaboration with HVM Catapult
  - drawing on shared investment coupled with government financial support
- **Cutting-edge equipment:** access to expensive equipment normally inaccessible to many individual companies.
  - Open-access national resources
- **Creative collaboration:** success through joint projects with leading-edge research partners.
- **Stimulating partnership:** large companies and SMEs can come together in partnership to develop new solutions.
- **Collective skill-set:** platform for skills development at all levels
  - an environment where groups of people with differing skills can work together.

# ... and Greater Influence

Critical mass to influence Government on the needs and priorities of UK Manufacturing innovation



Critical mass to influence the UK Research agenda



# ... and for SMEs

- Network of open access centres of expertise
- Help to develop and commercialise your innovations, perhaps through larger partners
- Training and up-skilling capability

# A personal perspective as a newcomer

- Sustained, long-term UK government support
- Centres are very business and results focussed
- Very capable people
- World class equipment
- Industry is pushing to get involved
- Pace of growth is already exceeding plan

# High Value Manufacturing Catapult

Technology Strategy Board  
Driving Innovation

**CATAPULT**  
High Value Manufacturing