Overview of the EPSRC Centres for Innovative Manufacturing

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Manufacturing the Future

Background

- Manufacturing is currently a political hot topic.
- Manufacturing has been an important component of the UK economy for at least 250 years.
- The nature of manufacturing is changing.
- The EPSRC Centres for Innovative Manufacturing (EPSRC Centres) are the latest in a line of EPSRC funding to support manufacturing research in UK universities.
  - Innovative Manufacturing Research Centres (IMRC).
  - Innovative Manufacturing initiative (IMI).
  - Application of Computers to Manufacturing Engineering (ACME).
Aims of the EPSRC Centres

- To create, deliver and disseminate world-leading research.
- To address major long-term manufacturing challenges and or emergent manufacturing opportunities.
- To provide strong support for UK manufacturing industries.
- To enhance the global profile and significance of UK research.
- To create a national network of expertise in manufacturing research knowledge.
- To provide outreach to other centres and relevant research groups.

Details of the EPSRC Centres calls

- There are 16 EPSRC Centres, funded through three separate calls.
- Typical EPSRC Investment for a Centre is £5-6m over 5 years.
- The total EPSRC investment is in excess of £80m.
- Over 200 UK and international business partners drawing in significant additional investment.
- Multinationals to SMEs.
- Financial contributions from host universities.
- Links with HVM Catapult institutions, trade bodies, KTN etc.
- No more calls for EPSRC Centres within the current spending review.
What is an EPSRC Centre?

- Strategic investment: a focus for existing manufacturing strengths in the UK.
- National focus for the UK.
- Significant outreach programmes: A Centre must be more than just research projects – it must have its own identity.
- Flexible budget: flagship projects and trailblazer projects.
- Centres can also apply for responsive mode projects in EPSRC.
- Continuation beyond the initial period with a mixture of funding sources.
- Regulated by Advisory board and management board.
- Subject to mid-term review.
ARRANGED BY VERY ROUGH CLUSTERING OF RELEVANCE.

COLOURED BY FUNDING DATE:
- LIGHT BLUE - PHASE 1, 2010
- MID BLUE - PHASE 2, 2011
- DARKER BLUE - PHASE 3, 2013

RICHARD BAILEY (EPSRC, CHALLENGE), 20/05/2013
Lead Universities

University of Strathclyde
Continuous Manufacturing and Crystallisation

University of Huddersfield
Advanced Metrology

Loughborough University
Intelligent Automation, Regenerative Medicine

Cranfield University
Through-Life Engineering Services, Ultra-precision

University of Southampton
Photonics

Heriot Watt University
Laser-Based Production Processes

University of Leeds
Medical Devices

University of Nottingham
Additive Manufacturing, Food, Composites

University of Cambridge
Industrial Sustainability, Large-area Electronics

UCL
Emerging Macromolecular Therapies

Brunel University
Liquid Metal Engineering
<table>
<thead>
<tr>
<th>University</th>
<th>Centres</th>
<th>Value</th>
<th>Partner Universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nottingham</td>
<td>Additive Manufacturing</td>
<td>£5.6m</td>
<td>Loughborough</td>
</tr>
<tr>
<td></td>
<td>Composites</td>
<td>£5.9m</td>
<td>Bristol, Cranfield, Manchester</td>
</tr>
<tr>
<td></td>
<td>Food</td>
<td>£4.5m</td>
<td>Loughborough, Birmingham</td>
</tr>
<tr>
<td>Loughborough</td>
<td>Intelligent Automation</td>
<td>£5.9m</td>
<td>Cranfield</td>
</tr>
<tr>
<td></td>
<td>Regenerative Medicine</td>
<td>£5.8m</td>
<td>Nottingham, Keele</td>
</tr>
<tr>
<td>Cranfield</td>
<td>Ultra Precision</td>
<td>£6.0m</td>
<td>Cambridge, NPL</td>
</tr>
<tr>
<td></td>
<td>Through-Life Engineering</td>
<td>£5.8m</td>
<td>Durham</td>
</tr>
<tr>
<td>Huddersfield</td>
<td>Advanced Metrology</td>
<td>£4.8m</td>
<td>NPL, STFC</td>
</tr>
<tr>
<td>Strathclyde</td>
<td>CMAC</td>
<td>£6.0m</td>
<td>Bath, Glasgow, Heriot Watt, Loughborough, Edinburgh, Cambridge</td>
</tr>
<tr>
<td>Leeds</td>
<td>Medical Devices</td>
<td>£5.7m</td>
<td>Newcastle, Nottingham, Sheffield, Bradford</td>
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<tr>
<td>Heriot Watt</td>
<td>Laser-Based Processes</td>
<td>£5.6m</td>
<td>Cranfield, Cambridge, Liverpool</td>
</tr>
<tr>
<td>Cambridge</td>
<td>Industrial Sustainability</td>
<td>£5.2m</td>
<td>Cranfield, Loughborough, Imperial</td>
</tr>
<tr>
<td></td>
<td>Large-Area Electronics</td>
<td>£5.6m</td>
<td>Imperial, Swansea, Manchester</td>
</tr>
<tr>
<td>UCL</td>
<td>Macromolecular Therapies</td>
<td>£5.8</td>
<td>Imperial</td>
</tr>
<tr>
<td>Southampton</td>
<td>Photonics</td>
<td>£5.1m</td>
<td>Imperial</td>
</tr>
<tr>
<td>Brunel</td>
<td>Liquid Metal Engineering</td>
<td>£5.1m</td>
<td>Oxford, Birmingham</td>
</tr>
</tbody>
</table>
Industrial Partners

• Centres operate in conjunction with industrial partners.
• Industrial partners represent a significant involvement in the Centres.
  – Over 200 partners across all Centres: Multinationals to SMEs
  – Membership schemes
  – Cash and in-kind contributions to research programmes
  – Advisory board/management board membership (balanced by academic membership)
• Industrial relevance is important for the Centres, but the research conducted is pre-competitive.
  – Guidance not control
  – Advice not consultancy
• Additional links between the Centres and other non-industrial partners.

Links to HVM Catapult

University of Strathclyde  Heriot Watt University
University of Huddersfield  University of Leeds
Loughborough University  University of Nottingham
MTC  NCC, MTC
Cranfield University  University of Cambridge
MTC
University of Southampton  UCL
Brunel University
Training: CDTs/IDCs

Continuous Manufacturing and Crystallisation
University of Strathclyde

Composites Manufacturing
University of Bristol

Ultra Precision
University of Cambridge

Macromolecular Therapies
OCL

Continuous Manufacturing and Crystallisation
University of Strathclyde

Composites Manufacturing
University of Bristol

Ultra Precision
University of Cambridge

Macromolecular Therapies
OCL

Manufacturing Fellows

Regenerative Medicine Manufacture
Loughborough University

Controlling Geometrical Variability of Products for Manufacturing
University of Huddersfield

Embedded Sensors for Through-life Engineering
Cranfield University

NDT for high-value manufacturing of composites
University of Bristol

Macromolecular Manufacturing
University College London

3rd Call closed April 2013 – decisions Dec 2013
Conclusions

- The EPSRC Centres are the **flagship investment** of the EPSRC Manufacturing the Future Theme.
- **16 Centres** covering a range of key manufacturing research topics. **27 different institutions** with a wide geographical spread.
- Links with other EPSRC strategic activities.
- Initial five year investment of ca. **£5m** plus match-funding.
- **Long-term investment** with the intention of continuation beyond the initial funding period (**Not necessarily EPSRC**).
- Focal point for similar research activities across the UK.
- Manufacturing the Future still provides funding for other research (Calls and Responsive Mode).

Thank you

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