A stronger and more competitive supply chain

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What does success look like?

- Contributing more positively to UK balance of payments (£16.75bn adverse in 2007)
- Giving OEMs and Tier 1s good reasons for
  - Staying in / growing in / coming to the UK
- Having the most attractive automotive manufacturing sector in Europe
  - Research, development and production
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How do we achieve this?

Supply Chain Expert Group programme

- Four areas of focus
  - Ensuring the competitiveness of UK supply chains
    - Lessons of national SCG programme and new pilots with Japanese OEMs
  - Developing manufacturing competencies and capabilities
    - “Hollowing out” UK supply chains: loss of the high value added production and development at Tier 2/3 level
  - Research and Innovation Support
    - Academic-industry collaboration: current systems complex, not focused on benefit to UK plc
  - Attracting R&D, etc from OEMs and Tier1s
    - Significant and differentiating action is required if OEMs/key suppliers are to see UK as a ‘second home’

Competitive Supply Chain – issues

- Vital to retaining OEMs – our competition is Mainland / Eastern Europe
- Challenge of total supply chain efficiency (partnership)
- Poor ‘matchmaking’ reduces UK value add
- Internationalisation challenge for UK suppliers
  - Access to new international markets
  - Access to best cost production potential
- SMEs find it difficult to access (the right) support
- ‘Market failure’ interventions are not forward-looking
- Poor image of UK manufacturing – nobody cares

Competency and capability – issues

- More “hollowed out” than elsewhere in Western Europe
  - Low value added production/development at Tier 2 / 3 level
  - Tier 1s tending towards jis/jit final assembly
- Manufacturing technology/automation below world class
- Structural gaps – machine tools, metal/plastic processing
- Unattractive environment (skills, investment incentives, stability, infrastructure) to compete for new business
- But
  - Opportunities in the total cost/value equation?
  - Opportunities in niche vehicle sector?
  - Opportunities in Low Carbon technologies?

Research and Innovation – issues

- Current systems of support are complex / not transparent / tactical in terms of interfaces, funding, etc.
  - Categorised by £5m 3-year ‘band-aids’
  - Where is the strategy?
- Research Council funding is overly focused on academic review – need to balance with wealth creation for UK plc
- Need to spread best practice in industry collaboration, eg JLR/WMG PARD programme
- UK – ‘great ideas but no volume business’
  - Insufficient focus on productionisation of process
  - Can we learn from the MIT/Frauenhofer models?

Attracting R&D from abroad – issues

- How can we get VMs/key suppliers to see the UK as their ‘second home’ for development of new automotive technologies?
- Something special required
  - Large scale strategic intervention, not multiple projects
  - Bringing together industry and academic support
  - Providing prototype/testing/demonstration facilities
- Opportunities
  - Manufacturing and production technology development to ensure UK benefits from production stage
  - Incubator for ‘leapfrog’ technologies, products and processes
  - Tier1’s as bridge between a good idea and volume supply for the mass market

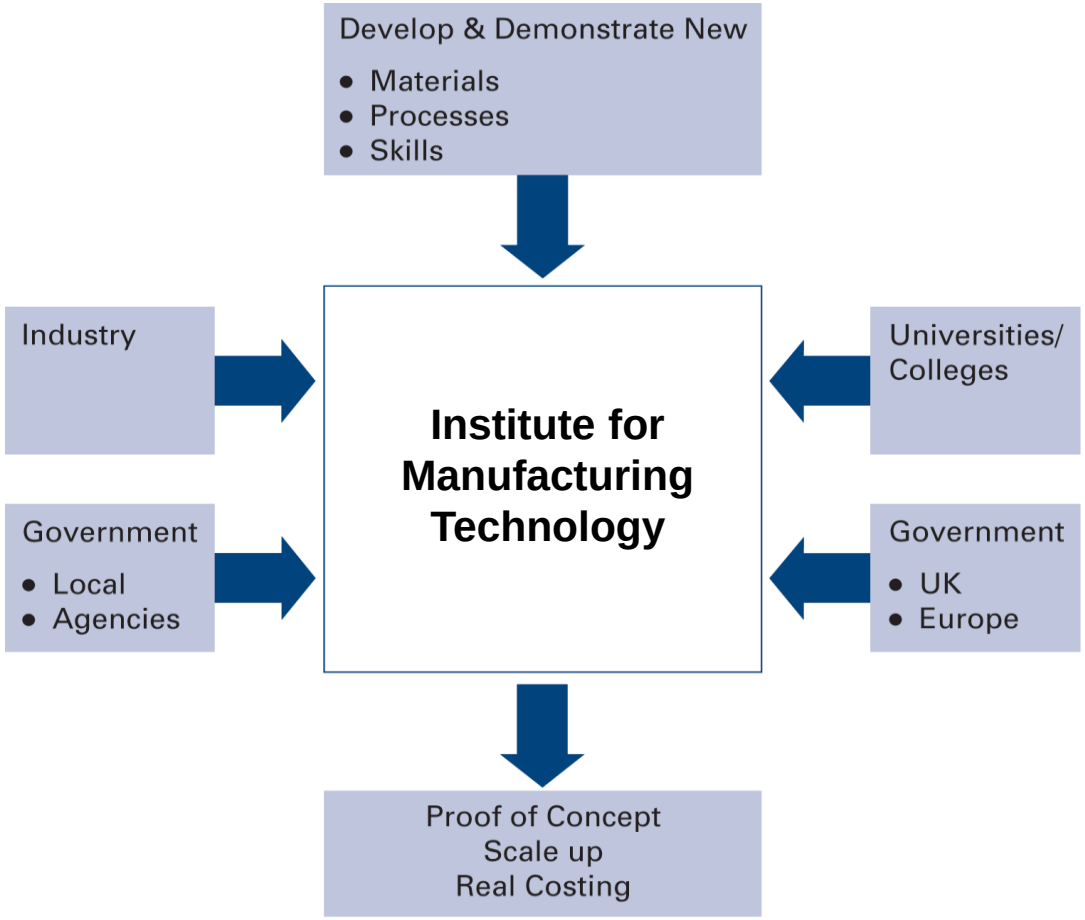
Recommendations (1)

- Establish a UK Automotive Supply Chain Council, with the following responsibilities
  - Establish a continuous national supply chain groups programme to streamline access to business support
  - Establish a Sourcing Roadmap to identify value adding opportunities to reverse the current ‘hollowing out’ trend
  - Address the internationalisation potential for UK Tier 2/3s
  - Look for opportunities for the niche vehicle and supply industry as development sources for emerging technologies
  - Review the investment environment requirements to realise these opportunities
  - Promote the UK supply chain internationally

Recommendations (2)

- Establish a UK Institute for Manufacturing Technology to provide a focal point for revitalising automotive supply chain manufacturing, with a two-step approach:
  - Pull together a core of existing high quality institutions and facilities, with revised and coordinated funding streams, to make a statement of intent for UK manufacturing revival
  - Use this as a blueprint for industry/university collaborative research and progressively implement across the UK

Institute for Manufacturing Technology

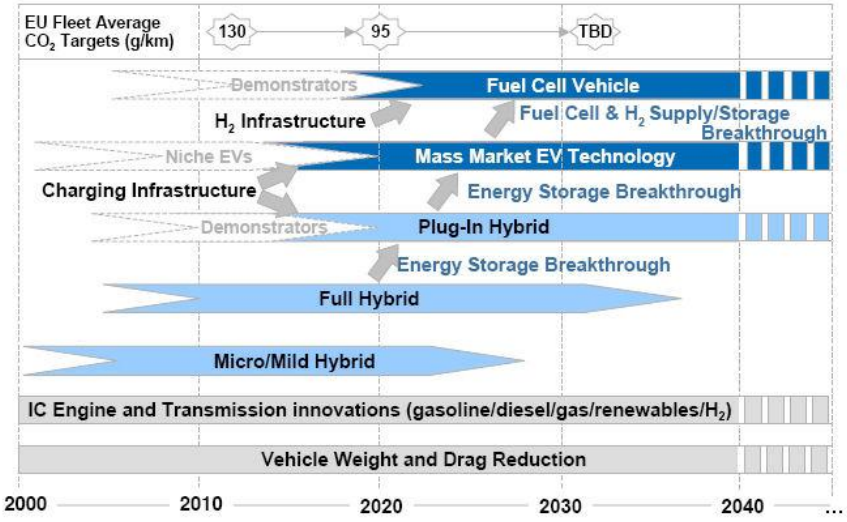


Example establishments:

- Warwick Manufacturing Group
- Cambridge Institute for Manufacturing
- Manufacturing Technology Centre, Coventry
- Advanced Materials Research Institute, Sheffield
- Advanced Forming and Forging Centre, Strathclyde
- Warwick/Bath Business Schools

Recommendations (3)

- Leverage and market the pilot Test Bed UK to global Tier1 suppliers as a reason for investing in the UK
  - Foster links with innovative/niche technology companies to generate upscaling partnership opportunities
  - Institute for Manufacturing Technology would provide academic and R&D facilities as a ‘one stop shop’



	SHORT TERM 5 – 10 years from production	MEDIUM TERM 7 – 15 years from production	LONG TERM 10 – 20 years from production
	INDUSTRY		UNIVERSITIES
Propulsion	• IC engine optimisation • Boost systems for downsizing • Flexible valve/actuation for engines/transmissions • Low cost compact e-motors	• Higher efficiency IC engines • Capacitive boost systems • All electric actuation systems • Optimised range extender engine • Lower cost e-motor • Heat energy recovery (e.g. E-turbine)	• Super high efficiency motors (superconducting) • New IC engines with 70%+ thermal efficiency • Advanced heat energy recovery (e.g. thermoelectric) • Motor/Fuel Cell materials
Energy Storage	• Improved quality / durability 200+ Wh/kg & $800/kW.h cost battery systems • Low cost power electronics	• Next gen batteries 300+ Wh/kg and $500/kW.h cost • Flexible power elec. modules • Other forms of energy recovery (mechanical/chemical etc)	• 3rd gen batteries 400+ Wh/kg & $200/kW.h cost • New low cost solid state power conversion systems • Hydrogen storage technology
Vehicle Efficiency	• Lightweight structures and interiors • Low rolling resistance tyres / brakes	• New vehicle classes and configurations • Combination of function to reduce weight / cost • Minimised weight / losses	• Flexible re-configurable multi-utility vehicle concepts • 50% weight reduction from 2008 • Advanced aerodynamic concepts
System Control	• Information enabled control (Topology, V2V, V2I, traffic etc.) • Optimised vehicle energy mgmt. • Intelligent thermal management	• Advanced information enabled control • Intelligent P/T and HVAC mgmt.	• Autonomous P/T and vehicle control integrated with active safety
Energy + Fuel Supply	• Optimised 1st gen biofuels processes • New 2nd gen biofuel processes	• Intelligent energy / re-fuelling infrastructure (e.g. fast charge) • Industrial scale demonstration of new 2nd gen biofuel processes	• 3rd gen biofuel processes • 2nd gen industrial scale biofuel production infrastructure
Processes + Tools	• Process + delivery tool development and connectivity	• Auto-optimisation methods using virtual systems	• Artificial Intelligence to deliver complex multi-criteria system optimisation

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- But they need
  - Government to deliver on their new ‘activism’ to compete with Western Europe (new script for the Treasury)
  - Industry to step up to the plate and commit senior management time to the proposed new Councils