

13 April 2017

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## EAMA response to the Government's Industrial Strategy Green Paper

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Agricultural Engineers Association  
 British Automation and Robot Association  
 British Compressed Air Society  
 British Fluid Power Association  
 British Paper Machinery Suppliers Association  
 British Plastics Federation  
 British Turned Part Manufacturers Association  
 Gambica  
 Gauge and Toolmakers Association  
 Manufacturing Technologies Association  
 Printing Industry Confederation  
 Processing and Packaging Machinery Association  
 Solids Handling and Processing Association  
 UK Industrial Vision Association

### **Summary**

- The Engineering and Machinery Alliance (EAMA) represents 2,000 machinery and engineering companies and has worked on an Industrial Strategy for its sector and therefore actively welcomes the Government's approach and the formation of the new department (1-7)
- EAMA's proposition is that the UK productivity problem won't really be resolved until there's a change of culture with the emphasis moving from but still including lean, but putting much more emphasis on the creation of added value through tax, investment, automation, SME engagement in new business development and innovation and capturing young people's attention for manufacturing from an early age as a creative worthwhile career choice (8-32)
- Exporting is central to the Alliance's membership because the manufacturing customer base in the UK is too small to provide sufficient domestic demand for the necessary economies of scale. Much more could be done now with the Department for International Trade to strengthen the sector's export performance (33-41)
- Various barriers hobble SME development (44-45)
- Nonetheless, this may be a singularly opportune moment to start tackling some of the long-standing problems within the UK's manufacturing culture. First there's the Government's totally open approach on the Industrial Strategy, inviting all economic players (companies, trade bodies and regional and local government etc.) to comment on the Green Paper. Second there's the external pressure from Brexit on companies to reassess their options and adapt. And third the UK really does have some excellent examples of fully globally competitive companies. (42-43 and 46)
- Before starting that process however, the UK would need to have certain infrastructure in place, on the one hand to monitor Industrial Strategy progress at the macro level and on the other to handle on the ground practical issues. We therefore propose a high-level Office of Industrial Strategy as an arm's length agency of BEIS to monitor how the UK's Industrial Strategy is performing. Its remit would be to help cut out unintended consequences that would otherwise undermine the Strategy. By also taking on the roles of developing new metrics and leading a national conversation about growing value added as well as increased efficiency it would help open up a new, more cohesive confidence building environment including at higher policy levels (47-48)
- Other agencies working at a more practical everyday commercial level would complement OfIS championing good performance and technology development and take-up as part of the feedback loop. The UK Productivity Council and the Small Business Commissioner could usefully add culture change to their remit so that SMEs are more confident about their ability to collaborate with other entities, even OEM customers in their supply chain (49)
- EAMA is keen that the concept of 'sector' be kept a flexible as possible as this reflects the reality on the ground (50-52)
- EAMA's Industrial Strategy approach, developed in conjunction with the Cambridge University Institute for Manufacturing (IfM) and many public agencies and trade bodies outside the EAMA membership coincides with the Government's plans (53-55)

- A brief costing of developing the two tools to strengthen ‘willing’ SMEs’ commitment to new business development and engagement in innovation activity shows it to be very cost effective compared with a direct one on one approach to achieve the same ends. (56-63)

## A Introduction

### The Engineering and Machinery Alliance (EAMA)

- 1) The Alliance’s 14 trade associations represent 2,000 companies, mostly in mechanical and electronic engineering, with sales of £10 billion into the main supply chains (including automotive, aerospace, food, medicine, pharmaceutical, defence, oil and gas, offshore wind etc.), providing equipment, components and services.
- 2) The mechanical sector has three important characteristics:
  - a) It is very export oriented (it has to be because the UK customer base is relatively small) and until recently ran a positive trade balance, but not in 2016 for the first time (Table 15 at <https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/bulletins/uktrade/jan2017>)
  - b) As supply chain providers, these companies are vital to the OEMs’ (Original Equipment Manufacturers) competitiveness and are increasingly being asked to take on more of those companies’ innovation risks
  - c) Many of the firms in the sector are SMEs.

### The Industrial Strategy

- 3) The Government’s high level aims in the Industrial Strategy are to: “improve living standards and economic growth by increasing productivity and driving growth across the whole country”
- 4) This to be achieved through three key goals, to:
  - a) Build on UK strengths and extend excellence into the future
  - b) Close the gap between the UK’s most productive companies, industries, places and people and the rest
  - c) Make the UK one of the most competitive places in the world to start and grow a business
- 5) Ten ‘pillars’ are to drive the progress: research, skills, infrastructure investment, finance, procurement, trade, clean affordable energy, cultivating world-leading sectors, driving growth across the whole country and creating institutions to bring sector and place together.

### EAMA Industrial Strategy initiative

- 6) Over the last two years EAMA and its member associations committed considerable resources and gained important support from BIS and many other organisations including public agencies and companies as well as the EEF and some banks, working on a strategy to raise UK machinery/mechanical and electronics engineering sector (MEES) performance in innovation as well as companies’ aspirations to grow extra value and in that way improve supplier productivity and competitiveness, both up and down the supply chain.
- 7) We commissioned Cambridge University’s Institute for Manufacturing ECS to help us scope out the priorities for our ‘horizontal’ sector, supplying into many ‘vertical’ markets, at a time when Government’s priorities were focused on 11 end-user sectors. The Alliance’s fundamentals reflect the themes in the Green Paper (e.g. skills, innovation and international competition), but the series of workshops we used has enabled us to take the work a stage further -- having established some of the issues and recommendations we have also sought practical ways to help companies raise their performance, adopting new technologies (e.g. industrial digitisation), winning new business and becoming more innovation oriented. (Please see 26-27 and 53-63)

## B Comments on Green Paper

### Productivity and

#### Supporting businesses to start and grow

##### **Question 2 Are the ten pillars suggested the right ones to tackle low productivity and unbalanced growth? If not, which areas are missing?**

- 8) We endorse the ten pillars, but also believe Government has its own levers that should be used. The way companies are taxed at both national and local levels are clear expressions of what the wider world expects of business and the priorities national and local governments have. Manufacturing capital investment involves a long term commitment. The UK’s ambivalent signals in its tax system (e.g. Business Rates taxing companies more for installing higher performance equipment and an AIA although it’s much improved, it’s still only half the cost of a really

sophisticated high tech piece of manufacturing equipment). The whole framework should be reviewed and updated for business as it is today to encourage continuous capital investment in appropriate modern technologies so the UK does become an even more competitive contemporary manufacturing economy.

**Question 17. What further actions can we take to improve the performance of infrastructure towards international benchmarks? How can government work with industry to ensure we have the skills and supply chain needed to deliver strategic infrastructure in the UK?**

- 9) With all the focus on major infrastructure projects, it's important not to overlook the importance of local authority roads. According to the RAC Foundation, they cover 97% of the network and carry two-thirds of the motor traffic. In 2014/15, 2.5 million potholes had to be filled and cost SMEs £5 billion in wasted staff time, fuel costs, vehicle repairs and production. Half of the road repair work undertaken is on behalf of utilities. The permit charging scheme introduced in 2010 is meant to encourage co-ordination so that work that needs to be done at a particular location by several utilities only requires one intervention. Is the scheme working as intended or can it be improved? Anecdotally there seems to be room for considerable improvement.

**Question 18. What are the most important causes of lower rates of fixed capital investment in the UK compared to other countries, and how can they be addressed?**

- 10) We all know productivity isn't a new UK problem. Many good people have tried many different ways to resolve it. Our contention is that even when most observers can agree on periods when the UK 'made progress', we weren't actually achieving the Government's clear aims for wider social progress, "improving living standards and economic growth".
- 11) Here is what we mean about the UK compared with some other EU countries and the USA.

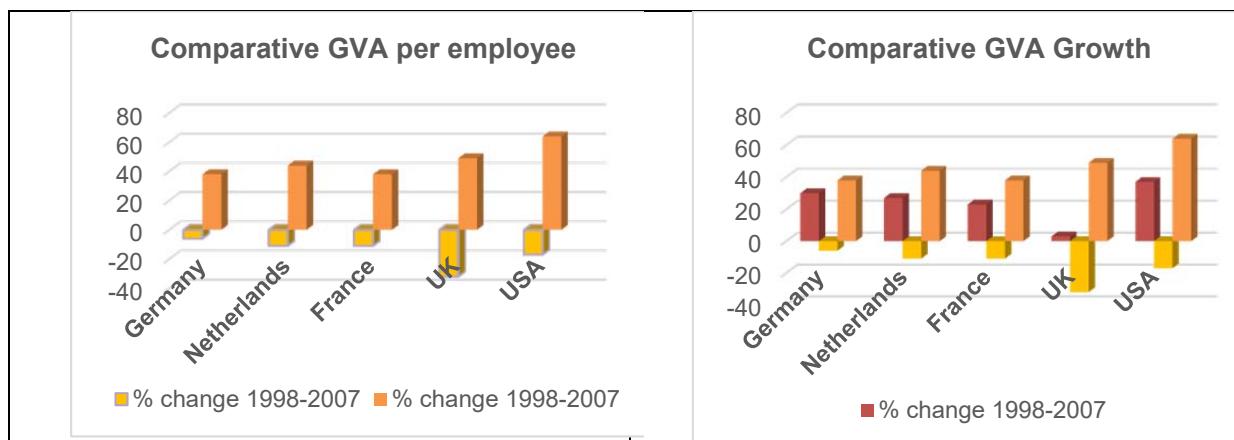
**Manufacturing value added constant 2010 national currencies 1998 -- 2007**

Country	1998			2007			% change 1998-2007		
	Sector billion	Nos employed millions	Per employee '000	Sector billion	Nos employed million	Per employee '000	Sector GVA	Nos employed	GVA per employee
Germany	420	7.8	54.1	545	7.3	74.9	+30	-6	+38
Netherlands	55	0.9	63.0	70	0.8	90.6	+27	-11	+44
France	176	3.5	52.3	217	3.1	72.3	+23	-11	+38
UK	151	4.1	37.0	155	2.8	55.0	+3	-32	+49
USA	1363	20.6	73.4	1879	17.2	126.3	+37	-17	+64

Source: AMECO On-line ECFIN revised 5 May 2015

Note: Germany, France and Netherlands in Euros, UK in GBP and USA in USD

- 12) In summary, the UK cut its manufacturing workforce by a third and kept producing the same amount, while others kept more of their people directly in work and increased their production by between a quarter and over a third in value terms. And this was a positive period for the UK.



- 13) In detail, UK manufacturing GVA per employee increased 49% in the period 1998-2007 (Germany 38%). But total UK manufacturing GVA, that is total wealth created by manufacturing within the country only grew 3% (from £151 billion to £155 billion in constant 2010 money) compared with total GVA growth in Germany (+30%), Netherlands (+27%) and France (+23%). The USA even

achieved a 37% gain in its total manufacturing GVA. (Note: all these data are in national currencies on the same basis, source AMECO).

- 14) While most other countries weren't anything like as successful as the UK in driving up 'productivity' per employee they all increased the size of their respective manufacturing sectors considerably more than the UK did and of course that increased their contributions to their national economies, higher wages, more tax for national and local government and so on.
- 15) What the UK achieved is impressive, but it wasn't really improving the productivity of the workforce in the UK, it was more about producing the same with fewer people. It's radical lean manufacturing and the UK is very good at it. It plays to certain typical UK manufacturing preferences such as taking on or shedding workers as circumstances dictate when demand rises or falls, rather than investing in capital plant and then ensuring there's sufficient work to make the investment profitable.
- 16) A solution however isn't solely required in UK manufacturing management culture. Government policy also needs to flex to incentivise investment in capital equipment, not tax it, if the UK is to improve its record for the long term and in the detail.
- 17) The UK's poor equipment investment record is well known. The EU Commission's 2014 Competitiveness Report (SWD 2014/278 figure 1.1.16) shows the UK's weak position when comparing investment in equipment as a percentage of GDP:

#### **UK 3%**

Well behind other EU countries and the EU average as a whole

**Germany 6.5% - France 5% - Netherlands 6% - Spain 6% - EU average 6%**

- 18) We shouldn't be surprised by our poor productivity record since 2007. Government scheme after scheme has incentivised jobs at investment ratios (£x,000 per job) that make it very difficult for capital equipment to compete broadly across manufacturing, particularly for SMEs.
- 19) It would be churlish not to recognise that this policy of favouring jobs over capital investment has been very successful in helping to reduce unemployment -- we enjoy a very low unemployment rate compared to most other OECD countries. But if we want SMEs and others to modernise their kit then policies and mindsets have to encourage this.

***Question 4 Are there important lessons we can learn from the industrial policies of other countries which are not reflected in these ten pillars?***

- 20) Dutch Smart Industry starting with the aspiration to have international links from the off.
- 21) German national and regional governments working together to turn Industrie 4 into a commercial reality (It's OWL Ostwestfalen-Lippe and Allianz Industrie 4.0 Baden Wuertemberg)
- 22) French scheme incentivising automation and robotics uptake amongst SMEs (<http://www.robotstartpme.fr/>) to invest in digital manufacturing productivity through their automation and robot investment tax credit (40%), with a subsidy (13%) paid to firms setting up an automation cell.
- 23) Some other countries share a greater social consensus about the importance of making things in their economy, which in turn supports a policy perspective that makes it easier for policy shapers to take the longer-term view. Germany would be an example of this.
  - a) In the UK there is a tendency to regard manufacturing as a minor contributor to GDP on the grounds that statistically it makes a 10% contribution but those statistics don't recognise the down-stream impact that the core 10% has upon jobs, research, technological development, exporting and trade and the ways the wider economy benefits servicing those activities (viz the Manufacturing Metrics Review observation that there are 5.1 million jobs associated with manufacturing compared with the 2.6 million "directly classified to manufacturing under conventional interpretations". This statistical 'under representation' needs to be 'corrected' in the mindset of the wider public and not least of all in the eyes of UK policy formers and influencers.
  - b) The longer the strategy is in place the easier it becomes for all stakeholders to navigate and flex to changing technologies and circumstances which can be particularly important in supply chain collaborations (e.g. sensitivities relating to trust, IP, commercial information).
- 24) There are many useful international comparative studies that highlight the UK problems and potential round automation and robotics, this time taking robotics also as a proxy for automation.

For example, the IFR World Robotics Report 2016 shows the UK trailing EU partners thus:

**Robot density in non-automotive sectors (robots per 10,000 employees)**

Germany	Sweden	Italy	Spain	France	UK
170	154	126	81	75	33

- 25) The CEBR Copenhagen Business School (Lene Kroman et al) report into automation and labour productivity shows the UK languishing in ninth position in a nine-country comparison, but concludes saying UK manufacturing productivity would increase by 22% if it was as highly automated in each subsector as the most automated in the study. That improvement could be equivalent to an extra £100 billion in turnover or £33 billion in gross value added to the economy.

### **Investing in science, research and innovations**

**Question 7. What else can the UK do to create an environment that supports the commercialisation of ideas?**

**Question 8. How can we best support the next generation of research leaders and entrepreneurs?**

**Question 9. How can we best support research and innovation strengths in local areas?**

- 26) While developing the EAMA Industrial Strategy we completed some pilot work on how to engage and support 'willing' SMEs on their business growth and innovation/research pathways. ('Willing' companies are open to developing new customers, products, processes or services in existing and new sectors at their own pace, but don't want to be pushed into it. Based on experience only, we estimate these companies to represent 10-15% of each subsector).
- 27) The two proof of concept tools that have been developed are exemplars of what could be achieved more widely:
- a) The first highlights key cross sector competences that are priorities for each sector's development. The SME then 'reads across' from their own specific strengths to identify new market opportunities where those competences are in demand
  - b) The second uses a scale to help SMEs position themselves according to their research/innovation maturity and in doing so identify who their most appropriate research, development and innovation partners are likely to be, depending on size, innovation experience, the objective and location
  - c) Ultimately these 'pilot' products refined by road testing could be easy-to-use tools employed by EAMA, other trade bodies, LEPs, and other groups advising supply chain companies that want to boost their sales and innovation performance. They would also be made available over the internet, promoted in the trade media and will provide a ready-made template for tools to cover other areas such as industrial automation and digital manufacturing, ALM and TES.

### **Developing skills**

**Question 11. Do you agree with the different elements of the vision for the new technical education system set out here? Are there further lessons from other countries' systems?**

- 28) From a manufacturing perspective, it's important to engage young people as early as possible (e.g. the excellent work undertaken by Primary Engineer led by Susan Scurlock) as a way to raise innate curiosity in young people before they become too entrenched in academic study that has been shown to favour service sector employment outcomes.
- 29) Automation and robotics capture young people's imagination. For example, look at the age spread of those following 'Robot Wars' on TV and attending live events and the success of Bloodhound SSC in sharing information in real time about the development, testing, trials and ultimately the record attempt in 2017/18.
- 30) CPD and upskilling should become an integral part of every firms' corporate DNA so that it can uprate its technology on a regular basis.

**Question 24. What further steps can be taken to use public procurement to drive the industrial strategy in areas where government is the main client, such as healthcare and defence? Do we have the right institutions and policies in place in these sectors to exploit government's purchasing power to drive economic growth?**

- 31) Teaching core manufacturing and engineering skills in universities, schools and further education colleges should be based on contemporary machinery, not outdated equipment and technology.

- 32) As already mentioned robotics have a direct appeal. One robotics company has an educational package that includes a small industrial robot with simulation and programming software priced so that 200 establishments can be set up on a £2 million budget.

### **Encouraging trade and inward investment**

***Question 25. What can the Government do to improve our support for firms wanting to start exporting? What can the Government do to improve support for firms in increasing their exports?***

***Question 26. What can we learn from other countries to improve our support for inward investment and how we measure its success? Should we put more emphasis on measuring the impact of Foreign Direct Investment (FDI) on growth?***

- 33) First, we need to be careful not to delude ourselves. When we describe ourselves as a great trading nation, we need to keep in mind we only export 31.4% of GDP compared with the EU average of 44.9%. It's importing that we are preeminent at.
- 34) Second, leaving the EU coincides with the recognition that 90% of global demand growth is going to be generated outside the EU.
- 35) To combine these two fundamentals effectively into a real action plan for UK exporting, we need one dedicated agency that shows the world that from now on the UK is 100% committed all the time and for the long term to exporting. No fudges, no blurred edges. No shared portfolios. Expertise and finance available, bettering anything anywhere.
- 36) A dedicated agency will be much more flexible serving the different sector cultures -- selling fashion goods and million pound machines to run in someone else's factory are obviously different, but subtly so too. The system needs to flex accordingly.
- 37) Two concerns that haunt some firms exporting for the first time are:
- A lack of sector specific market intelligence and the costs associated with obtaining it - even through UKTI and the OMIS scheme which for many is too broad based
  - The generic nature of the outward missions to target markets – what SMEs need is a tailored approach that gets them in front of potential customers, e.g. production directors rather than heads of state
- Both of these issues and the question of providing greater flexibility in the support services could be achieved through better use of trade associations (TAs) and their specialised knowledge of their sectors' supply chain strengths.
- 38) As 'multipliers', TAs could be paid to undertake sector specific market studies and outward missions for their sectors. All funded data and market intelligence would of course also be shared with BEIS and DIT in return for their support. This would tie in well with the development of a three-year cycle proposed next.
- 39) Set a three-year rolling cycle of activity focused specifically on raising exports in markets agreed with business sectors so that export partners can plan activities in line with local capital equipment procurement practice, rather than according to HMG's budgeting cycle.
- 40) We recently sought the membership's views about the recent changes following the formation of DIT with the following results:
- Little or no obvious progress has been made since January 2016, probably for understandable reasons given the radical reorganisation since June.
  - UKTI performance hasn't been radically improved by the merger into DIT, again for understandable reasons. Members are aware of some promising initiatives that subsequently failed to materialise, but don't know enough to say why they didn't.
  - The litmus test for our sector is how well the trade access scheme (TAP) meets members' needs. So far there seems to have been very little improvement.
  - Clearly big efforts are being made: one respondent named nine different organisations and websites accessible locally, all state funded, all signposting other organisations able to help exporting. Some signposted each other. But none could help with funding.
  - Another stated: "Of far more significance to our company is reform to the finance area than reform of the export/ import regulations/ tariffs etc. If you can't get finance support to export, it frankly doesn't matter what tariffs you face."
- 41) FDI has been a great success for UK overall and not least in helping to raise MEES performance. Individual company management teams acknowledge as much, but such introductions will need to be handled even more carefully post Brexit. The EU market's magnetic undertow will be a much weaker factor for companies considering whether to site their operations in the UK. So,

another danger may arise when prospective new inward investors look for additional sweeteners to make up for non-preferential access to the world's biggest market. As the UK puts its FDI package together it should be live to the 'cooling effect' it could have on investment and operations elsewhere as domestic firms with a proven long term commitment to the UK find themselves facing domestic competition from an 'incomer' that's benefitting from favoured tax or financing terms etc. and has to cut employment numbers accordingly.

## C Future action

### **Cultivating world-leading sectors and**

### **Creating the right institutions to bring together sector and place**

***Question 3. Are the right central government and local institutions in place to deliver an effective industrial strategy? If not, how should they be reformed? Are the types of measures to strengthen local institutions set out here and below the right ones?***

***Question 31. How can the Government and industry help sectors come together to identify the opportunities for a 'sector deal' to address – especially where industries are fragmented or not well defined?***

- 42) To embed the UK Industrial Strategy across the various manufacturing sectors requires an extension and a strengthening of the structures that we already have in place from the previous strategy framework. That will ensure policy continuity, coherence and relevance long-term.
- 43) Growing UK manufacturing productivity as we have described (paras 8-25), viz using lean but not focusing on it exclusively will require something of a culture change based on past performance.
- 44) The need for some culture change also applies when it comes to encouraging SMEs to engage in OEM dominated digital supply chain development. Too many SMEs feel they are vulnerable and open to potential exploitation in their relationship with their OEM customers (e.g. delayed payment and cost down only contract renewals that make it difficult for the firms concerned to invest in manufacturing equipment upgrades), rather than benefitting from a mutual trust where transparently 'shared pain leads to shared gain'.
- 45) When it comes to digital adoption, the Digital Leadership Group (D4I) underlines their finding that the UK's SME supply chain community comprises many too small companies which makes take-up problematic.
- 46) The nexus between the Government's total Industrial Strategy across the whole economy, the Brexit pressure on companies to reassess and adapt where prudent and the excellence of some UK manufacturing firms creates a very special opportunity to start addressing culture change in some areas of manufacturing.
- 47) Having worked on the development of a MEES Industrial Strategy EAMA very much welcomes the creation of the Department for Business, Energy and Industrial Strategy to set policy in the area. But there is a need for a feedback loop that monitors how well the economy and some sectors are progressing, what effects other areas of Government policy may have on Industrial Strategy delivery/performance and what new metrics are needed to achieve the changes and growth.
- 48) So to maintain the Industrial Strategy as a dynamic long term influence across the economy, raising productivity and encouraging managements to grow value we propose an Office of Industrial Strategy (OfIS) with the remit to monitor policy development elsewhere (nationally, regionally, locally) so that it goes with the intended grain and doesn't unintentionally undermine the strategic value creation aims. This will be at a high policy level. But ensuring the aims are delivered will involve a national conversation about added value growth creation and the use of new metrics to get these concepts over.
- 49) We could see OfIS's high level strategic role usefully linking with practical agencies on the ground, perhaps the UK Productivity Council and the Small Business Commissioner in a framework that encourages culture change through a wider national, public conversation about value growth and productivity and gives SMEs the confidence to collaborate between themselves and with larger entities and OEMs in the take up of digital and other new technologies strengthened by trust in wider fair treatment backed by voluntary codes of practice, e.g. as per prompt payment.

***Question 32. How can the Government ensure that 'sector deals' promote competition and incorporate the interests of new entrants?***

- 50) The Engineering and Machinery Alliance is an example of a sector and shows how diverse a sector's activities can be. We welcome any approach that allows for flexibility of association.
- 51) Companies in our 14 trade associations variously supply hardware (machinery and components), software and services used in other sectors from OEM end users such as automotive and aerospace, offshore energy and medical to farming and food production and produce delivery to the home.
- 52) Despite that diversity, companies share the similar perspectives and concerns in areas such as exporting, finance, investment, skills and training, technical standards and the importance of trade shows in the sales process.

***Question 33. How can the Government and industry collaborate to enable growth in new sectors of the future that emerge around new technologies and new business models?***

***Question 37. What are the most important institutions which we need to upgrade or support to back growth in particular areas?***

***Question 38. Are there institutions missing in certain areas which we could help create or strengthen to support local growth?***

- 53) EAMA very much welcomes the Government's Industrial Strategy framework because EAMA's strategy objectives sync so closely with it, including the following goals with the long-term vision to help raise UK supply chain productivity, value added capacity and innovation by 2030 so that:
  - a) The UK MEES and the allied component supply chain is fully able to exploit the significant investment planned in UK infrastructure (rail, nuclear, alternative energy etc.) and to contribute to export growth
  - b) OEMs and Tier 1s are able to source more of their requirements competitively from their UK-based supply chains
  - c) There is significant exploitation of currently available and emerging technologies in automation/motion control, industrial robotics and simulation and modelling
  - d) Expertise in new manufacturing technology applications, particularly digital manufacturing, additive layer manufacturing (ALM), servitisation and the internet of things/Industry 4.0 is extensively exploited across the supply chain
  - e) UK supply chain is seen as proactively involved in setting and exploiting the UK innovation agenda and associated government investment
  - f) Education provides appropriately qualified candidates for industry's needs, e.g. digital skills, STEM skills, work readiness and the perception of manufacturing as a creative worthwhile career choice
  - g) The financial services sector has a wide portfolio of funding products easily matching international competitors in terms of cost and simplicity to support supply chain contracts delivering to UK and overseas customers
- 54) There are numerous examples of first-rate innovators in MEES. However, SMEs in particular face a number of barriers when it comes to developing and commercialising innovation and extending their customer base into new sectors.
  - a) Most EAMA members and other allied trade bodies have developed a wide variety of different skills development and training schemes to support their members
  - b) Business model innovation, industrial automation and productivity benchmarking are all important for MEES competitiveness, but they don't feature at the moment as national priorities.
  - c) There is also a gap (at least anecdotally) in OEMs' knowledge of UK supply chain competences and the UK's MEES potential, because many supply chain companies are currently focused on just one or two OEM end user sectors. A broader audit will highlight the practical potential.
- 55) At the same time, in addition to the constraints described in paras 44-45, another set of hurdles is slowing development and uptake of digital manufacturing technologies (lack of understanding, few open standards and protocols to facilitate the industrial internet of things, misconceptions about the impact of industrial automation and robotics and the potential of additive layer/3D printing).

**Hence the need for a sector-wide initiative:**

- 56) Strengthened co-ordination across MEES and component producers across sectors
- 57) Engaging beyond the EAMA footprint
- 58) Creating greater shared visibility across trade bodies initiatives on skills, exporting and finance

- 59) Develop SME easy to use tools for wider independent application by companies, regional growth hubs, LEPs etc.
- 60) At the moment, the ‘tools’ remain early development concepts (26-27). The Alliance cannot fund the necessary new product development (NPD) required, through the necessary ‘road testing’ iterations for wider use (e.g. into industrial digitisation) by trade bodies, public agencies and LEPs advising willing SMEs, prepared to manage risk and engage in new activities and processes to succeed in developing new offerings and customers.
- 61) In broad terms we expect to engage say 3% of the cohort and turn them on to act differently as path finders for others to follow. In the machinery sector (SIC 28) that will be equivalent to 250 companies. Engaging 250 companies through a dedicated initiative would cost conservatively £4,000 per company if handled directly through consultancy visits (i.e. £1 million).
- 62) (For broad comparison purposes only, aerospace’s Sharing in Growth four-year skills training and development programme for each targeted company worked out at up to £1.2 million funding through the Regional Growth Fund, with in-kind to the same value from the company).
- 63) We estimate the NPD programme at between £100,000 and £150,000.