Future of manufacturing

• A new vision for manufacturing – Future of manufacturing report
  – Dai Morgan

• Competencies for future manufacturing competitiveness: The UK high value manufacturing landscape
  – Andrew Gill

• The future of manufacturing: implications for UK science, technology & innovation policy
  – Eoin O’Sullivan

• Capturing value from global networks
  – Jag Srai

• Developing manufacturing talent
  – Judith Shawcross
The Future of Manufacturing: A new era of opportunity and challenge

Dr Dai Morgan
IfM Briefing Day, 13 May 2014
The Future of Manufacturing: A new era of opportunity and challenge
Economic change and uncertainty

Manufacturing (% Share of economy)
Economic change and uncertainty

Manufacturing (%)

United States

Brazil

United Kingdom

10% 15%


Dept for Business @bisgovuk · Apr 25
New #Aerospace Technology Institute headquarters to allocate £2bn to UK research & tech projects gov.uk/government/new... #IndustrialStrategy

Dept for Business @bisgovuk · Apr 25
Skills, technology and confidence at the heart of UK's info economy says @techUK: computerweekly.com/opinion/Skills... #industrialstrategy
Foresight Future of Manufacturing Project

Objective has been to investigate *changes and uncertainties* facing UK manufacturing activities, to 2050 where possible, to inform how the UK can create and capture *future value*.

Vince Cable is the sponsoring minister. Findings available for BIS to use to inform development of future policy.
How the research was done

- Lead Expert Group
- Industry High Level Stakeholder Group

- Drafting of chapters
- Engagement with BIS & HMT

Scoping
Jan-Mar 2012

Research
Apr 2012-Feb 2013

Synthesis
Feb-Jul 2013

Launch
28 October 2013

- 37 commissioned evidence papers, 2000+ pages
- 3 international workshops (USA, Germany, Japan)
- Engagement with industry
- UK roundtable events
Local contributions

Lead expert group
- Professor Steve Evans
- Professor Alan Hughes
- Professor Chris Lowe

Evidence papers
- Dr Elif Bascavusoglu-Moreau
- Professor Ha-Joon Chang
- Dr Antonio Andreoni
- Ming Leong Kuan
- Dr Ken Coutts
- Professor Simon Deakin
- Professor Michael Kelly

Evidence papers ctd
- Dr Finbarr Livesey
- Dr Eoin O'Sullivan
- Nicola Mitchell
- Dr. Mike Tennant (EPSRC Centre)

Report peer review
- Prof. Sir Mike Gregory
- Professor Robert Rowthorn

Workshops
- Dr. Carlos López-Gómez
- Elliot More

Further evidence
- Professor Andy Neely
A range of indicators for value

- Direct employment
- Quality of life
- Global influence
- R&D investment
- National resilience
- National pride
- Technology transfer
- Green capital
- Skills
- Inward investment
- Exports
- Product & process innovation
- Tax
- Wealth creation
Manufacturing jobs are changing
1. More than making a product and selling it

- **Services with products** e.g. Rolls Royce
- **Selling of technological ‘know how’** e.g. ARM
- **Remanufacturing** of products e.g. JCB / Caterpillar

Manufacturers will increasingly make use of a wider value chain to create revenue.
By 2050 we will see a technological revolution in how products are designed, offered and used by customers.

New opportunities for value creation including true mass personalisation at low cost.
2. Faster, more responsive and closer to customers

- **Mass personalisation** of products on demand
- **Distributed**: big high-tech, modular, home, mobile
- Greater **design freedom**
- More **digital connections** along value chains
3. Exposed to new market opportunities

- Changes to **personal wealth / ageing** populations
- **BRICs** and the ‘Next 11’
- Continued **global ‘fragmentation’** of the value chain
- Some ‘**onshoring**’
4. Increasingly dependent on highly skilled workers

- **Strong demand** for manufacturing workers
- A need to accommodate more **older workers**
- Importance of **STEM** qualifications
- Blending of technical & commercial ‘**hybrid’ skills**
- Potential for **human enhancement**
5. More sustainable

- Growing / urban populations *raise resource demand*
- **Climate change** and global supply chain vulnerability
- Volatility in *price & availability of commodities*
- Reuse, *remanufacturing*, recycling: circular economy
5 key findings

- More than making a product and selling it
  Services with products, selling know-how
- Faster, more responsive and closer to customers
- Exposed to new market opportunities
- Increasingly dependent on highly skilled workers
- More sustainable
By 2050: Manufacturing will be a complex, value creating system. Emphasis not on production or services but on flexing business models and offerings to create value in new and interesting ways.
The Future of Manufacturing
A new era of opportunity & challenge

Do read the report!