IfM Briefing day

A landscape for the future of high value manufacturing in the UK

Andrew Gill
13th May 2014
Topics

- Recap on 2011/2 study
- Further work
- Next steps
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UK Future Manufacturing Landscape 2011/2

Study objectives

To map the for the 15 – 25 year horizon

• The most important trends influencing the changing nature of manufacturing

• The greatest challenges and opportunities

• The capabilities needed in the UK to capture these opportunities

To help develop the medium to long term strategy of the High Value Manufacturing Catapult
Approach (May – Dec 2011)

- High level consultation with Industry, Government and academia
- Input of manufacturing challenges from industry sector technology roadmaps via Knowledge Transfer Networks (KTNs)
- Major product, service & process opportunities identified (working with HVM Catapult Centres)
- Generated a set of 22 National Competencies within 5 Themes
## 5 strategic themes

<table>
<thead>
<tr>
<th>Resource efficiency</th>
<th>Securing UK manufacturing technologies against scarcity of energy and other resources</th>
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<tbody>
<tr>
<td>Manufacturing Systems</td>
<td>Increasing the global competitiveness of UK manufacturing technologies by creating more efficient and effective manufacturing systems</td>
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<tr>
<td>Materials Integration</td>
<td>Creating innovative products, through the integration of new materials, coatings and electronics with new manufacturing technologies</td>
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<tr>
<td>Manufacturing Processes</td>
<td>Developing new, agile, more cost-effective manufacturing processes</td>
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<tr>
<td>Business Models</td>
<td>Building new business models to realise superior value systems</td>
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# 22 National Competencies

<table>
<thead>
<tr>
<th>Securing UK manufacturing technologies against scarcity of energy and other resources</th>
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<tr>
<td>• Biotech, biological and synthetic biology processing</td>
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<td>g y g</td>
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<tr>
<td>• Design &amp; manufacture for small-scale &amp; miniaturisation</td>
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<tr>
<td>• Process engineering, capability and efficiency development across food, pharmaceuticals &amp; chemicals</td>
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<td>• Novel mechanical conversion processes for scale, economy and efficiency</td>
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<td>• Systems modeling &amp; integrated design/simulation</td>
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<td>• Automation, Mechanisation and Human/Machine interface</td>
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<th>Creating innovative products, through the integration of new materials, coatings and electronics with new manufacturing technologies</th>
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<tr>
<td>Net and near net shape manufacture</td>
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<th>Building new business models to realise superior value systems</th>
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<td>• 4. Managing risk and resilience to support HVM</td>
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## High Value Sectors considered

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
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<tbody>
<tr>
<td>Food</td>
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<tr>
<td>Biotechnology</td>
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<td>Chemicals</td>
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<td>Pharmaceuticals</td>
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<td>Medical</td>
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<tr>
<td>Nuclear</td>
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<tr>
<td>Energy</td>
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<td>Oil &amp; Gas</td>
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<tr>
<td>Mining</td>
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<td>Aerospace, Defence and Space</td>
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<tr>
<td>Automotive</td>
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<tr>
<td>Rail</td>
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<td>Marine (incl. under sea)</td>
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<tr>
<td>Built Environment</td>
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<tr>
<td>Electronics</td>
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<td>Retail, Entertainment and Consumer goods</td>
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<tr>
<td>Digital economy, Communication and Security</td>
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Topics

• Recap on 2011/2 study
• Further work
• Next steps
Further work – IfM and IfM ECS

• Sector Deep Dives
  – Food
  – Healthtech (Pharma, BioPharma, Medical Devices)
  – Energy
  – Oil & Gas
  – Construction
  – Electronic Systems
• MoD Science and Technology Landscape
• Local Enterprise Partnership HVM Landscapes
  – Liverpool City Region
  – Swindon and Wiltshire
Sector Deep Dives - Healthtech

**Pharma**
- Flexible manufacture
- Personalised medicine manufacture
- Smart packaging to improve adherence to prescription
- Supply chain reconfiguration

**BioPharma**
- New routes to market and business models to retain value in UK
- Improved analytics and formulation knowledge
- New biological production techniques
- BBSRC/BRIC/TSB integrated investment

**Medical devices**
- Additive and nano scale manufacture
- Surface functionality
- Bio and non bio systems integration and modelling
MoD Defence and Security S&T Landscape

Technical competencies identified that cut across defence and security and other sectors.

Clear opportunities to develop the Ministry of Defence’s (MOD) priorities as part of wider national technology investment

Selected technology areas further developed to identify where collaboration with funding bodies across government will leverage wider resources.

- Power generation, energy management and storage
- Intelligent sensing and detection including quantum sensing

Includes mapping of Defence and Security and TSB HVM competences
Liverpool City Region HVM Landscape

Short term opportunities:
- National Process Scale-Up Solutions Centre
- Global market leader for smart, non-invasive monitoring
- International exemplar for Marine Ballast Water Treatment
- LCR Sustainable Energy Solutions
- Centre of Excellence in Light-Weighting
- North West Shale Gas Exploration Platform

In addition to action programmes to build strength in National Competencies other opportunities include:
- Big Data
- ‘Materials Innovation Factory’
- Quantum Technology
Topics

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BIS ‘Great technologies’ and ‘Sector strategies’ 2011 study status:

**Agri-science**
- Regenerative Medicines
- Satellite

**Energy Storage**

**Agricultural technologies**
- Life Sciences
- Chemicals
- Aerospace
- Automotive
- Nuclear
- Offshore wind
- Oil and Gas
- Construction

**Synthetic Biology**

**Robotics and Autonomous systems**

**Advanced Materials**

**Big Data**

**Information economy**
- International education
- Professional and business services

**Key:**
- Black = Addressed
- Amber = Addressed but not explicitly named in 2011
- Red = Not yet addressed
Further information

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