

A Legacy Handbook for Manufacturing

A report prepared by *emda*

September 2011

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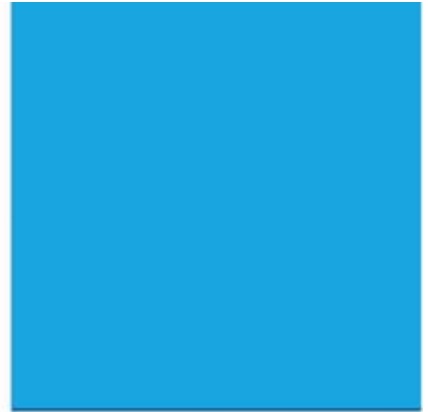
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Manufacturing Competitiveness:

Guidance for managing the legacy of *emda's* manufacturing investment in the East Midlands



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Foreword by Bryan Jackson



The United Kingdom has a strong and globally competitive manufacturing base. This is clearly seen in the East Midlands where the sector contributes significantly to the regional economy, far more so than in many other regions; being a major constituent of GDP and employment.

Encouragingly, there is now the beginning of a consensus amongst politicians, economists and commentators that high value goods and services are central to economic recovery and the building of a prosperous UK economy. Most agree that there are three ways to create wealth. You can grow it, dig it up or convert something to add value.

The manufacturing sector will therefore remain a critical component in the East Midlands economy. It can:

- Increase its activities in new markets around the world
- Develop innovative products and processes that provide it with competitive advantage
- Employ and develop skilled people that add to its value and provide future job security
- Provide the underpinning economic infrastructure on which to build future economic success.

As the Chair of the East Midlands Development Agency (*emda*) and Lead on Manufacturing for the Regional Development Agencies, I am proud of the work we have done to promote this sector at international, national, regional and local levels. *emda* has undertaken a wide variety of economic development roles in support of this broad sector; providing both strategic leadership and resources for investment. We have placed manufacturing at the heart of everything we have done, utilising a cross-cutting approach to ensure that all our interventions have a significant impact on the sector.

This handbook records the activities *emda* has undertaken to stimulate and promote manufacturing in the East Midlands. I am sure that future policy makers, at whatever economic level, will find benefit from reading about our hard-won successes and learning from the Agency's approach.

A handwritten signature in black ink, appearing to read 'Bryan Jackson', written in a cursive style.

Bryan Jackson
Chairman
East Midlands Development Agency

Executive Summary

This legacy handbook on manufacturing describes *emda*'s activities to increase the competitiveness of manufacturing businesses in the East Midlands and highlights key learning points from the agency's experiences.

The manufacturing sector represents a significant proportion the East Midlands economy and one that is higher than the UK average. Manufacturing support has featured heavily in successive Regional Economic Strategies (RES) produced since 1999 and has been integral to *emda*'s economic development remit.

The need actively to encourage the development of the region's manufacturing sector is interwoven in the last RES, 'A Flourishing Region'. The RES recognises its importance to the structural theme of 'Raising Productivity', which re-iterates the need for a strong globally competitive business base which has an efficient workforce and high levels of innovation in both manufacturing and services. It includes the priority action to use the Manufacturing Advisory Service to "target support to firms that are ready and willing to innovate and assist their investment in diversifying their products, processes or markets and link these firms to wider Business Link support for growth and skill development".

Since 1999, *emda* has invested some £312m in programmes and projects that were either accessible to manufacturing businesses or directly targeted at supporting the sector.

What is Manufacturing?

The term manufacturing can conjure up images of poorly skilled workers, producing goods on a repetitive basis in undesirable working conditions. This production orientated view now belies the nature of much of the global manufacturing sector in the UK today. There is no doubt that traditional labour oriented manufacturing has declined, undermined by cheaper costs of production overseas. However, the UK continues to offer comparative competitive advantage through its focus on what is known as '**Advanced Manufacturing**'.

Much of our manufacturing base now focuses on specialised and diverse processes, particularly in high technology areas. Many UK companies have used Information and Communications Technologies (ICT), new materials (for example advanced composites), and process breakthroughs (such as nanotechnology and biotechnology) to transform the way they work. These innovations have driven growth in advanced manufacturing sub-sectors much faster than those on the more familiar 'traditional' sectors.

Further, this modern definition of manufacturing goes beyond its production basis. It covers research and development, technology exploitation, product design and development, logistics and distribution, service, and repair and re-manufacturing. All of these elements contribute to provide the UK with a potentially thriving advanced manufacturing base.

Justification for Intervention

emda's justification for intervention in this agenda was principally shaped by the significant proportion of the region's businesses, jobs, exports and investment that is represented by this sector. Pleasingly, manufacturing output in the East Midlands grew steadily during the first decade of this century. However, performance dropped sharply during the recession of 2008, and still sits below pre-recession levels. Manufacturing output in the region fell by 10% in 2009 and, whilst this has recovered in 2010, output was still 1.6% lower than in 1999.

emda's analysis shows that:

<ul style="list-style-type: none"> ▪ Regional manufacturing exports from the sector are above the UK average but are dominated by large employers.
<ul style="list-style-type: none"> ▪ Manufacturing employment in the East Midlands fell from 366,000 in 2004 to 291,000 in 2009, before improving slightly in 2010. Pre-recession, this demonstrated an improvement in regional productivity. Employment numbers held up during recession, probably reflecting the increased use of part-time working and wage freezes/cuts to maintain skills. Significant capacity appears to remain in the sector, which will restrict job growth as it recovers further.
<ul style="list-style-type: none"> ▪ In the ten years prior to the recession, investment by manufacturers in the region fell despite their growth in output. Investment was equivalent to 8.5% of GVA in 2007. This demonstrates an ongoing reluctance for the sector to invest in itself; and this will not have been helped by the reduction in credit facilities post-recession.

The justification for further public sector investment to help the sector recover fully from the recession and adopt advanced manufacturing principles and processes remains.

emda's Approach to Supporting Manufacturing in the East Midlands

emda's approach can be broken down into two elements:

- **Providing strategic direction to our partners and stakeholders in the East Midlands, based on a detailed economic evidence base.**

emda has developed **Regional Policy** based on the national frameworks for manufacturing and the evidence contained in the RES. Typical of a number of early strategic documents centred on manufacturing was 'Manufacturing in the Regions – East Midlands'. This linked the Government's manufacturing strategy with the support being provided to the sector in the region.

More recently, *emda* has followed a **mainstreamed approach**, based on the primary drivers of productivity. A range of generic sub-strategies were developed; for example in Access to Finance, Business Support, Innovation, International and Skills. All of these policy areas have a direct link to the manufacturing sector.

emda has been the '**lead RDA for manufacturing**' since 2006. In this role, *emda* shaped national policy, shared RDA best practice, aligned RDA activity, and communicated issues and achievements. *emda* represented the RDAs on national policy forums including the Ministerial Advisory Group for Manufacturing (MAG). The agency also coordinated the national delivery and promotion of the Manufacturing Advisory Service (MAS), taking over the role from a private sector contractor.

emda has **generated research studies** to support national and regional policy development. Despite being recognised for its strategic insight, *emda* has found it challenging to collate intelligence specifically relevant to manufacturing. This was particularly highlighted during the development of the agency's New Industry, New Jobs proposals for the previous Government in 2009.

emda has **partnered with representatives of the regional manufacturing sector**; setting up advisory groups (for example, East Midlands Innovation), worked closely with regional representative organisations (such as Engineering Employers Federation, where *emda* also had the national lead), and undertaking relationship management of key strategic investors.

emda's work has complemented other **private and public sector activity**. It has worked closely with bodies such as the Technology Strategy Board (TSB) and the Skills Funding Agency (SFA) to achieve this. This has involved facilitating regional priority clusters and sectors.

- **Investing in specific activities and in infrastructure to move the manufacturing competitiveness agenda on rapidly**

emda's primary investments in the sector have fallen under the **Supporting Innovation and Business Best Practice** heading. Manufacturers have been provided with a simplified portfolio of business support. Some of the products directly target the manufacturing sector, most notably MAS. Others include mainstreamed support through Business Link (BL) and the agency's High Growth Coaching, Business Mentoring, Transformational ICT and Selling to the Public Sector programmes.

Manufacturing businesses have been provided with investment and access to finance initiatives, seen as vital for growth. *emda* developed a regional 'Escalator of Funding'. The key equity finance elements of the escalator were the Regional Venture Capital Fund, the Lachesis Fund, the East Midlands Early Growth Fund and the Catapult Growth Fund. These were integrated with the Understanding Finance for Business and the Growth Investment Network East Midlands programmes. In addition, the two main national grant programmes delivered by *emda* - Grant for Business Investment (GBI) and the Grant for Research and Development (GRD) - formed part of the escalator.

Innovation support to the sector has included developing the market sector based innovation networks (iNets), with their SME innovation and university/business collaboration grants; the Pathfinder and Demonstration grants, based on the Regional Technology Framework; and the FP7 Service, which helped SMEs to apply for European funding

emda has also played a key role in bringing together regional partners, especially when responding to manufacturing-based economic shocks. For example, *emda* led the Rolls-Royce Taskforce following 9/11 and the region's response to the recession in 2008. Part of the latter involved developing the East Midlands Transition Loan Fund.

emda has also encouraged manufacturers to **Exploit International Markets**. The agency's remit has been concentrated on creating inward investment. This was structured into three main areas: the attraction of new foreign direct investment; the retention and growth of existing overseas and large UK businesses; and the provision of enabling activities such as knowledge management.

UKTI delivered the region's export trade services; working in a dual-key relationship with *emda*. They have been supported financially by the agency to: give additional support to manufacturers interested in their target high-growth markets; support a specialist regional international trade association (EMITA); and provide language and culture support for companies as they prepared to enter markets overseas. *emda* also established the East Midlands China and India Bureaux to provide specialist trade and inward investment support targeted at these emerging economies.

emda has invested in **Developing Skills through Education and Training** to meet the needs of manufacturers. The agency has worked with Government to improve awareness and understanding of manufacturing, using programmes such as Manufacturing Insight (a BIS initiative aimed at improving the image of the sector).

The agency has also looked to shape the views of educators that provide the skills to 'fuel' the manufacturing sector. This included: the promotion of Science, Technology, Engineering and Mathematics (STEM) skills; schools and qualification development; coordinating and sharing best practice between bodies active in the skills agenda in the region; and capital investment in education facilities in cooperation with high-value manufacturing industries. *emda* has also funded programmes to ensure that graduates are equipped with the skills and knowledge that regional employers require.

emda has directly supported manufacturing training in the East Midlands. Typical initiatives include: working with universities and colleges to develop new courses for management and leadership; providing launch funding for National Skills Academies (including in manufacturing); and supporting the redeployment of engineers within the industry through the Career Chain initiative.

Lastly, *emda*'s capital investment has also provided **Manufacturing Infrastructure** in areas such as technology exploitation and transfer, as well as business accommodation. The agency's joint investment in the Manufacturing Technology Centre with Advantage West Midlands is typical of this work.

The handbook presents the rationale for intervention in each category, based on the more detailed review contained in the specific productivity-based policy handbooks published earlier. Examples and learning points from each are also presented in a series of case studies.

Achievements

In March 2009, *emda* published an independent report highlighting that for every £1 spent by *emda* over £9 of GVA was generated. Individual projects, tied closely to manufacturing, demonstrated that *emda*'s business support investment contributed significantly to this achievement. For example, the Manufacturing Advisory Service and High Growth Coaching programmes returned £10 and £15 of GVA respectively for every £1 *emda* invested.

Some of the highlights from individual project evaluations include:

<ul style="list-style-type: none"> • The Manufacturing Advisory Service East Midlands (MAS-EM) supported 3,500 manufacturers in the region and generated £95m in GVA between 2005 and 2011.
<ul style="list-style-type: none"> • <i>emda</i>'s High Growth Company Support programmes supported more than 300 companies since 2005, generating more than £80m in regional GVA.
<ul style="list-style-type: none"> • The Regional Venture Capital Fund invested £19m in 44 businesses between 2002 and 2008 and <i>emda</i>'s Lachesis Fund has invested £7.4m in 52 enterprises or projects seeking to commercialise research activity since 2002.
<ul style="list-style-type: none"> • The Understanding Finance for Business product helped 141 East Midlands SMEs raise £108m since 2002.
<ul style="list-style-type: none"> • <i>emda</i>'s Grant for Business Investment programme created or safeguarded 7,450 jobs since 2002, generating £315m of private sector leverage, and the Grant for Research and Development achieved a cumulative net GVA impact of £308m.
<ul style="list-style-type: none"> • The Transition Loan Fund, between February and November 2009, approved 59 loans to a value of £6.7m to businesses employing 2,890 staff.

Beyond these specific successes, *emda*'s wider manufacturing-related achievements can be summarised under the following categories:

<ul style="list-style-type: none"> • Evidence – developing a comprehensive evidence base to articulate the benefits of working on the manufacturing agenda and to highlight opportunities for further investment;
<ul style="list-style-type: none"> • Visibility and profile – promoting investments and interventions that have raised the visibility and profile of the manufacturing agenda;
<ul style="list-style-type: none"> • Catalyst for change – using investment as an incentive to bring partners together and stimulate activity;
<ul style="list-style-type: none"> • Best practice and expertise – undertaking activity that other public sector organisations were unlikely to tackle, utilising the agency's mainstreaming approach.

The project evaluations undertaken have shown positive outcomes and developed useful learning points. Examples of these are shown in the case studies in the handbook.

A review of the manufacturing based projects invested in by *emda* since 1999 indicated that collectively they have:

- **Created or safeguarded 43,174 jobs**
- **Created 5,549 businesses**
- **Intensively-assisted 129,900 businesses**
- **Forged 2,595 business collaboration with the knowledge sector**
- **Assisted 11,373 people to get a job**
- **Helped 29,448 people to develop their skills**
- **Leveraged £270m in external private sector income**

Key Learning Points

The legacy handbook provides many reflections and learning points from the wide spectrum of activity covered by the manufacturing sector. Strategically, *emda*'s policy makers have benefited from embracing a broad definition of manufacturing, encompassing its many specific sub-sectors that are defined on a market or technology basis. By adopting a mainstreaming approach, based on the modern advanced manufacturing definition and the primary drivers of productivity, *emda* has ensured that businesses in this sector have benefited from most of the support it has provided. Supplementing this with some manufacturing specific policy, driven by the use of private sector and/or third party endorsement, has ensured that the importance of the sector has been highlighted.

Effective delivery of support must underpin any successful strategy. *emda* found that a holistic diagnostic of manufacturing business needs was a key factor in ensuring that the businesses were signposted to the most appropriate form of support. The adoption of the brokerage model of intensive delivery, and a stringent set of criteria for using private sector consultants, has helped to ensure that the quality of support offered has remained high and has been well received. Grants to encourage the adoption of intensive activity or capital investment have been shown to generate significant impacts if they are used in a targeted way, based on transformational manufacturing change. Businesses will contribute to these services financially if the above criteria are met and they have often continued to fund such activity themselves after the *emda* intervention has been completed.

Supporting this, the escalator of funding enabled public sector financial initiatives to be linked to and targeted in support of specialist business support and capital investment provided separately by *emda*. Multi-interventions, either at points in a business's lifecycle or at a critical point in its growth, have proved to be effective. This has often required a mix of finance, whether it be grant, equity or loan. However, the agency has avoided developing sector-specific equity and loan funds; reflecting that funders prefer to invest in a range of sectors.

emda's capital investment in manufacturing has led to a legacy of world-class facilities, such as the Manufacturing Technology Centre. Evaluations have shown that they should provide lasting benefits for individual companies and the region's manufacturing base as a whole.

emda has developed a sophisticated multi-partner approach to dealing with economic threats, particularly in the manufacturing sector. Unfortunately 2008 proved that, however effective this support, it can only go so far to mitigate the impact of a global recession.

Future Opportunities

Encouraging the manufacturing sector to grow and create jobs is a priority for the Government, partly in its quest to rebalance the economy from a perceived over-dependence on the service sector, particularly in the greater South East. Despite major changes in the future Business Support landscape, the Government intend to maintain advisor-based improvement support to manufacturers through a number of national services:

• A replacement MAS service, due to launch in January 2012 once the regional contracts have been completed
• A new Business Coaching for Growth service, targeted at companies with the potential to grow quickly and again due to launch in January 2012.
• Continued international investment and expert trade services, delivered for UKTI
• Skills support based on management and leadership development and the training of apprentices for the SFA.

The total level of funded activity for these services will be much reduced when compared to the funding provided previously by RDAs. Capital grant support for manufacturers will also be much reduced with the disbanding of the GBI scheme and the movement of the GRD scheme to a call-based approach, administered by the TSB.

The developing Local Enterprise Partnerships (LEPs) could be encouraged to step into the 'gaps' created by these changes, working to influence the role of Local Authorities and, perhaps, drawing down funding from the Regional Growth Fund. BIS Local will need to review how it can use the LEPs to gather the intelligence required to influence future policy in favour of the region's manufacturing sector. The involvement of private and third sector organisations in developing and delivering activity is likely to be well received by Government. The establishment of a regional manufacturing forum could also be encouraged.

BIS Local and LEPs will need to work closely with the remaining Government bodies that act in and across the regions. These will have to have a greater influence and impact on the economic development of the manufacturing sector following *emda's* abolition. It will be important that these bodies work closely together in order to inform and align their strategies such that the best possible outcomes can be secured from their investments. Specifically, BIS and UKTI will need to review their communication with foreign-owned and

large manufacturing business following *emda*'s closure to avoid perceived inefficiency and potential loss of investment opportunities for the UK.

The Government will need to continue to address the 'image deficit' for manufacturing. This is not easy to influence and Government needs to drive it strongly if the desired cultural change is to be achieved within society. BIS should not underestimate the resource and investment required to underpin such a change programme. Perhaps most vulnerable to the deficit reduction cuts are the schools programmes aimed at addressing this. Some key educational programmes have already closed.

Partners and stakeholders should be encouraged to access the extensive information that *emda* has already developed before investing in further evidence gathering themselves. *emda* is making this available through Nottingham Trent University as part of its legacy process.

Chapter 1

Introduction

This handbook has been developed by the East Midlands Development Agency (*emda*) to inform the next generation of organisations that will have responsibility for supporting the manufacturing sector in the UK with particular reference to the Original Equipment Manufacturers and those SMEs that make up their many supply chains. The handbook provides a reflection of the programmes that have been developed over the life of *emda* to encourage a thriving manufacturing sector in the East Midlands.

Encouraging manufacturing competitiveness has been recognised as a crucial factor in growing an economy. The manufacturing sector creates wealth by utilising added-value processes. It develops the next generation of products and processes that maintain economic prosperity. It also creates highly skilled jobs which bring future job security.

The importance of a globally competitive manufacturing sector has been recognised by many policy makers in the UK, whether at national, regional or local level. The same can be said, however, about UK's economic competitors, at European and International levels. Our manufacturers are actively competing against rivals in Germany, France and the USA. At the same time, the future economic powerhouses such as China and India are also encouraging manufacturing inward investment and the development of their indigenous producers, capitalising on their abundance of resources.

Experience and analysis has also shown that a flourishing manufacturing sector is not just essential for economic reasons. Its capabilities are also key to addressing a country's environmental and societal challenges. A strong manufacturing sector is particularly responsive to coordinated activity; bringing about quick and lasting improvements in productivity, competitiveness as well as being the principal driver behind much of the country's exploited innovation capability. Manufacturing currently accounts for 12.7% of all UK economic output and for approximately £2.7m jobs.

Since 1999, the East Midlands Development Agency (*emda*) has played a key role for Government in driving regional development, and providing key elements of manufacturing support.



Through strategic management, investment, and coordination, it has used its core funding to set common regional objectives, promote skills, develop infrastructure and build stronger businesses. It has adopted a cross-cutting, 'mainstreamed', approach to this work, recognising the importance of individual policy areas in influencing this sector. This broad approach, alongside a limited number of specific sectoral interventions, has ensured greater investment in manufacturing than simply concentrating on the subject in isolation.

This Handbook describes the activity undertaken by *emda* in providing support to the regional manufacturing sector. It also describes the context for providing sub-national manufacturing support, and then goes on to describe the cross-cutting nature of *emda's* support to manufacturers, focusing on its:

- strategic leadership
- promotion of innovation and best business practice
- encouragement of overseas trading and inward investment
- support to ensure that appropriate skills are development and maintained in the sector
- investment in manufacturing infrastructure.

The justification for *emda* to intervene in the support of the Manufacturing sector has been well rehearsed in other handbooks in this range of legacy documents. Most notable of these is the Innovation handbook that describes regional sectoral intervention in key manufacturing sectors in greater detail. It should be recognised, however, that manufacturing is also heavily supported by handbooks covering Business Support, International, Low Carbon, Enterprise and STEM (Science, Technology, Engineering and Mathematics) skills.

Each handbook contains the justification and economic context for *emda* intervention in its policy area. Collectively they build to an overall picture (albeit from different vantage points) of the East Midlands manufacturing sector. This handbook will not repeat this analysis. However, the forthcoming sections provide the policy context presented with a specific manufacturing orientation. On this basis the Manufacturing Legacy Handbook should not be read in isolation but alongside other handbooks in the *emda series*.

As a handbook for managing the legacy of our support in the region, it is hoped that this document will smooth the transition to new Government delivery structures. It is therefore targeted primarily at those bodies able to exert a leadership, coordination and/or business support-delivery role.



Chapter 2

The Context for Manufacturing Intervention

This Chapter presents an analysis of the context for support to the Manufacturing sector, being a priority for the East Midlands. It is divided into three parts:

- **Economic Context:** The analysis presented in this section sets the East Midlands data against a national context and also offers some brief thoughts on how the decline in manufacturing (from a modern perspective) may be overstated by some of the more regularly quoted statistical sources.
- **Advanced Manufacturing:** This section gives an explanation of the definition of manufacturing and the industrial capabilities of the East Midlands in this field.
- **Wider Context for Manufacturing:** This section provides a SWOT analysis of the regional strengths and weakness and also comments on some of the wider economic factors to review when considering the importance to having a vibrant manufacturing base in the East Midlands.

Economic Context

Government focus on manufacturing, at both national and regional level, has been driven primarily by economic considerations; not least of which is the significant proportion of the UK's businesses, jobs, exports and investment that is represented by this sector. Our analysis has shown that the **manufacturing sector is more significant to economy of the East Midlands than in any other region in the UK.**

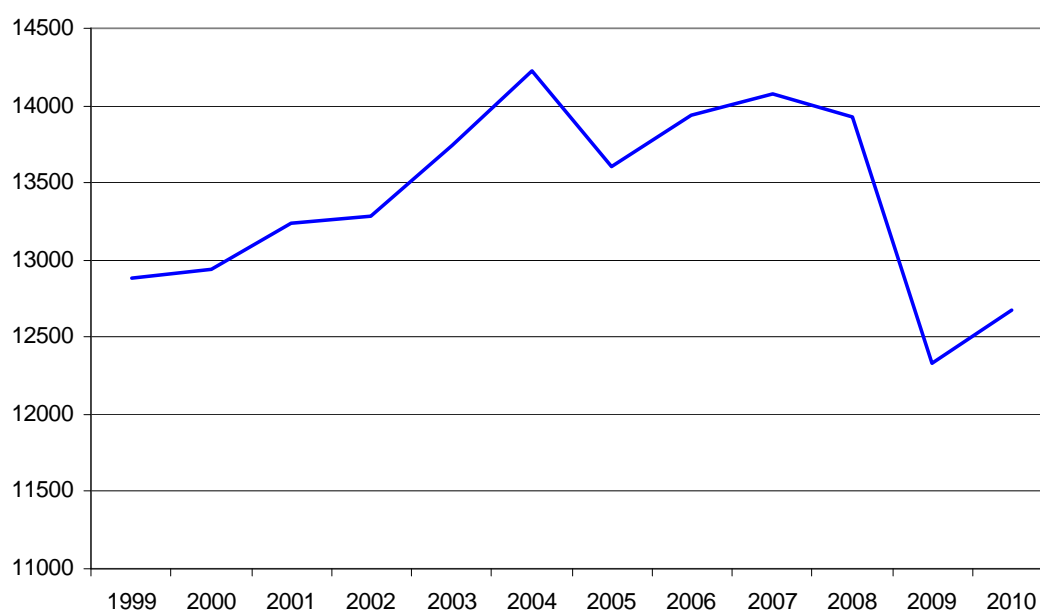
Manufacturing performance in the East Midlands grew steadily during the first decade of the 21st century. However, performance dropped sharply during the recession of 2008 and this still sits below pre-recession levels.



Manufacturing Performance

Chart 2.1 shows that, prior to the recession, manufacturing output was increasing in the East Midlands, in contrast to the UK where output was relatively stable. However the sector has been impacted by the recession and in 2009 it is estimated that manufacturing output in the region fell by 10%, slightly less than the fall of 11% for the UK. The chart also shows how manufacturing output increased in 2010 as the economy recovered. It is estimated that manufacturing output in the region increased by 2.8%, compared to 2.3% for the UK. However, as a result of the recession, manufacturing output in the region in 2010 was 1.6% lower than in 1999.

Chart 2.1: Manufacturing output in the East Midlands 1999-2010 (£million)

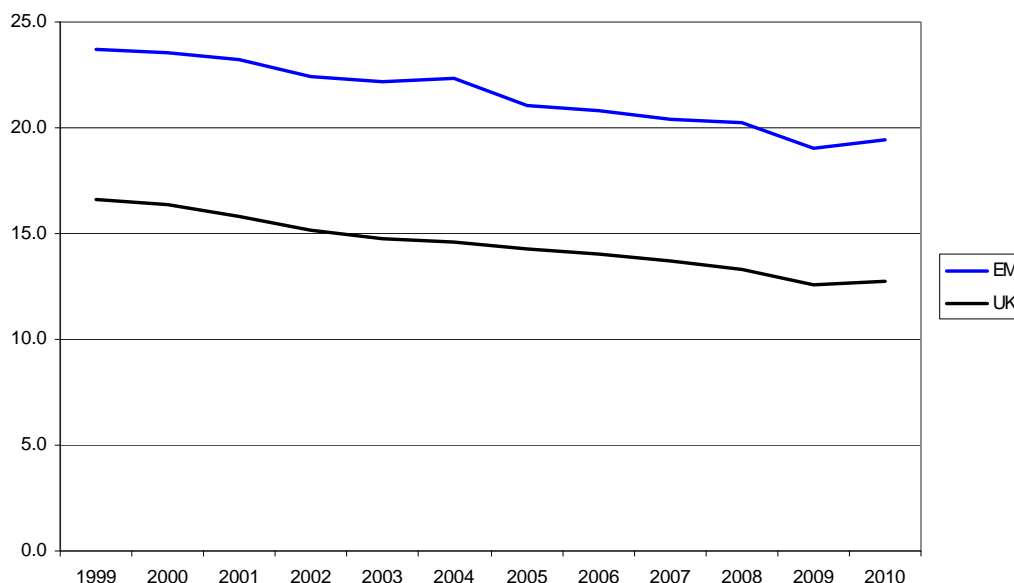


Source: emda/Experian Scenario Impact Model, November 2010

Chart 2.2 shows that, despite this growth, manufacturing output accounted for around 19.4% of the total output in the East Midlands in 2010, down from 23.7% in 1999. This reflects the continuing decline of the sector in relative importance to the economy.

The corresponding figures for the UK are 12.7% and 16.6% respectively, demonstrating that whilst the East Midlands is proportionally more reliant on the manufacturing, its relative importance has followed a trend seen more widely in the UK. The gap between the share of output accounted for by manufacturing in the East Midlands and UK has remained stable over this period.

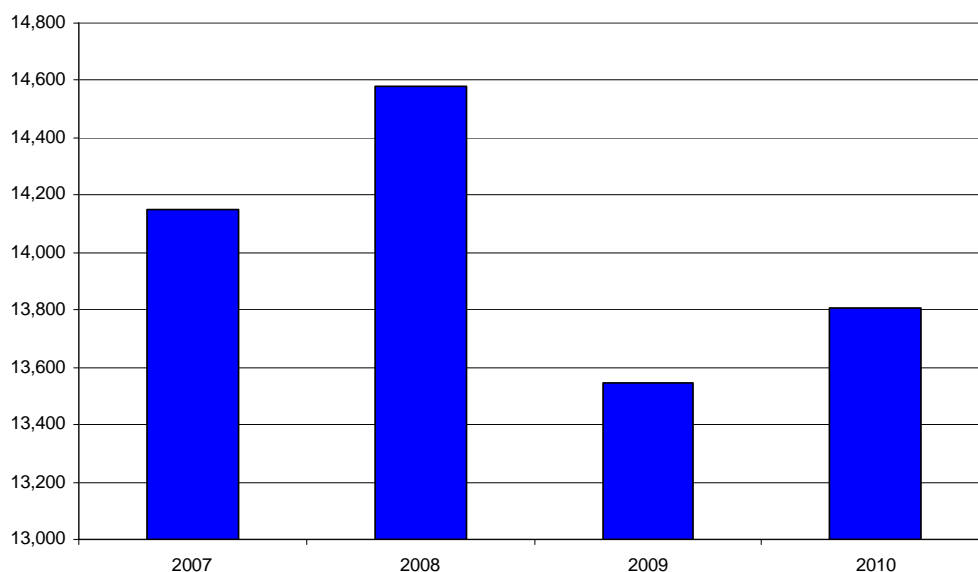
Chart 2.2: Manufacturing output as a share of total output 1999-2010 (%)



Source: emda/Experian Scenario Impact Model, November 2010.

Chart 2.3 shows that the recent growth in the total manufacturing exports from the East Midlands also fell in 2009, a result of the severe contraction in world trade that occurred in the first half of that year. There was a small recovery in 2010, but the value of exports in that year from the East Midlands, at £13.8 billion, was still below the peak of almost £14.6 billion in 2008. A similar pattern is observed in the data for the UK.

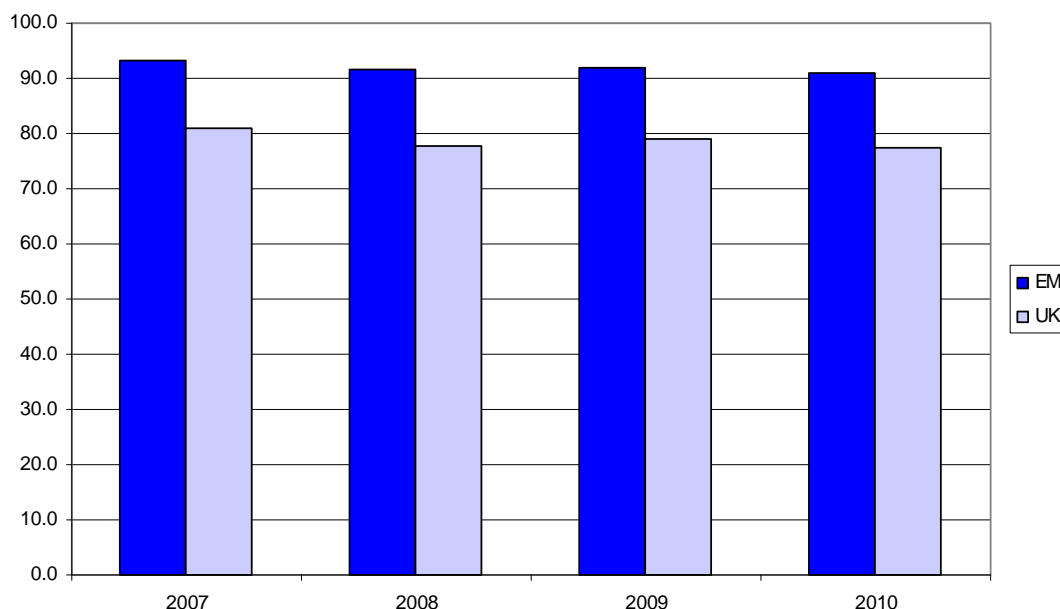
Chart 2.3: Manufacturing exports from the East Midlands 2007-2010 (£million)



Source: UK Regional Trade in Goods Statistics Quarter 4 2010, HM Revenue & Customs.

Chart 2.4 shows the proportion of all goods exported that is accounted for by manufacturing. There are two points to note. First, the share of manufacturing in goods exports is higher in the East Midlands than the UK as a whole (around 90% compared to around 80%). Second, the proportion of manufacturing in goods exports has remained stable over the short time period for which data is available.

Chart 2.4: Manufacturing as a proportion of all goods exports 2007-2010 (%)



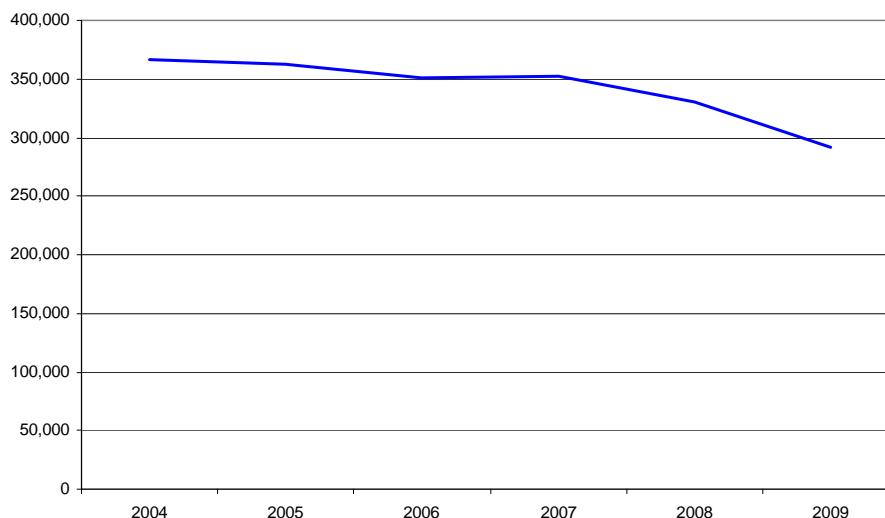
Source: UK Regional Trade in Goods Statistics Quarter 4 2010, HM Revenue & Customs

Chart 2.5 shows that total manufacturing employment in the East Midlands fell from 366,000 in 2004 to 291,000 in 2009, again accelerating slightly post recession. The fall in employment pre-recession against a backdrop of increased output demonstrates an improvement in productivity for the regional sector, with expected increases in competitiveness, perhaps reflected in the increased exports. These were most notable in the larger employers.

The drop in employment, post recession, does not reflect the drop in output and probably reflects the increased use of part-time working and wage freezes/cuts to maintain skills within a business rather than the use of redundancy.

UK manufacturing employment fell from 3.57 million in 2004 to 2.68 million in 2009. The proportion of manufacturing employment fell by 24.9% in the UK as a whole, a larger fall than that experienced in the East Midlands (20.5%). Despite the bounce back in economic output, the expected recovery in manufacturing jobs has yet to be seen in the East Midlands. Again this is a reflection of the sector having maintained people capacity and therefore not needing immediately to recruit and demand increased prices for their goods.

Chart 2.5: Total employment in manufacturing in the East Midlands 2004-2009

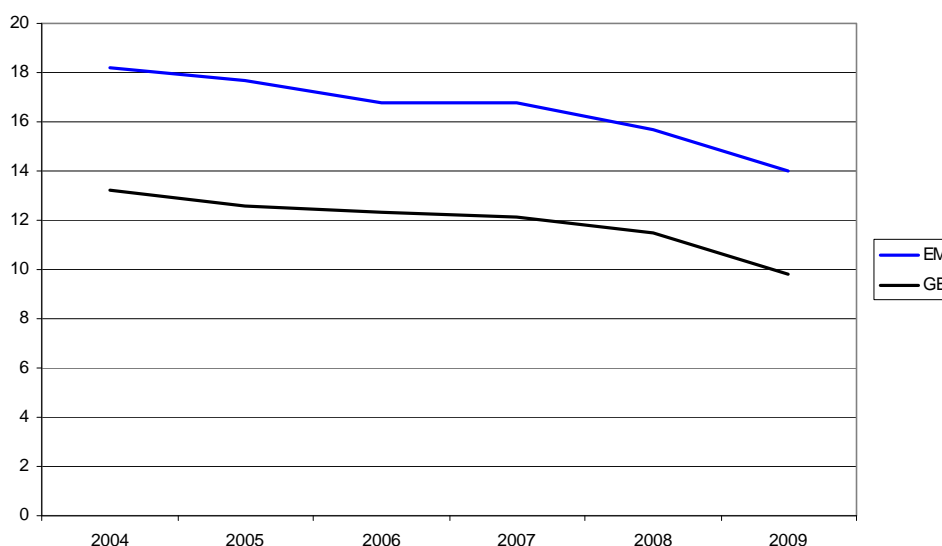


Source: Annual Population Survey, downloaded from NOMIS 16th May 2011

Chart 2.6 shows that the proportion of total employment accounted for by manufacturing has fallen, both in the East Midlands and Great Britain, between 2004 and 2009, again partially reflecting increased productivity in the pre-recession period.

In 2009, manufacturing accounted for 14% of total employment, down from 18.2% in 2004. The corresponding figures for the UK are 9.8% and 13.2% respectively. The rate of decline increased as economic conditions deteriorated from 2007 onwards.

Chart 2.6: Manufacturing employment as a share of total employment 2004-2009 (%)



Source: Annual Population Survey, downloaded from NOMIS 16th May 2011.

Capital investment is a key driver of productivity. Increasing the quality and use of capital normally allows a greater level of output to be produced from the same level of inputs; e.g. investment in training for a single worker increases the capital that the worker can utilise, enabling them to produce a higher level of output.

The term 'investment' is used here to describe all business investment by UK and foreign-owned companies. The recession and subsequent challenge in obtaining credit has had an impact on investment. That will not be captured by the data for another 2-3 years.

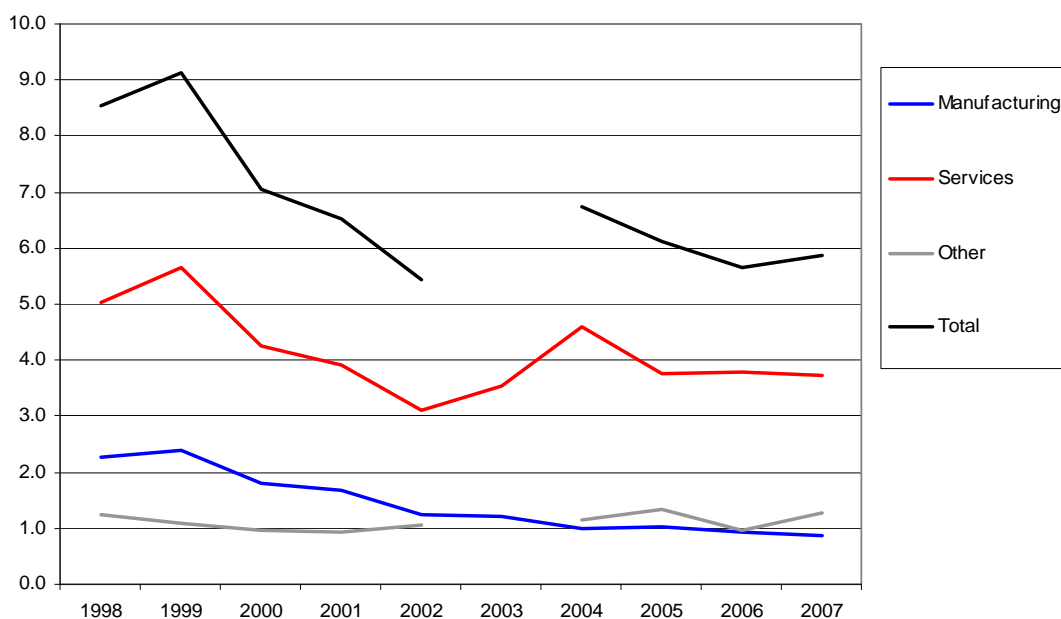
Charts 2.7 and 2.8 show the latest data available, for 2007, and demonstrate that:

- | |
|---|
| ▪ In the ten years prior to the recession, investment by UK-owned businesses in the region fell. Investment fell among manufacturers and service sector businesses, but the 'other' category remained stable. In total, investment by UK-owned companies in the region was equivalent to 5.9% of GVA in 2007; |
| ▪ On the other hand, investment by foreign-owned businesses increased during this period. However, within this overall increase there was a decline in investment among manufacturers; and |
| ▪ Investment by foreign-owned businesses in the region was equivalent to 2.6% of GVA in 2007. |

It is quite likely that the downward trend in investment by UK-owned companies continued through the recession and that the upward trend of investment by foreign-owned companies will have been reversed.

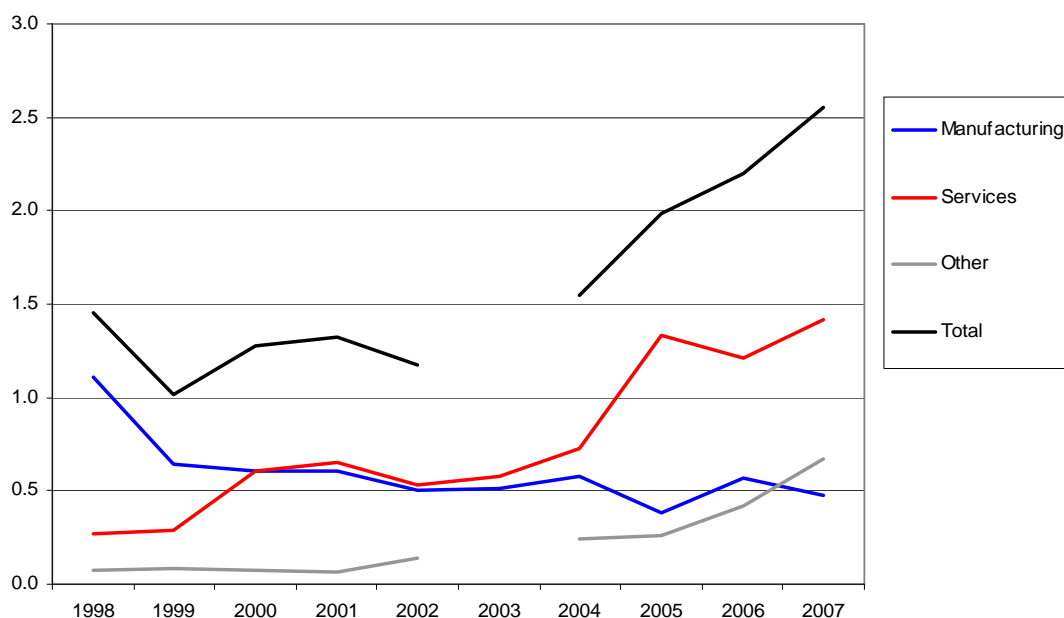


Chart 2.7: Investment by UK owned companies in the East Midlands as a percentage of regional GVA 1998-2007 (%)



Source: *Regional Economic Performance Indicators, Department for Business, Innovation & Skills, 2010*

Chart 2.8: Investment by foreign owned companies in the East Midlands as a percentage of regional GVA 1998-2007 (%)



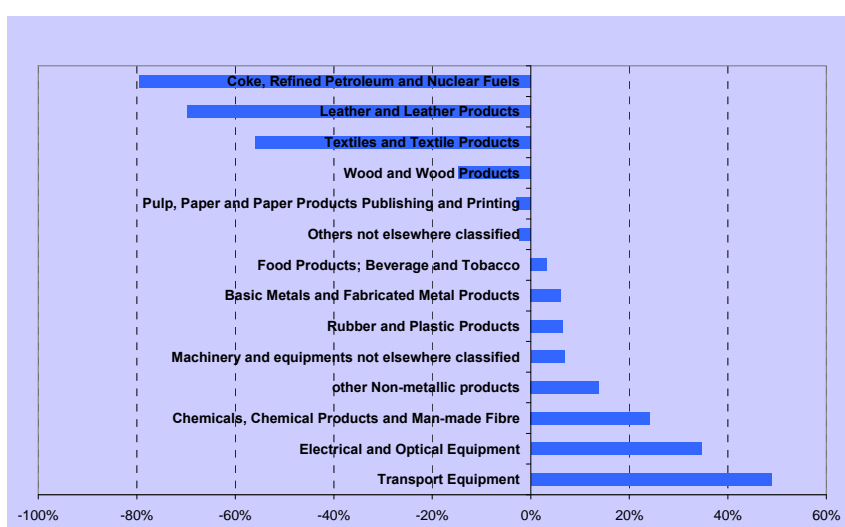
Source: *Regional Economic Performance Indicators, Department for Business, Innovation & Skills, 2010.*

Wider Economic Factors

While the data above demonstrates why manufacturing is important regionally, some further general points can be made about the performance of the manufacturing sector in the East Midlands:

- The region has a relative weakness in the proportion of the economy made up by services (i.e. the potential over-reliance on manufacturing production as opposed to the wider series of interrelated processes that make up a manufacturing operation e.g. finance, marketing, and contract maintenance). This new 'servitisation' of manufacturing - the ability to shift business model from one where you compete solely on product to one where you focus on helping customers use it to their best advantage - is one of the key new 'battlegrounds' in which manufacturers now need to fight in order to win and retain market share.
- The capability of the region's businesses and workforce to innovate is therefore of utmost importance, being linked to opportunities to increase turnover, employment, profitability, market share and resilience to economic shocks (by bringing manufacturers closer to the customer, extending contract duration, and enhancing capacity for innovation).
- Taking a broader servitisation view of manufacturing, concerns about the decline of manufacturing may be slightly tempered by the understanding and belief that current statistics are not sufficient to give a true picture of the importance of the sector. Estimates of the understatement vary, ranging from 5% to 27%. However, qualitative evidence (from policy studies and relationship management) has confirmed that there are concerns about the competitiveness of large parts of our manufacturing base (e.g. automotive, furniture, textiles) which is influencing decisions about where to source production. **Chart 2.9** shows the changes in size and value-adding of East Midlands manufacturing over time.

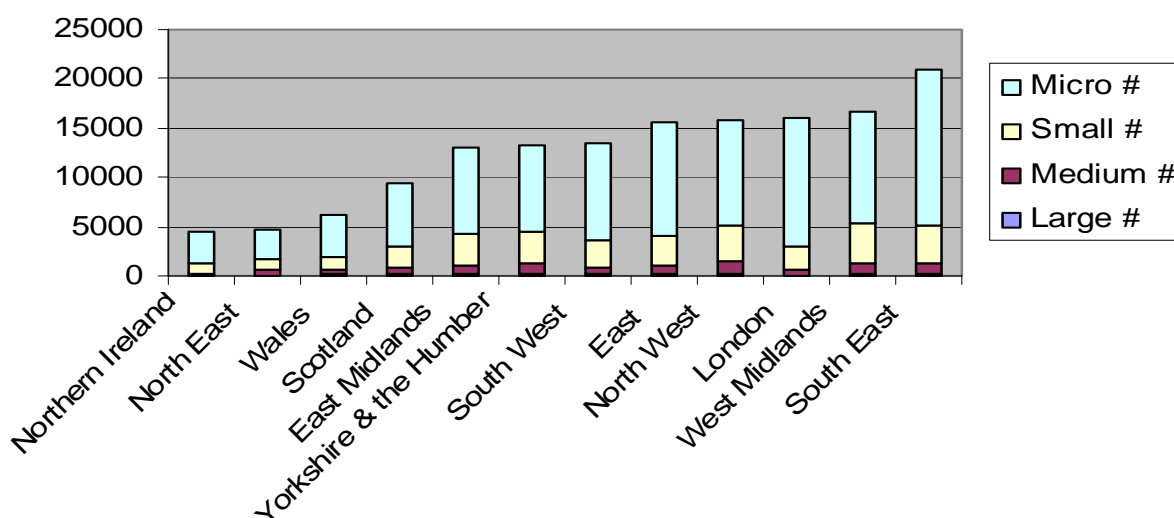
Chart 2.9: Real GVA Growth or Contraction in East Midlands Manufacturing 1994-2008



Source: *emda*, 2010

- This statistical problem has come about because manufacturing businesses have tended to fragment, focusing increasingly on discrete areas of competitive advantage as the difficulties in keeping ahead in terms of cost and technology increase. Those parts of the value-chain no longer focused on production are likely to fall outside the ‘manufacturing’ Standard Industrial Classification (SIC) codes, even though they are entirely focused on creating value through manufacturing. Hence, a ‘modern’ definition of manufacturing has been adopted by Government for defining manufacturing targets for support, and value-chain mapping has increasingly had to be relied upon to identify appropriate target audiences for manufacturing support programmes.
- Businesses that are better at vertical integration or brand and supply chain management will tend to grow and internationalise faster, addressing the Government agenda for higher value-adding employment and exports. The UK unfortunately lags behind our main industrial competitors in establishing new global companies, and emphasis is therefore being increasingly placed on maintaining the success of our large companies and helping middle market companies to go international.
- **Chart 2.10** below shows the relative size distribution of our manufacturing companies (compared to the rest of the UK), illustrating that the East Midlands has a relatively large share of mid-market companies and does not show the extremities in some other regions of large proportions of smaller or larger companies.

Chart 2.10: Comparative size of East Midlands Companies



Source: *emda*, 2010

Advanced Manufacturing

The preceding section shows that, whilst traditional manufacturing has been in decline, the region may have a comparative competitive advantage through focusing on **Advanced Manufacturing**.

Much of our indigenous manufacturing base has transformed beyond its historical origins in labour-intensive production lines and heavy engineering, and is now focused on specialised and diverse manufacturing techniques, particularly in high technology areas. Many UK firms have used Information and Communications Technologies (ICT), new materials (for example advanced composites), and process breakthroughs such as nanotechnology and biotechnology to transform the way they work. These innovations have driven growth in advanced manufacturing sub-sectors much faster than in what would be termed as 'traditional' manufacturing areas. This is borne out by business expenditure of research and development (BERD) figures that consistently point to manufacturing as being the largest contributor to innovation with some or all BERD attributed.



Box 2.11 provides a definition of Advanced Manufacturing.

Box 2.11 - 'Advanced Manufacturing' is...

...dependent upon high-level knowledge, skills and capabilities which not only define the design and production of high-value products, but also create and manage complex business models. These business models encompass fragmented, often multi-national, manufacturing supply chains and value chains and, increasingly, are focused on high-value services centred around the manufactured products. The high value [manufacturing] of the future will be characterised by:

- High-value adding products, processes and associated services (e.g. manufacturing and leasing of jet engines)
- ICT-enabled products, processes and services (e.g. rapid manufacturing or complex ICT-enabled products)
- Low Carbon products, processes, services and business models (e.g. low carbon vehicle (cars and aircraft) civil nuclear plant equipment).

...opportunities offered by new materials (e.g. composites, nanotechnology, printable electronics).

The trend towards high value manufacturing will continue, leading to ongoing changes in the manufacturing system. There will a continued shift from resourced-based to knowledge-based systems leading to a radical change in the fundamental processes of manufacturing, based upon:

- Flexible manufacturing processes which can manufacture a range of products and be readily reconfigured, in response to innovation, to manufacture new products
- Adaptive or 'intelligent' manufacturing systems which can automatically re-organise, self-monitor, self-optimize, self-diagnose and self-correct
- Concurrent, rather than linear, manufacturing processes that apply throughout the product lifecycle, not just in production
- Design and manufacture for sustainability - this encompasses whole-life design of both products and processes including recycling, re-use and re-manufacture.

Competition will be at the value chain level and will require management of, and cooperation within, complex networks of internal and external assets, skills and systems, and which may also encompass international as well as national partners.

Scientific and technology developments will continue to drive changes - in particular the shift from macro-to-micro-to-nano scale. The progressive reduction of device dimensions, together with the added functions provided by knowledge-based materials, is permitting not only the creation of new products, but also new production processes and the more efficient use of resources.

"Identification of Expertise and Excellence in New Industry New Jobs Industrial Technologies: Advanced Manufacturing" (GHK, CURDS, & Technopolis Group, 28 September 2009).

By looking at Manufacturing in this way we can see that East Midlands has amongst the highest proportions of workers in Advanced Manufacturing across the UK, as the chart below demonstrates.

Chart 2.12: East Midlands share of employment in Advanced Manufacturing

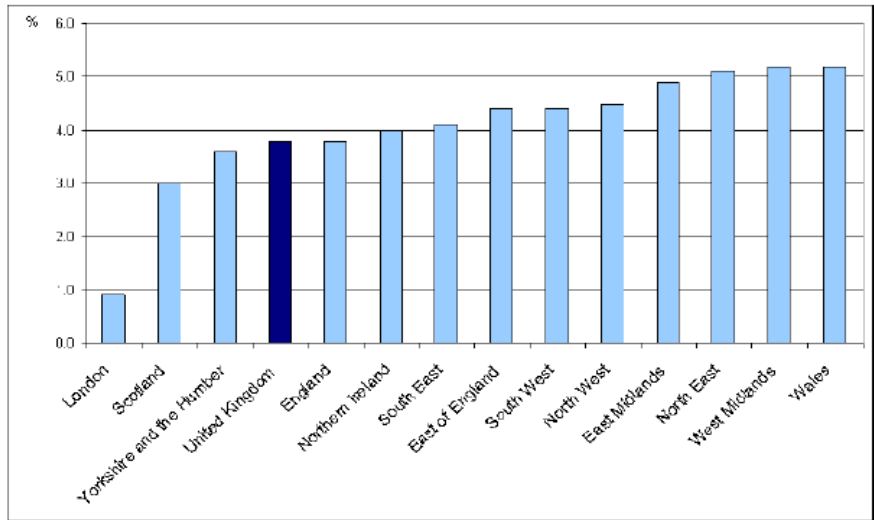


Figure 1: current share of regional employment in sectors defined as high or medium high tech manufacturing sectors

This is further supported by the contribution that this type of ‘high tech’ manufacturing accounts for in terms of Foreign Direct Investment with some 18% nationally and 47% regionally of all inward investment successes being attributed to Knowledge Driven Manufacturing projects. The table below provides some context for the importance of manufacturing to the East Midlands.



Chart 2.13: Inward investment Trends in Knowledge-Intensive Manufacturing

Manufacturing FDI jobs	2006-7	2007-8	2008-9	Total three-year period
Number of FDI jobs with manufacturing business operation	2,072	3,934	4,637	10,643
Total FDI jobs (all business operations)	5,733	5,960	5,595	17,288
Manufacturing as % of total FDI jobs	36% 66	%	83%	62%

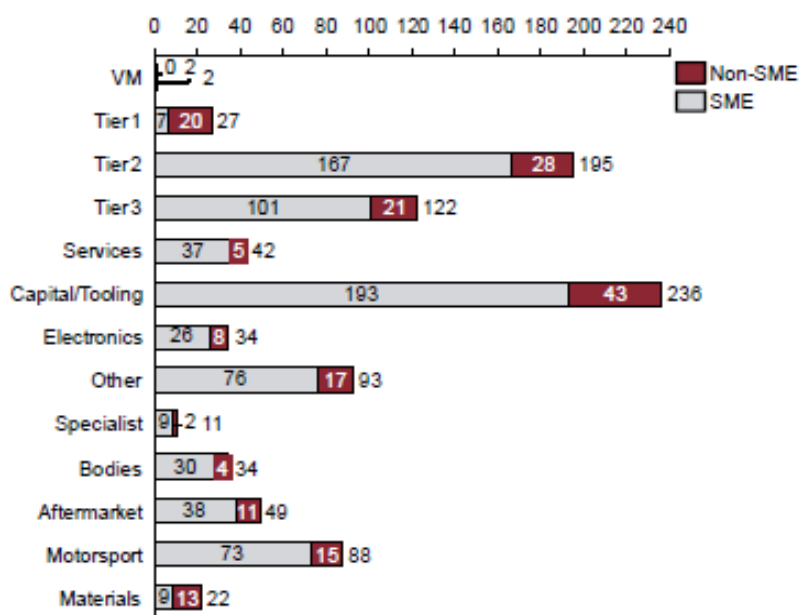
Knowledge Driven Manufacturing FDI projects	2006-7	2007-8	2008-9	Total three-year period
Number of Knowledge Driven FDI successes with manufacturing business operation	6	13	18	37
Total Knowledge Driven FDI successes (all business operations)	35	41	38	114
Manufacturing as % of total Knowledge Driven FDI successes	17% 32	%	47%	32%

Despite these positives, *emda* has found that that, in many advanced manufacturing fields, smaller businesses are often less competitive and less productive than larger businesses. Also, SMEs do not always necessarily constitute the ‘lion’s’ share of employment in key target sectors. A good case in point is in the region automotive sector where, in the majority of the supply chains, some 75% of the businesses are non-SMEs.



Chart 2.14 shows the structure of the automotive industry in the East Midlands.

Chart 2.14: The automotive sector structure in the East Midlands



- Mapping of the East Midlands Automotive Industry & Identifying the Main Innovation Drivers Prepared for the Transport iNet (Knibb, Gormezano & Partners, February 2009).

Because of this, and the regulatory environment that the Agency and the UK Government has to work within e.g. State Aid Regulations, the agency has sometimes been limited in the type and range of interventions that it could make to support regional manufacturing. *emda* has had to be innovative in the approach taken due to the scale of manufacturing operations, and has worked closely with Government Departments in order to achieve desired changes.

Chapter 3 ‘Outlining *emda*’s approach to Manufacturing Support’, provides further detail on the specific types of the interventions that *emda* has championed. Key to this approach has been *emda*’s support for large manufacturing business, both in order to anchor large investors and to influence change along the regional supply chain

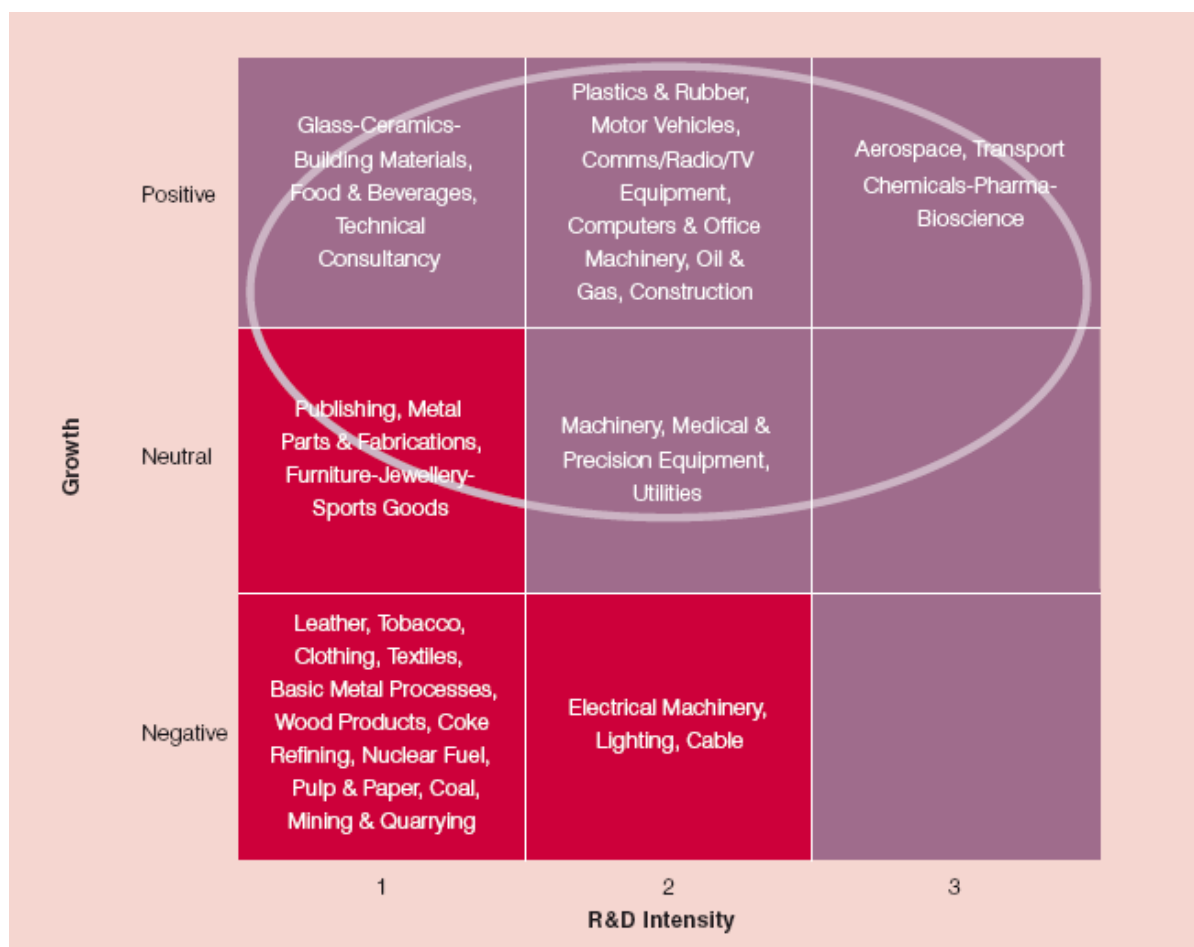
Growth Prospects for Advanced Manufacturing

As the sixth largest manufacturing nation in the world, the UK represents around 5% of global manufacturing output (US\$8.4 trillion globally in 2006). In some sectors, such as aerospace, this represents as much as 15% of global output. Global manufacturing output is forecast to grow to US\$15.5 trillion in 2015, of which China will make up around a third. Developed countries, including the UK, are also expected to experience growth.

The size and growth of key manufacturing technology markets is much harder to map. However, as an example, Additive Manufacturing - which is a technology in which the UK (and the East Midlands) is a global leader - is due to double in market size (globally) to \$2.3bn between 2008 and 2012.

Diagram 2.15 below shows the diverse sectors in which the Technology Strategy Board (TSB) believes that innovative, higher-value-adding manufacturing is most likely to be found in the UK.

Diagram 2.15 - UK Growth Prospects – Advanced Manufacturing



Technology Strategy Board – High-Value Manufacturing Strategy.

Key East Midlands Manufacturing Sub-sectors

Looking across a range of factors (e.g. size of employment and investment, growth prospects, presence of large companies and supporting institutions (for example, universities)), *emda* determined that four key priority sectors should be a particular focus for support. This was to ensure their success and therefore lead the way in sustainable economic development.

These sectors were:

- Transport Equipment (aerospace, rail, marine, automotive and motorsports)
- Food and Drink
- Sustainable Construction
- Healthcare & Bioscience.

An assessment of the relative strength of these sub-sectors to the region is provided in **Box 2.16** below. Further detail can be found in the Innovation Legacy Handbook, which has a much more comprehensive assessment of our work in these areas.



Box 2.16: The importance of manufacturing to the region's priority sectors

Transport Equipment

Aerospace: The East Midlands accounts for 15% of the value and employment in aerospace in the UK. Its strengths are centred on civil aerospace. Multinationals such as Rolls-Royce, Thales and SPS Aerostructures are based in the region. These larger companies support a host of SMEs involved in the manufacturing supply chain. The larger companies have also partnered regional universities, leading to the development of six major university-industry aerospace technology centres. The industry employs approximately 25,000 and accounts for 60% of the region's employment in transport equipment.

Automotive and Motorsport: The location of Silverstone and Donington Park racetracks within the region has led to a significant cluster of world-class motorsport companies and suppliers, including two Formula 1 teams. Leading 'household names' including Toyota, Mercedes and Cosworth are located in the region, reflecting the sector know-how and leadership, as well as research and training centres, including MIRA.

Rail: Approximately 25% of the UK rail industry is based in the East Midlands. The East Midlands is particularly known for rolling stock integration, rail engineering and consultancy, major university-industry rail technology centres, and a significant rail supply chain, accounting for over 7,000 jobs.

Food and Drink

The sector has 700 manufacturers and employs 46,000 people. The manufacturing part of the sector constitutes 8% of UK food and drink employers and 11% of UK food and drink manufacturing employment. This sector in the East Midlands is dominated by small companies. The few large regional companies are generally owned by international parent companies such as Nestle or PepsiCo, with Samworth Brothers being an exception. Regionally, the GVA of the food and drink sector has increased by 25% since 2000, which is significantly above the national average in the UK (7%).

Construction

This is not traditionally considered a manufacturing sector, but off-site manufacturing is an increasingly important input in which the region excels, and construction consumes large quantities of manufactured goods. At Steetley, Laing O'Rourke is creating a global centre of excellence and the most advanced facility in the UK for the manufacturing of construction modules, thereby revolutionising the industry in the UK and challenging the image of what construction is and the way it is done.

Healthcare and bioscience

This sector represents 6.9% of regional GVA (the region's fourth largest sector) and 9.7% regional employment, though not all in manufacturing. There are more than 250 medical technology companies employing over 19,000 people, and 150 biotechnology and pharmaceutical companies with over 12,000 employees in the area. Leading lights such as Boots Healthcare, BioCity in Nottingham and Queens Medical Centre have helped establish Nottingham as one of the UK's six 'Science Cities'.

- all data *emda*, 2009.

The Wider Context for Manufacturing

As well as economic considerations, as recognised in successive Regional Economic Strategies, there is a wider context for the need to support and nurture a vibrant manufacturing sector. **Table 2. 17** presents a broader view of the relative merits of Manufacturing in the region.

Table 2.17: East Midlands Manufacturing Strengths, Weaknesses, Opportunities & Threats (SWOT)

	Strengths	Weaknesses
Internal	<ul style="list-style-type: none"> ▪ Low unemployment ▪ Good north-south transport infrastructure and communications links ▪ Good science base ▪ World-class transport equipment sector ▪ Large and successful manufacturing base ▪ Distribution centre for goods in the UK. 	<ul style="list-style-type: none"> ▪ Weak regional identity ▪ Low-skilled workforce ▪ Net export of graduates ▪ Low investment and expenditure on R&D ▪ Rural areas dependent on low-added-value jobs ▪ Lack of suitable sites for modern manufacturing operations ▪ Low level of SME-academic partnerships ▪ Generally low value-added manufacturing jobs.
	Opportunities	Threats
External	<ul style="list-style-type: none"> ▪ Exploit emerging technologies such as biotech and nanotech (which have science centres of excellence in the region) through encouraging high-tech spinouts and start-ups. ▪ Globalisation of science and technology ▪ New environmental markets ▪ Servitisation and the development of knowledge-based manufacturing by tailoring support to guide businesses in developing new business models ▪ Upgrading skills in SMEs to improve productivity ▪ Developing innovation links between academia and SMEs using regional, national and European collaborative funding streams ▪ Greater use of automation and e-commerce. 	<ul style="list-style-type: none"> ▪ Globalisation of supply chains ▪ Global competition in innovation ▪ Environmental change ▪ Strategic alliances likely to look outside the region ▪ Competition with other regions for FDI ▪ Poor image in manufacturing ▪ Higher regulatory constraints and labour costs than foreign competition.

Source: - Proposals for an East Midlands Manufacturing Strategy (Oakdene Hollins - unpublished - 2007).

The Social Context

There is a range of opportunities and threats to manufacturing identified in the Regional Economic Strategy (RES) that have a broader social dimension. For example, there are opportunities in considering the needs of a society with more to spend on leisure activities and, with an increasingly ageing population profile, potentially more time to spend on them. Additionally an ageing and increasingly obese population has new needs in terms of equipment and medical treatment, creating opportunities for sectors such as pharmaceutical and medical devices.

The tailoring of products and related services to the needs of different ethnic and minority groups gives further niche opportunities for manufacturers in terms of new markets and differentiation in the market, with clear scope to build on the diversity in our population to exploit in international markets.

Unfortunately, regional analysis shows that, whilst it might exploit the growing markets for products relating to the increasing ageing, obese population, the sector is challenged by the under-supply of people with the skills for manufacturing, the low (albeit improving) retention of qualified graduates in the region, the stubbornly low levels of investment in training in the region, and a continuing lack of management and leadership skills.

All these factors still require intervention from Government if they are to be addressed.



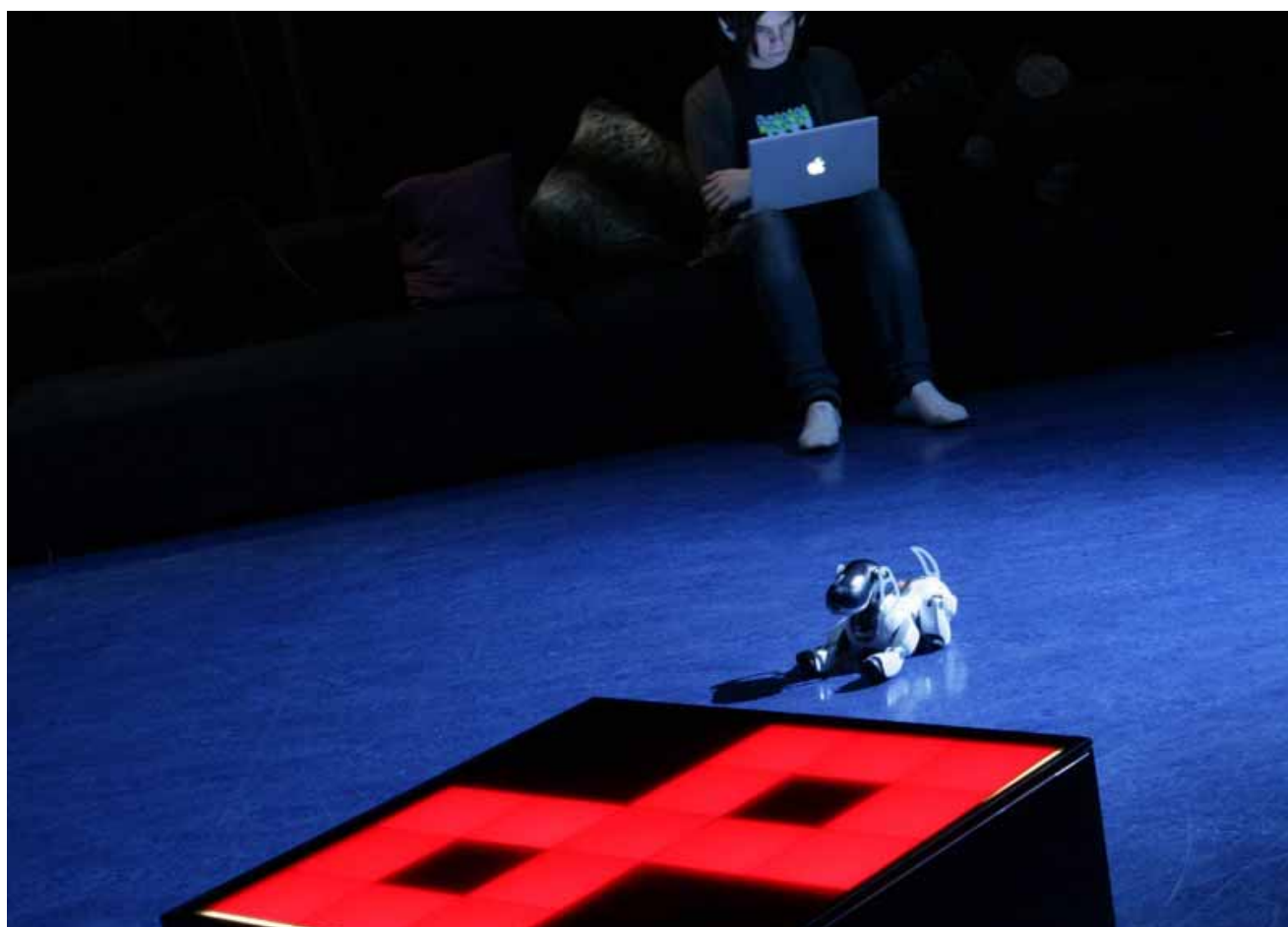
Technology

As previously mentioned, our ability to develop and exploit new technology is seen as key for retaining and growing our manufacturing output, employment and exports.

The East Midlands Regional Technology Framework, commissioned by *emda*, has provided a detailed map of where we have strengths and where our priorities are for developing them. The majority of these strengths are related to manufacturing, either as a key user or as a key enabler.

With manufacturing being responsible for 75% of business enterprise Research & Development (R&D), this seems hardly surprising. Indeed, through the process of the 2008 national Manufacturing Strategy Review (which was strongly supported by *emda*), Government started significantly to shift its position from one where it believed it needed to support a knowledge economy, to one where it tried to position manufacturing as one of the key drivers the knowledge economy.

In the light of this, it would appear that the East Midlands is well placed to boost innovation in its manufacturing base with major international businesses investing heavily in R&D (and encouraging their local suppliers to do so), a good number of innovative smaller companies, and strong technical universities recognised (including with significant funding by the EPSRC) for their ability to work well with industry.






If we take a sub-regional analysis, it is evident that there are significant concentrations of businesses operating in key technology sectors. **Figure 2.18** overviews where these are, and how competitive they are. This analysis dates from 2007 and is in need of updating.

Figure 2.18: Significant concentrations of East Midlands’ manufacturing capability by Strategic Sub-regional Partnership area

Sector/Niche	DDEP	Alliance	Lincs	Nottingham	Leics	Northants	East Mids
Motorsport						International	International
Automotive	National	Regional	Regional	National	National	National	International
Aerospace	International		Regional	National	International		International
Rail	International						International
Fuel Cells	National			National	International		International
GNSS/Sat Nav				International	International		International
Nanotechnology				International			International
Logistics		Regional			National	International	International
Life Sciences				National	National		National
Medical Devices				National	National		National
Food & Drink		Regional	Regional	Regional			
Construction		Regional			National		
Financial & Business Services		Regional	Regional	National	National	National	National
Materials & Textiles	Regional			Regional	Regional		
Engineering	National	Regional			National		
Environmental Tech		National	Regional			National	
Telecoms & Electronics				Regional	Regional		National
Media & Creative	National			National	National		
Software & IT				Regional	Regional		Regional
RFID							Regional

LEGEND:

colour	Geographical scale of competitiveness
	International
	National
	Regional
	No significant concentration

emda-led analysis, undertaken by the RDAs in 2009, provided recommendations to BIS on how they could shape and prioritise cross-Government support for manufacturing. This analysis concluded that, whilst there is a significant variety in the technologies that industry needs to master in order to realise growth market opportunities, there are a number of common underlying capabilities – or ‘key enabling technologies’ - which are applicable across industries. These are referred to in the subsequent BIS Economics Paper 10A as ‘technologies of general purpose’.

Table 2.19 below provides an overview of the key capabilities and priorities for investment in technology in the region.

Table 2.19: Priority areas for future Technology Investment in the East Midlands

Technology priorities	Sustainable construction	Food & drink	Healthcare & bioscience	Transport equipment	Commercial status	Research status	Focus for action
Lightweight and composite materials	*		*	*	Core	Core	Exploit & strengthen
High-temperature materials				*	Core	Core	Exploit
Construction materials	*				Core	Core	Exploit
Biomaterials			*		Emerging	Core	Exploit
Design and rapid manufacturing	*		*	*	Core	Core	Exploit
Process engineering	*	*	*	*	Core	Core	Strengthen
Energy efficiency	*	*		*	Core	Core	Exploit
Fuel combustion				*	Emerging/Core	Core	Exploit & strengthen
Energy storage, integration and distribution	*			*	Emerging	Emerging	Strengthen
Renewable energies	*	*	*	*	Emerging	Core	Strengthen
Waste minimisation, management and recycling	*	*		*	Emerging	Core	Exploit
Instrumentation, measurement and imaging	*	*	*	*	Core	Core	Exploit & strengthen
Intelligent systems	*	*	*	*	Emerging	Emerging	Exploit & strengthen
Sensors and controls	*	*	*	*	Core	Core	Strengthen
Computation	*	*	*	*	Emerging/Core	Core	Strengthen
Microbiology and hygienic environments		*	*		Core	Core	Exploit
Tissue and cell engineering			*		Core	Core	Exploit & strengthen
Bio-nanotechnology		*	*		Emerging	Core	Strengthen
Drug discovery and drug development			*		Core	Core	Exploit & strengthen

- A Technology Framework for the East Midlands 2008-2011: Developing and exploiting technology for long-term prosperity (East Midlands Innovation, 2008), page 27.



Legal Context

Strategically, the key legal factors that stimulate a need for public sector intervention relate to the ability of manufacturers to implement new voluntary standards and regulation, and the rules that govern the operation of the market. Amongst the most significant of these are public procurement rules. *emda's* experience shows that there is a need for sub-national support in both of these fields to improve opportunities for businesses locally.

At a regional level, *emda* worked closely with partners to agree a Regional Procurement Opportunities Plan (highlighted in the Business Support Legacy Handbook) that would improve business benefits. The findings of this work were similar to those of the OGC-led Glover Review. Whilst the recommendations of this national work are largely being implemented by Government, the outcomes do not yet appear fully to address some of the key concerns specific to manufacturers in the East Midlands. These include the visibility of forward planning in the rail sector and the provision of sector procurement strategies similar the much-lauded one for the Defence industry, which has done much to support the competitiveness of that industry.

To meet the standards set down in procurement plans or in regulations, there is often a need for technical assistance to be offered to manufacturing businesses. Whether it is to find alternative materials or processes, or to introduce new process documentation requirements, e.g. SC21, there are many hurdles that smaller manufacturers in particular can find difficult to master or that can even be damaging to business.



Environmental Context

The 'greening' of the industrial base is an increasingly important agenda, driven by both opportunity and regulation. Manufacturers are also being asked to reduce their environmental impact. It has long been good business sense to do so, that is, to produce more competitive products at lower cost.

Manufacturing is cheaper if processes are employed that use less energy, water and materials, and result in less waste. For example, lighter cars are cheaper to run. The win-win from reducing the use of materials, water and energy is further encouraged and driven by their increasing scarcity and cost. Indeed, some commonly used materials are becoming so scarce that they are predicted to run out, and there is no alternative but to look for alternatives that can be used.

At the same time, there are tensions, since the currently available lightweight materials might themselves not be sustainable or recyclable, with advanced composites being a good case in point.

As recognised in the technology section above, the environmental agenda has the potential to revolutionise our key sectors, and there are significant capabilities that exist regionally, for example:

- | |
|---|
| ▪ The Energy Technologies Institute, Loughborough |
| ▪ Nottingham University's recognition by BIS as the UK's leading centre for research into recycling of composites |
| ▪ The designers of the first hydrogen-powered motorbike to seek type-approval (Loughborough). |



Summary

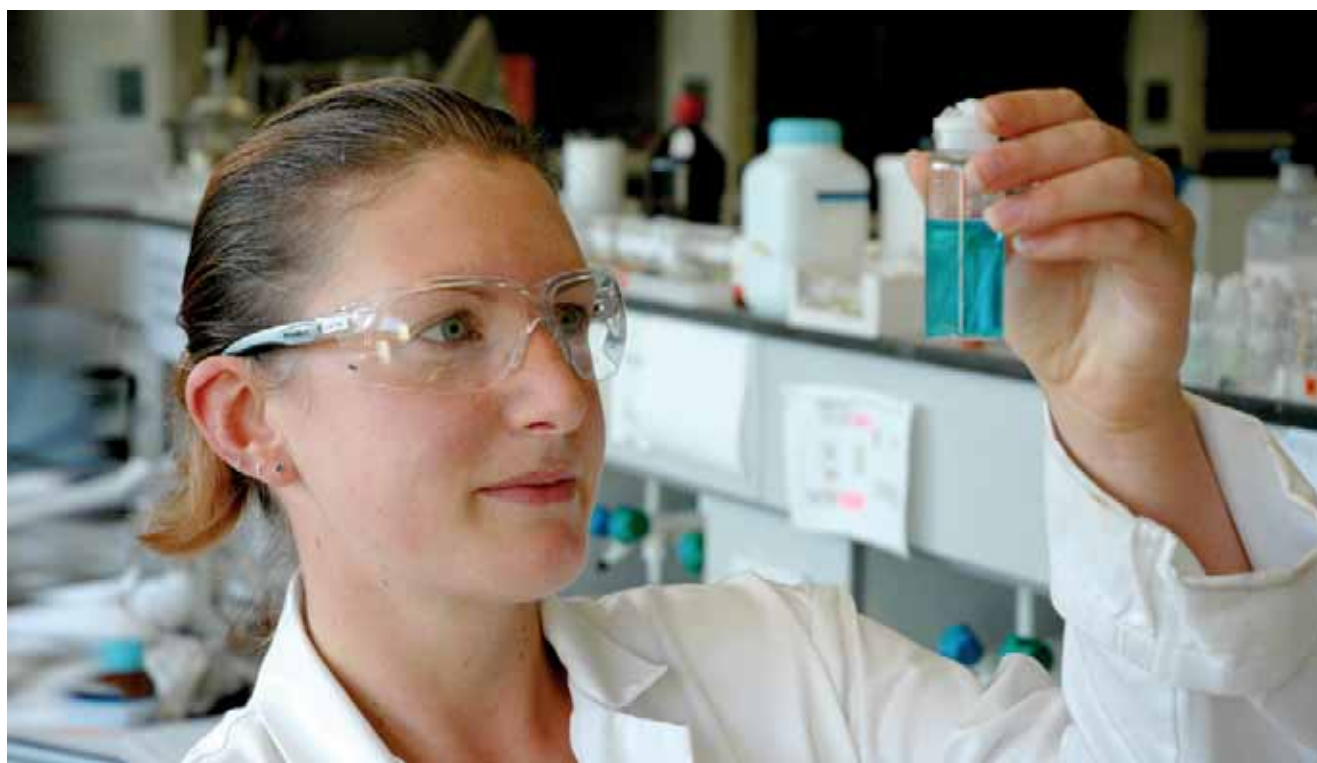
This chapter has attempted to describe the relative importance of manufacturing to the region and also to demonstrate the close interrelationship between the national and regional frameworks for intervention.

The handbook also shows that there are important differences in terms of strengths, weaknesses, opportunities and threats at a regional and sub-regional which make it important that there is robust evidence to inform priorities. These objectives need to be shared and aligned with partners at the national and local level.

Some useful organising principles have been identified, including:

- | |
|---|
| ▪ the recognition that manufacturing is not just about production, and, |
| ▪ that there are some strong areas of common interest between different of manufacturing sub-sectors that, if connected, can help ensure that no opportunity is lost to manufacturing whilst more traditional industrial growth opportunities are deliberately pursued. |

In particular, by ensuring that the needs and opportunities for manufacturing growth are regularly reviewed and understood, there is real potential to help manufacturing rebound in the economy – exceeding the pre-recession output levels and hopefully achieving the Government's objectives for also increasing exports and employment.



These issues have influenced and go beyond the RES, from which the following priority objectives (**Table 2.20**) could be said to have particular relevance to manufacturing:

Table 2.20: Priority objectives of particular relevance to manufacturing

People and skills

1. Employer engagement in schools to improve attainment and provision of a skilled workforce
2. Ensure training provision meets employer needs to operate in a globally competitive environment
3. Redeployment of highly qualified engineers to ensure they don't leave the sector
4. Improve the infrastructure and responsiveness of skills supply – exploiting the opportunity of higher education

Innovation

5. Create a dynamic SME base through improved rates of start up and growth
6. Support innovation and diversification in manufacturing / Improve the innovation capacity of SMEs
7. Provide tailored export services, with a focus on large emerging market opportunities (in Brazil, Russia, India and China)
8. Develop business skills in international sales and marketing, language and culture
9. Assist companies to internationalise, where appropriate, through offshoring, joint ventures, and strategic partnerships
10. Support SMEs to harness public procurement opportunities
11. Translate scientific excellence into business success / improve the commercialisation of ideas generated in the science base

Investment

12. Increase investment in R&D
13. Attract knowledge/R&D-intensive FDI
14. Help existing businesses deploy technologies and processes
15. Ensure there is an appropriate supply of land to meet future business requirements, including transport accessibility, utility and ICT connectivity

Low Carbon economy

16. Respond to the challenge of climate change / improve resource efficiency
17. Exploit new and growing low carbon markets
18. Ensure an infrastructure for a low carbon economy.

Chapter 3

emda's approach to supporting the East Midlands Manufacturing sector

Mainstreaming Manufacturing Support

Given the wide reaching nature of the manufacturing sector, *emda's* primary challenge has been to encapsulate what this sector represents and to ensure its importance to the East Midlands' economy is fully recognised.

emda took a cross-cutting approach to this work, relying primarily on prioritising its mainstream policy direction and investments such that the manufacturing sector had opportunity to benefit from all activities. A range of manufacturing specific activities were also undertaken to supplement this 'mainstreaming' approach.

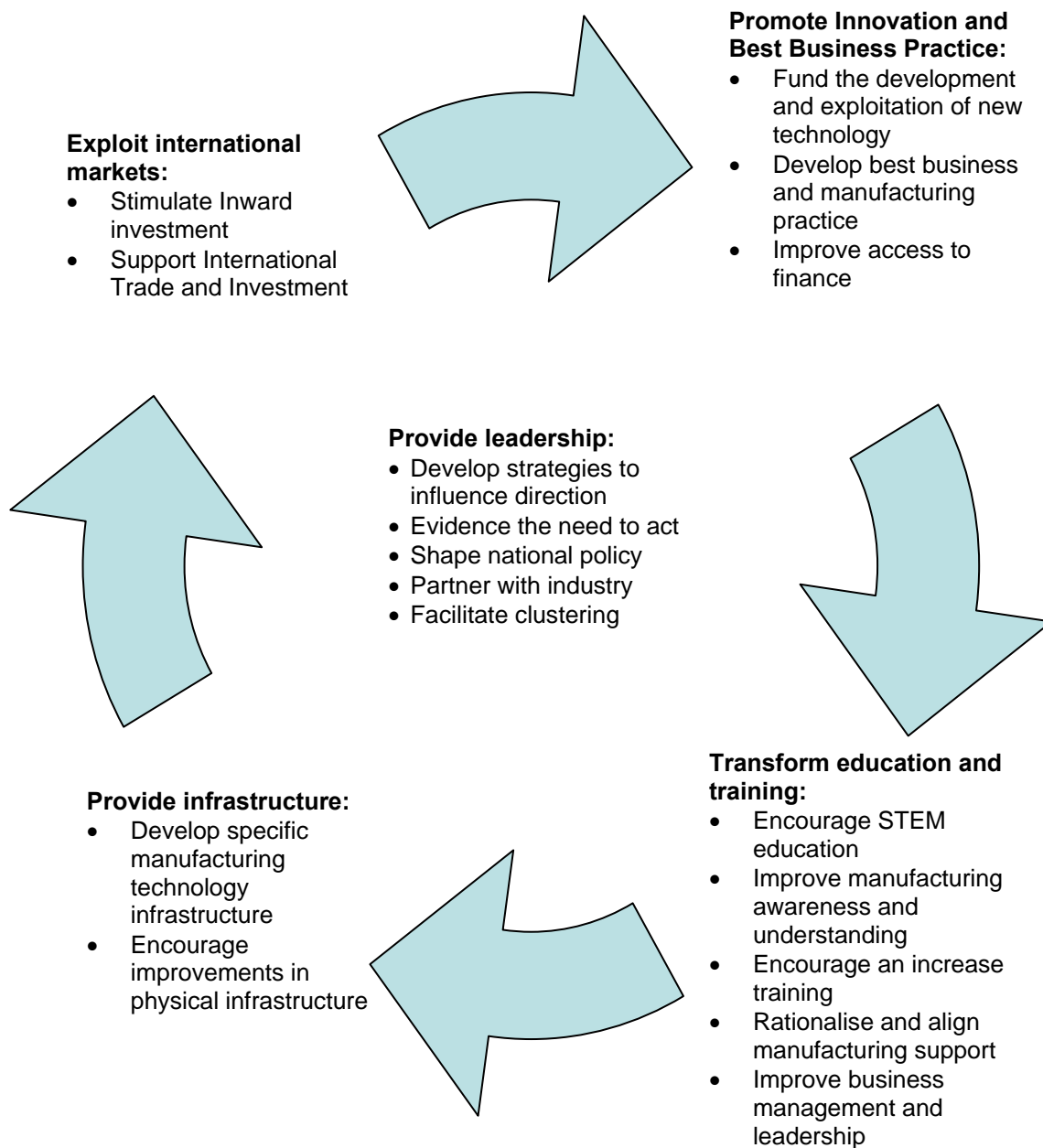
Our approach can therefore be broken down into two main elements:

- **Providing strategic direction to our partners and stakeholders in the East Midlands based on a detailed economic evidence base.** This has been aligned with national strategic activity and, in turn, influenced sub-regional economic development priorities. A snap shot of the strategic evidence has been included in the preceding section.
- **Investing in specific activities and infrastructure to move the manufacturing competitiveness agenda on rapidly.** The nature *emda's* investment has fallen under the main productivity theme headings contained in the Regional Economic Strategy (RES). This reflects the regional prioritisation of manufacturing. These have been supplemented with specific investment in manufacturing sub-sectors in some cases.

emda organised its activities so that they addressed the key drivers of productivity as defined by Government and the RES (Skills, Innovation, Infrastructure, Investment (Access to Finance), and International market developments); ensuring a comprehensive and mainstreamed approach to sustainable economic development in the manufacturing sector.

Figure 3.1 illustrates the approach that *emda* adopted to promote manufacturing competitiveness.

Figure 3.1: Five key aspects to *emda*'s approach to providing manufacturing support



Our approach is further summarised in **Figure 3.2** below:

Figure 3.2: *emda*'s Approach – Supporting the East Midlands Manufacturing Sector



The approach taken in each of these thematic areas is summarised below, together with learning points developed from *emda*'s own experiences. Some of these were developed from a cross-RDA review of support for Advanced Manufacturing commissioned by BIS to mitigate the impacts of recession in 2009. This was part of the former Government's New Industry, New Jobs strategic initiative.

Learning Point

The manufacturing sector has a very broad definition. It encompasses many specific sub-sectors which can be defined on a market or technology basis. *emda* has found that by following a mainstreamed approach, based on the primary drivers of productivity, it has ensured that businesses in this sector have benefited from most of the support it has provided. Supplementing this with some manufacturing-specific investments has ensured that the importance of the sector has continued to be highlighted.



Providing Strategic Leadership

Central to its remit, *emda* developed its Regional Economic Strategy (RES). In each of the three RESs that *emda* published, the manufacturing sector has figured strongly in the region's priorities for intervention, due to its economic impact.

The latest version of the RES, *A Flourishing Region*, highlighted the importance of manufacturing to the region's economy.

The RES provided the background economic context. It highlighted that the region:

<ul style="list-style-type: none"> ▪ "...has existing strengths, particularly in manufacturing, which accounts for almost 23% of regional GDP and over 95% of the region's exports and directly employs more than 300,000 people".
<ul style="list-style-type: none"> ▪ has levels of investment by manufacturing businesses that "are above average, although this is to be expected given the relatively large scale of the manufacturing base in the region"
<ul style="list-style-type: none"> ▪ has an "existing business base throughout the East Midlands" that "has below average productivity. Some sectors also have alarmingly low levels of investment".
<ul style="list-style-type: none"> ▪ faces an "increasing international competition and exporting is becoming increasingly difficult for standard services and products". There are "particular issues in the East Midlands in relation to globalisation, as a result of our traditional strengths in manufacturing".

The RES specifically focused on the region developing the "service sector" and "high value added manufacturing activities". The creation and growth of smaller and innovative businesses was seen as "essential if the region is to remain competitive".

The need to support the manufacturing sector is brought out in the Productivity section of the RES which re-iterated the need for a strong business base that is "productive" and that has "an efficient workforce and high levels of innovation in both manufacturing and services, able to compete on a global basis. The region must achieve high levels of investment, enterprise and skills"

The RES acknowledged that "as the pace of technological change speeds up and new industrial economies develop, the manufacturing sector within the region must recognise that the route to long term success lies in increasing investment and capital intensity, adopting world-class practices and recognising that innovation, through the continuous introduction of new and differentiated products and services". It warned that "regional manufacturing risks becoming 'locked in' to a path of relative (or even absolute) decline and will have a negative impact on regional growth aspirations".

The RES contained one specific Priority Action related to manufacturing. This references the importance of the regionally-funded and nationally-managed Manufacturing Advisory Service (MAS) in helping businesses to compete on a global basis.

2c PRIORITY ACTIONS

SUPPORTING INNOVATION & DIVERSIFICATION IN MANUFACTURING

Through the national Manufacturing Advisory Service, target support to firms that are ready and willing to innovate and assist their investment in diversifying their products, processes or markets and link these firms to wider Business Link support for growth and skill development.

The manufacturing sector was also referenced in the section on Innovation. It suggested that “technology is enabling more efficient and flexible production in both manufacturing and services”. It stated that “the East Midlands can only remain competitive by bringing to market or making use of the latest available technologies.” It also recognised that “the region has a history of linking research with manufacturing innovation. However, much more can be done to connect this impressive world-leading science base to the regional economy.”

Not unsurprisingly, manufacturing was also referenced in the section of the RES that covered the important regional business sectors. It stated that “the East Midlands, along with others in the UK, continues to experience this restructuring, which has been driven by both domestic policy (e.g. privatisation) and external factors (e.g. the development of manufacturing activities in low cost developing economies).”

The RES also recognised that “it remains essential that an appropriate supply of land is available in locations to help meet economic and other growth objectives. Despite the restructuring and overall decline, manufacturing remains an important sector to the East Midlands region. Between 2000 and 2004, the number of factory units was fairly constant but the amount of floor space occupied declined. There has been an increase in the amount of floor space occupied by offices and retail units.”

Lastly, the RES accepted that the threats and opportunities relating to certain areas of the East Midlands more than others. It specifically highlighted the “the north of Nottinghamshire and north-eastern Derbyshire. This sub-area has been heavily affected by the decline of traditional manufacturing industries and coalmining, and covers a large proportion of the East Midlands' former coalfield areas. “



Developing Regional Policy

The RES has driven *emda*'s approach to supporting manufacturing sector at regional level. It has spawned a number of regional strategy documents. In the early days of the Agency, a number of strategic documents centring on Manufacturing were developed. Key amongst these was the strategy document "Manufacturing in the Regions – East Midlands" published in March 2003. This document aimed to demonstrate the link between the Government's Manufacturing Strategy and the planning, activities and support being provided at regional level.

The document introduced seven pillars for manufacturing success, based on the national strategy:

- Macro-economic stability
- Investment
- Science and Innovation
- Best Practice
- Raising Skill Levels
- Modern Infrastructure
- Right Market Framework.

This structure demonstrated the cross-cutting nature of the proposed support to this sector.

Latterly, a range of sub-strategies to improve the region's productivity and competitiveness were also developed from the RES. These included providing strategic direction for:

- Business Support – including improving Access to Finance
- Enterprise promotion
- Innovation activity
- International Investment
- Regeneration
- Skills – including STEM.

All of these strategic areas had a direct link to the manufacturing sector. As a consequence, and in part to avoid confusion, *emda* chose not to develop a specific regional strategy directly for manufacturing. Instead, all generic strategies were prioritised to reflect the importance of the regional manufacturing sector and all investment made under their direction was required to support manufacturing businesses. Much of the learning from this work has been included in the Legacy Handbooks for these policy areas.

Underpinning its work and based on the above generic strategies, *emda* has undertaken certain further specific leadership activities that directly relate to the manufacturing sector.

Shaping National Policy

emda has led the RDAs contribution to national manufacturing policy and strategy since it took over the mantle of 'lead RDA for Manufacturing' from SEEDA in 2006. In this role, *emda* was expected to:

- Help shape national policy
- Identify and share best practice from the RDA network
- Align the activity and thinking of the RDAs with each other and with Government (or be able understand and justify the variations)
- Invest as required in studies and events
- Communicate issues and achievements.

emda appointed a dedicated policy-manager, who could act as a focal point for the RDA contribution to the development of manufacturing policy. The national policy lead:

- Worked closely with the Agency's strategy and research teams to gather intelligence, shape and communicate manufacturing policy, and influence, guide and instigate projects as required
- Linked together all of the Manufacturing leads in the RDA family
- Acted as the main communication route with Government, initially through the DTI and latterly BIS.

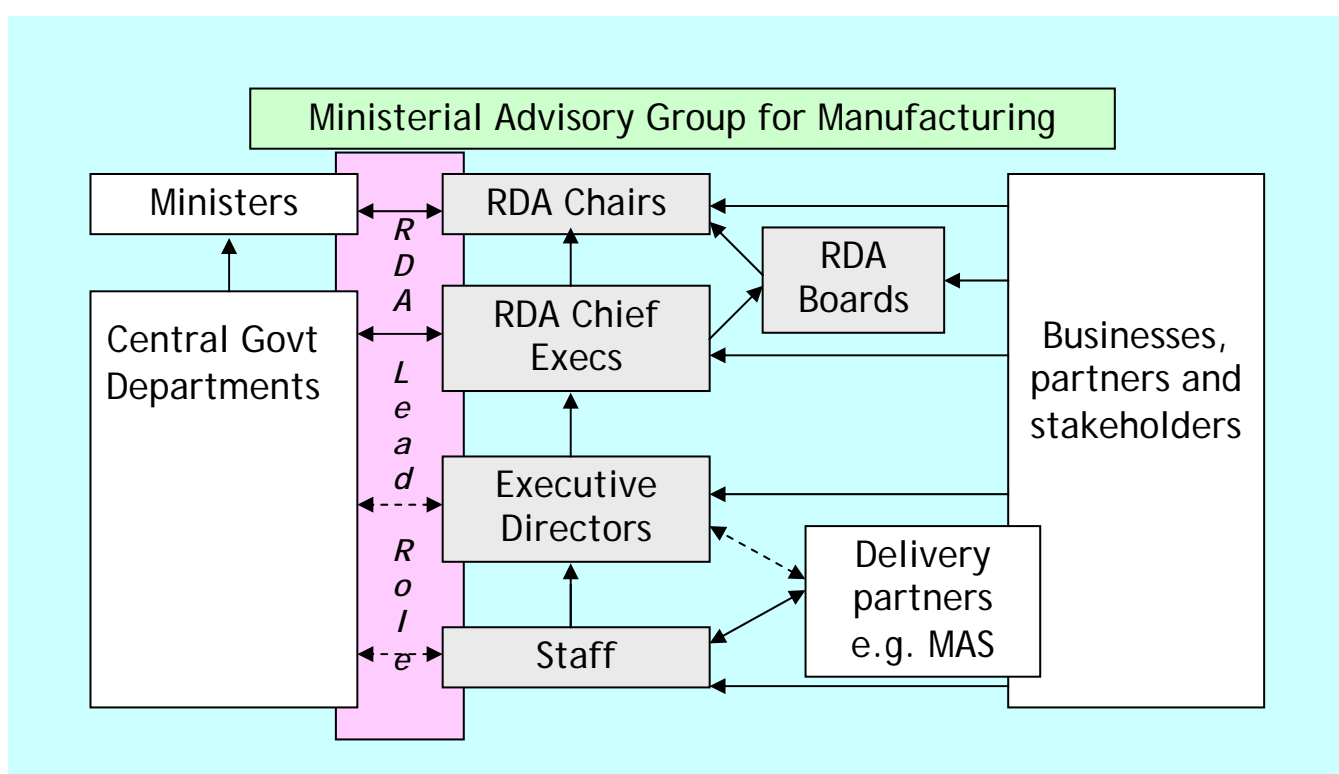
emda represented the RDAs on key national policy forums, in order to optimise and simplify communications between Government or other national partners and the RDA network. These included the:

- Ministerial Advisory Group for Manufacturing (MAG)
- Manufacturing Strategy Project Board/Implementation Group
- Manufacturing Advisory Service (MAS) Policy Group
- Automotive Council Supply Chain Sub-Group
- Materials Knowledge Transfer Network
- UK Manufacture Steering Group

In order to ensure consistency, *emda* maintained particularly strong and close relations with RDA leads for the market and technology led sectors of automotive, aerospace and civil nuclear as well as the generic policy leads in innovation, skills and sustainable development.

Figure 3.3 below shows the structures of the lead role management and the way that the manufacturing policy agenda penetrated other policy and functional areas.

Figure 3.3: Overview of key structures and relations in *emda*'s RDA lead role for manufacturing



Learning Point

RDAs, and *emda* specifically, played a key role in ensuring that national manufacturing policy reflected regional and local needs. With the forthcoming closure of RDAs, BIS will need to review how this vital intelligence gathering and influence is maintained. This will need to reflect the learning from *emda*'s activity in order that it is undertaken cost effectively and in a manner that minimises confusion in communications and maximises the impact of the outcomes. This requirement is not without cost if it is to be achieved effectively.

Box 3.4 : MAS National Programme Management and Leadership

emda became a full partner with BIS in managing the programme policy and delivery of MAS, following the national review of its design and delivery in 2006. *emda* worked 'hand in glove' with Government officials to determine the appropriate direction for the programme and to improve its performance, by managing directly the national network funded by individual RDAs. This work included:

- **National marketing**
- **Championing common training approaches**
- **Performance reporting**
- **Facilitating a national infrastructure**

emda used separate BIS funding to appoint two dedicated members of staff to undertake this work. They linked to the wider resources of *emda* and to the other RDAs to achieve their goals; for example designing continuous development programmes for MAS business advisors in fields such as Low Carbon.

The team improved the communications between BIS, the RDAs and the MAS delivery partners; improving their ability to work in partnership across the UK (as *emda*'s role also included partnership with sister programmes to MAS in Scotland and Wales). A good example of this was the mobilisation of support and delivery for £8m new MAS funding for Low Carbon and Advanced Manufacturing, as recession-beating measures in 2009.

BIS were able to achieve a 20% reduction in management costs in making this change, whilst at the same time boosting programme performance; for example proving more than a 33% improvement in returns on marketing investment.

The programme went on to receive recognition for excellence in areas such as performance management and branding. More information can be found in the RDA MAS Achievements Brochure.

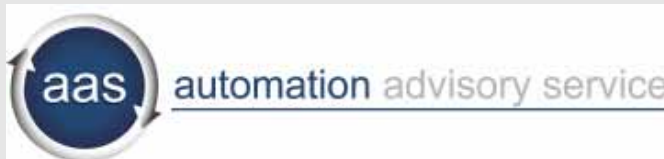


Evidencing the need to act

emda has generated a number of studies to support both national and regional policy development. It has been recognised for its strategic insight. An example of this work is shown in **Box 3.5** below, based on the promotion of automation within the manufacturing sector.

Box 3.5: Establishing the rationale for promoting automation

In 2008, BIS approached *emda* to coordinate a study across the RDA network to understand better why manufacturers were not exploiting this key technology. UK benchmarks lagged behind the key industrial competitors.



emda facilitated a review across all regions, together with BIS and industry representatives, to explore whether new activity was needed and could be justified. The result was an agreement that industry should complete an independent objective study to establish the rationale for intervention, whilst work would continue in the meantime to ensure that the Manufacturing Advisory Service had the best possible understanding of robotics and automation, including via technical training provided by the British Automation & Robot Association (BARA).



emda, together with BIS and the Northwest Development Agency, sponsored the study at a cost of £5,000 to *emda*. The study was completed in 2010 and was overseen by a steering group including BIS, *emda*, and industry representatives (users and providers of robotics). It concluded that there was a rationale for specific policy measures to promote the uptake of robotics and automation since, uniquely to the UK, manufacturers tended to invest less because they could not understand the benefits and, even if they could, they were less able and willing to invest.

As a direct result of this study, Government allocated £600,000 to launch a national Automation Advisory Service, which was launched by the Government with a national remit in November 2010.

Despite this work, there have been difficulties in collating the intelligence relevant to manufacturing. This was particularly highlighted during the development of the agency's New Industry, New Jobs proposals to the BIS Secretary of State in 2009. *emda* suggested that more needed to be done to 'tag' and monitor the full range of manufacturing support activity so that a fuller understanding of the needs and impacts could be achieved.

Learning Point

To strengthen the oversight of sub-national manufacturing support needs and impacts, *emda* suggests that future organisations focus on the wider strategic interests of manufacturing support. Strong structures and protocols need to be put in place to ensure that knowledge in the field is routinely examined with a view across all/other policy and programme areas. These could potentially be developed through the establishment of a Manufacturing Forum that could oversee intelligence and investment activity in the area, as has been done in other key policy fields (e.g. innovation, skills).

Partnering with Regional Industry

emda was established with a business-led board in order both to ensure the relevance of its activities and to import as far as possible the culture of efficiency, cost effectiveness and risk-taking. The agency has supplemented knowledge and experience of its Board members by building close relations with other business leaders and representative bodies. It has found this essential for informing policy, implementing strategy, and identifying performance issues.

emda has used three key types of mechanism to work with business on policy and strategy development:

- | |
|---|
| <ul style="list-style-type: none"> • Setting up committees and steering groups for key activity areas – for example East Midlands Innovation – the region’s Science and Industry Council; |
| <ul style="list-style-type: none"> • Working closely with regional industry representative organisations, such as Engineering Employers Federation (EEF) and the Confederation of British Industry (CBI), through vehicles such as the East Midlands Business Forum (EMBF) |
| <ul style="list-style-type: none"> • Relationship management of key strategic investors, including both big businesses and smaller inward-investors (to whom aftercare was a key part of the package that helped bring them to the region). |

Many of the individuals and businesses involved in this work have come from the manufacturing sector and *emda* has worked with them to ensure that the ‘voice’ of the sector is heard within the region. In many cases, it has helped support the secretariat to these representative groups.

Learning Point

If future organisations wish to set up consultative groups of this type, care must be taken to ensure that a wide enough spread of representation can be achieved without making the group too unwieldy. The members of the groups should also be chosen based on their ability to contribute rather than just their area of representation. Such groups have prospered when:

- They have had a clear remit
- They have responsibilities and objectives to achieve
- When there is support for running the secretariat

Separately, *emda* provided specific resources to ensure day-to-day contact with the region's larger and foreign-owned businesses. Not only did this allow *emda* to support these businesses to make new investment directly, but it also enabled them to act as a critical friend by providing comments on national and regional strategic direction. In doing so, *emda* was able to speak with greater authority on their behalf.

emda chose not to set up a separate team to undertake this work, choosing to adapt its existing Investor Development team operating alongside the Agency's International Inward Investment team. By adapting their role to allow support to the larger non-foreign owned investors in the region, they were able to work efficiently and with less confusion on symbiotic activities. They also were able to provide direct support to business-facing economic shocks as part of this process. This was most notable for manufacturing businesses following the recession of 2008. The Investor Development team has been a consistent generator of inward investment successes and jobs.

Learning Points

- BIS and UKTI will need to revise its communication routes with foreign-owned and large indigenous business following *emda*'s closure to avoid fragmentation and inefficient delivery.
- The orchestration of national account management for the largest UK businesses will be key to this. *emda* recognised that for some of the larger, multi-regional (indeed multi-national) businesses, it was able to facilitate activity for Government but that ultimately these companies wanted to deal with BIS directly on strategic matters.
- For smaller businesses, the activities of BIS Local, the new UKTI regional service delivered by PA Consulting and the future role of Local Enterprise Partnerships will all require alignment, particularly in responses to future economic shocks.

Influencing Other Institutions

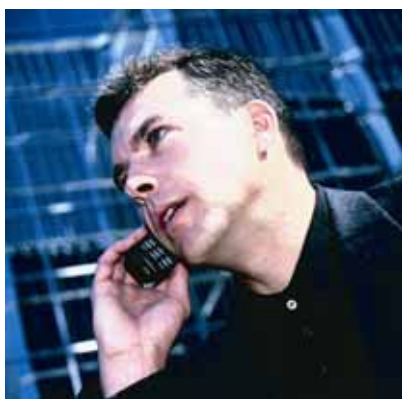
emda also played a role in supporting the manufacturing sector in a manner that provided 'complementarity' and/or 'additionality' to that of other private and public sector activity. This was most noticeable when working with national public sector bodies with determined roles within the region. These included:

<ul style="list-style-type: none"> • The Technology Strategy Board – which determines what the funding priorities for investment in new technology development should be
<ul style="list-style-type: none"> • The Skills Funding Agency – which has taken over the responsibility of determining how funding for education and training should be allocated and used
<ul style="list-style-type: none"> • The Science Councils (EPSRC etc) – which promote and support research excellence
<ul style="list-style-type: none"> • Job Centre Plus, which facilitates the smooth functioning of the labour market
<ul style="list-style-type: none"> • The Office of Government Commerce, which has a key role in shaping procurement practices across Government

emda also developed relationships with other non-governmental institutions and business membership bodies, for example the Chartered Institute of Purchasing and Supply.

Learning Point

BIS and LEPs will need to continue to work closely with the remaining Government bodies that act in and across the regions. These will have to have a greater influence and impact on the economic development of the manufacturing sector following *emda*'s abolition. It will therefore be important that bodies work closely together and share information openly in order to inform and align their strategies and that the best possible outcomes can be secured from their, often public sector, investments.



Facilitating clusters and sectors

emda has done much to encourage cooperation in industry, with a view to improving the efficiency and critical mass of activity. In some cases, this has meant rationalising funding to a number of networks and bodies, and in other cases it has meant supporting new ones to play a significant role.

Initially, *emda* invested funding in groups that facilitated networking between businesses that made up the regional presence in a specific manufacturing-based market sector e.g. the Engineering Forum and the Food and Drink Forum. Some of these organisations were developed from scratch, occasionally with other regions – for example the Midlands Aerospace Alliance and Motorsport Development UK.

emda independently evaluated its support for cluster development in 2005. The resulting report challenged the Agency regarding the value for money and sustainability that it was achieving through its investment in these cluster groups. As a result, the emphasis shifted towards supporting businesses in certain sectors more directly and withdrawing core funding for specific organisations. They were required to win business from the private or public sector if they were to sustain themselves.

A number of organisations such as Medilink East Midlands, the Food and Drink Forum and the Midlands Aerospace Alliance have successfully drawn down funding to support their specific sectors. Central to this has been the support provided by *emda*'s Innovation Networks (iNets). These were created to catalyse innovation through partnership across sectors, with the potential that they could do more to help new combinations of businesses and universities to create new markets.

Learning Point

- *emda* has demonstrated that regional clusters of manufacturing-based activity can be developed. This has been most noticeable in the Healthcare sector but similar strong networks have been developed in each of the priority sectors. Many of these have linked to national networks, for example the TSB's Knowledge Transfer Networks (KTNs) and have often provided an engagement service for them. The strength of these networks will continue for some time to come but will be threatened if further public sector investment remains restricted for some time.
- *emda* has shown that developing self-sustaining business support and networking groups, based on cluster/sector alignment, is difficult. The scale of the sectors leads to insufficient private sector income to deliver viability, unless a pure consultancy model is followed, and not necessarily on a regional scale. Larger companies have preferred to align with national sector groups, which have been seen as more recognised by Government and hence, potentially, more influential.
- Some regional cluster/sector based groups have prospered by drawing down public sector contracts both regionally, and through alignment with similar groupings nationally. These have better recognition centrally but are currently at risk through loss of contract opportunities.

In 2008/09, *emda* also reviewed the future sector/cluster focused activity at a national level. This included manufacturing activity under the Advanced Manufacturing heading, as part of the then Government's New Industry New Jobs initiative. *emda* found agreement that most sector-development needed national leadership, reinforced by better signposting from a local level to those companies it most suited.

For example, in supporting BIS in the design of the National Composites Strategy ('Plastic Fantastic' – BIS, 2009), RDAs backed a concept to encourage networking of the six national centres of excellence that, with leadership from a nominated 'national centre', and support from the Materials KTN could:

▪ Understand what standards of excellence should be targeted
▪ Promote R&D and training to ensure future competitiveness in these markets
▪ Understand who the key players were in the market and support them
▪ Provide expert advice in partnership with wider business support programmes, such as MAS.

With close cooperation across Government, including UKTI-funded mapping of the sector's capabilities (also for use in promoting inward investment and export) this model put down a marker for more efficient future sector-focused activity.

Learning Point

There is more scope to develop national based sector networks, particularly around the emerging Advanced Manufacturing sectors. These can be linked with and possibly developed from the current KTNs. Local business engagement and wider alignment with developing technology exploitation initiatives (such as the Technology and Innovation Centres (TICs)) to encourage the participation of larger business is required for this to be achieved.



Innovation and Business Best-Practice

Improving business competitiveness has been recognised by successive Governments as a key driver of economic competitiveness, and has been a strategic priority in each of the Regional Economic Strategies (RES) published since 1999. As already described, the manufacturing sector is a significant part of the East Midlands business base and hence has been the target for much of *emda*'s business support activity aimed at improving competitiveness.

Supporting Business Best Practice

The region's priorities and plans for supporting businesses have, since 2005, been promulgated through two Business Support Strategies, the first covering 2005-2008 entitled 'Supporting Business: A Strategy for Business Support in the East Midlands', and the second covering 2008-2011, entitled, 'Encouraging Business Success'.

The importance of Business Support has been reflected in the level of investment that *emda* has put into programmes and projects in this area over the years. In order to give a sense of scale of the *emda*'s Business Support agenda, from April 2006 to March 2011, *emda* invested £165.5m in the delivery of regional Business Support, creating/safeguarding 39,385 jobs, creating 11,011 new businesses, assisting a further 112,173 businesses and supporting 25,268 individuals with their skills development.

Business Support is defined as:

“Any publicly-funded activity that benefits a business or a person considering creating a business such as through grant, loan, subsidy, advice or service” with:

- A specific purpose of assisting a business or a person considering creating a business
- An environmental, cultural or social primary purpose and which has the incidental but material effect of improving national, regional or local economic growth.

Since 2005, RDAs have been the primary funders of this type of support for Government.



emda takes its latest objectives for business support from the Business Support Strategy 2008-2011, 'Encouraging Business Success'. These objectives include:

- Making the East Midlands the place with the best approach and infrastructure to do business.
- Creating more sustainable and growing businesses.
- Raising awareness of new business opportunities and encouraging take-up of public, private and third sector business support.
- Encouraging businesses to plan for success and adapt to a rapidly changing global economy through the development of a skilled workforce, new products, processes and markets.

Simplified Portfolio of Business Support

emda has worked closely with central Government since 2005 to deliver a portfolio of business support products that are easy for businesses to understand and access and have a significant impact on their performance when they do.

The final list of products developed as the national Solutions for Business portfolio, prior to the election of the current Government, contained the following products:

National Solutions for Business products	Regional Programme	Relevant Legacy Handbook
Starting a Business	Business Link Start-up Service	Business Support
Intensive Start-Up Service	Business Link Start-up Service Start-Up with the Princes Trust	Business Support
Starting a High Growth Business	Incorporated in the start-up products above	Business Support
Enterprise Coaching	Funded programmes by local partners e.g.the Local Enterprise Growth Initiative (LEGI)	Enterprise
Innovation, Advice and Guidance	Innovation Networks (iNets)	Innovation
Manufacturing Advisory Service	Manufacturing Advisory Service	Business Support
Coaching for High Growth	High Growth Coaching	Business Support
Designing Demand	Designing Demand was due to start in April 2010	Business Support

Maximising Foreign Direct Investment	Inward Investment Investor Development	International
Developing Your International Trade Potential	Passport to Export Regional Languages Network Export Communications Review Market Research Service R&D Programme	N/A National UKTI product topped up with <i>emda</i> funding
Accessing International Markets	Overseas Market Introduction Service Market Visit Support Tradeshaw Access Programme China & India Business Bureaux Meet the Buyer Events	N/A National UKTI product topped up with <i>emda</i> funding
Networking for Innovation	iNets	Innovation
Business Collaboration Networks	Business Links / iNets	Business Support Innovation
Collaborative R&D	National programme, no regional offer	Not covered
Knowledge Transfer Partnerships	Knowledge Transfer Partnerships	Innovation
Innovation Vouchers	iNets	Innovation
Grants for Business Investment	Grants for Business Investment	Business Support
Enterprise Finance Guarantee	National Programme, linked through BL	N/A
Small Loans for Business	Enterprise Loans East Midlands	Business Support
Grants for R&D	Grants for R&D	Innovation
Low Carbon Energy Demonstration	National programme, but connected through Innovation Networks	N/A
Understanding Finance for Business	Connect Invored Growth Investment Network	Business Support
Finance for Business	Venture Capital Funds	Business Support
Export Credit Guarantee Scheme	National programme, linked through BL	N/A
Skills Solutions for Business	National programme, linked through BL	N/A
Business Premises	Managed Workspaces	Enterprise
Specialist Facilities and Environments	High quality employment floorspace e.g. BioCity	Innovation Enterprise

Improving our Resource Efficiency	Business Link Resource Efficiency enhancement and the Improving Your Resource Efficiency product	Low Carbon
RDPE Business Support Programme	RDPE Priority Axes 1 and 3	N/A Continuing programme
Transformational ICT Pilot	e-business programme	Business Support
Business Mentoring Pilot	Mentoring for All	Business Support
Selling to the Public Sector Pilot	Raising SME awareness of public sector procurement	Business Support

Almost all of these products were accessible to manufacturing businesses. The details of their activities are contained in each of the generic legacy handbooks illustrated in the table. Some of the products either directly targeted the manufacturing sector - most noticeably the Manufacturing Advisory Service (MAS) - or had a strong relevance to it. These are described in this handbook. Some of the descriptors are contained in this innovation and best business practice section whilst others are in the specific sections on infrastructure, international and skills.



Manufacturing Advisory Service

The national MAS service was launched by RDAs in 2002 and was delivered through a network of Regional Centres for Manufacturing Excellence (RCMEs), latterly known as MAS Regional Centres, with a national-level MAS website acting as an additional mechanism for making the service accessible for all types of manufacturing businesses.

Since 2005, MAS East Midlands has generated £156m worth of GVA, with the 2009-2012 programme providing an estimated return of investment of £19 for each £1 of public sector investment (for level 4 interventions). Since 2002, MAS East Midlands has already assisted 4,829 businesses, developed the skills of 785 individuals and created or safeguarded 1,045 jobs.

The service worked on a number of levels and was targeted primarily at UK manufacturing firms employing 250 or fewer people. The five levels of support were:

- **Level 1** – The initial contact with the potential client, handling enquiries and providing information.
- **Level 2** – A maximum of four days face-to-face support, reviewing the company's manufacturing operations and identifying what further support may be required.
- **Level 3** – A range of awareness-raising events, networking opportunities and best practice visits.
- **Level 4** – A maximum of twenty days intensive consultancy support, achieving quantifiable improvements in a company's operations, a proportion of which was paid for by the client.
- **Level 5** – Signposting and referring of clients to locate the most suitable form of non-MAS support.

The service aimed to:

	▪ Improve awareness and adoption of innovative techniques and technological solutions for all aspects of manufacturing operations
	▪ Work alongside other programmes, to improve the capabilities of manufacturing management in target firms
	▪ Increase the 'value added' aspect of client firms.

emda has run three MAS programmes. All based on the basic principles outlined above. The first ran between 2002 and 2005 and engaged with over 970 businesses. Evaluation showed that:

- **90% of firms** considered MAS-EM good value for money.
- **Turnover generated as a direct result of MAS-EM** involvement was **£103m**.
- **Costs savings of £1.5 million** were made as a result of businesses interacting with the MAS-EM regional centre.
- **Profit Increases of £1.7 million** was attributable to MAS-EM.
- **Turnover had increased by £35k per £1k** spent by *emda*.

emda's second MAS-EM programme operated between 2005 and 2009. Its performance is summarised in the table below:

Output / Activity	Target	Actual
Number of businesses assisted to improve their performance	1,994	2,028
Number of people assisted in their skills development	1,500	1,653
Number of jobs created or safeguarded	810	1,099
Number of businesses engaged in collaborations with the UK knowledge base	459	980

Its evaluation showed that:

- In terms of the monetary return on investment, the programme was highly successful, with every pound being spent leading to £12.50 of new business for SMEs, £2.20 in cost savings and £2.20 in profit increases.
- The MAS-EM programme outperformed many other business support programmes when it came to generating GVA - **for every pound spent the programme provided £9.40 of GVA compared to the national average of £7.**

The current MAS programme (2009-2012) is in its final year of delivery and is reporting excellent results. An interim evaluation undertaken for *emda* in March 2011 has highlighted the following impacts and outcomes:

- The programme has generated a **GVA increase of £83 million by the end of 2010/11.**
- The return on investment for each **£1 invested by *emda* is reported as £19 in GVA.** If the anticipated impacts from existing improvements do materialise the return on investment could rise to £79 in GVA per £1 of *emda*'s investment.
- Evidence suggests that the MAS-EM service adds significant value to other business support provision within the region. In addition, the evidence also suggests that MAS-EM has addressed a key market failure, given that it engages companies that have historically demonstrated a low propensity for engaging with, and paying for, publicly funded business support.

MAS Case Study - MJ Milward Printing

Originally established in 1982, MJ Milward Printing Ltd was in November 2008 purchased by its joint owners, who were keen to develop the company by introducing some innovative ideas, such as digital printing.

The MAS-EM Advisor performed a manufacturing review on the company and then referred it to a lean manufacturing expert, utilising the 50% subsidised support. The expert was with the company for two weeks. Based on a detailed analysis, he calculated the maximum time allowed to produce a unit in order to meet demand and was able to help the company release some capacity for future projects.

MJ Milward has seen a 40% increase in production capacity since receiving support from MAS-EM. Enhancements included better production integration between departments, a more efficient shop-floor layout plus the introduction of visual methods of keeping staff informed of orders coming in and of the progress of jobs.



KEY LEARNINGS

- The partnership between MAS-EM and the different support programmes in the region should be further augmented and developed during future delivery. This relationship has resulted in Business Link referring approximately 25% of all clients to MAS-EM during the latest programme.
- The review of the company's manufacturing operations and the intensive consultancy support were highlighted as inherent strengths of the programme, with stakeholders particularly complementary of the relationships developed between MAS practitioners and beneficiary companies.
- The adoption of the brokerage model of delivery has expanded the pool of consultants and hence the expertise available to deliver level-4 assists. The adoption of a stringent set of criteria for admitting consultants to the level-4 provider panel has helped to ensure that the quality of advisors has remained high.
- MAS can support individual businesses but can also cover additional areas including Sourcing and Supply Chain Activity.
- MAS has proved that a subsidised charging policy works for the client base as long as they perceive that the expertise provided relates to their business needs. MAS has also shown that repeat interventions can provide greater outcomes.
- There are still manufacturers across the East Midlands who are not aware of the MAS service. Work is required to raise the awareness of the programme. MAS East Midlands Ambassadors should be used in to market the programme throughout the East Midlands. This could include the Ambassadors undertaking visits to manufacturing companies within the region, and publicising the impacts that MAS East Midlands support had generated for their business.

Following the decision to close the Regional Development Agencies, the delivery responsibility for the national MAS programme will be transferred from to BIS, utilising a new contracting body. This is expected in January 2012. *emda* has confirmed that, alongside the other RDAs outside London, it will continue to deliver a MAS service until the end of December 2011 in order to effect a smooth transition.



Mainstreamed Business Support through Business Link

Central to our support to generic business has been our funding and development of the **regional Business link service**. Manufacturing businesses, particularly at the smaller end of the SME scale, have accessed this service regularly. More recently, the Business Link service has been formally linked to MAS and other support services, including those for Innovation. This has led to improved referral rates.

Business Link was set up to provide clients with an independent **Information, Diagnostic and Brokerage (IDB)** service. Some clients received the diagnostic and information services remotely whilst others were able to receive face-to-face support from advisers before being brokered to further sources of relevant public and private sector support.

The re-modelled service, developed by *emda* in 2005, significantly increased the resources available to support businesses and entrepreneurs, with a 40% increase in resources going to customer facing activity from 'back office' functions. This increase in customer-facing staff resulted in very significant increases in customers using the service and on its impact on the region's economy. Between April 2007 and March 2010 the regional Business Link service:

- **Increased the number of businesses using the service by 80%** (44,589 in the 12 months to March 2007, 80,254 in the 12 months to March 2010).
- **Increased the number of businesses assisted by the service by 62%** (13,514 in the 12 months to March 2007, 21,843 in the 12 months to March 2010).
- **Increased the proportion of women-owned businesses** accessing the service, from 1.9% to 6.8% of customers.
- **Increased the proportion of BME owned businesses** accessing the service, from 9.2% to 17.2% of customers.
- **The total GVA that can be attributed** to the regional Business Link service between 2007 and 2010 is **estimated at £2.4 billion**.
- **Every £1 of *emda* expenditure the regional Business Link service** targeted at businesses may have **generated £88 in net additional GVA** between 2007 and 2010.



Business Line Case Study - Ross Handling



Ross Handling, based in Leicester, supplies 2,600 product lines of castors, industrial wheels and adjustable feet to everyone from hospitals and caterers to steel fabricators and energy companies. The business was looking to increase foreign trade and improve efficiency.

Business Link helped to identify funding that enabled the company to kick-start a three-stage development plan. The first stage was to convert a web presence into an e-commerce site and then get it translated and hosted internationally. The business also needed to spend £20,000 on state-of-the-art software to modernise its operation and accommodate the potential increase in orders expected, as well as upgrading its computers and server. Funding was identified, which resulted in a grant of £7,500 towards client's total outlay. Additionally, the company was referred to UK Trade and Investment (UKTI) for help with international trading and to the Manufacturing Advisory Service (MAS) for pointers on how they could streamline their shop floor layout.

The new system went live in April 2009 and the investment quickly gave visible paybacks. At the month end, for example, the company now saves at least two days on the time previously taken to generate statements and invoices, as this is now fully automated and many customers now receive these electronically. The new system has also improved staff professionalism on the telephone as they now have all stock information available at the press of a button.

For the period from 2007 to 2010, Business Link was able to provide the **Business Transformation Grant (BTG)**. The grant had a ceiling of £10k and a flexible capital/revenue mix, with the participant SME matching the grant on a 50/50 basis. The grants helped support the delivery of projects that were identified as a result of in-depth reviews with Business Link advisers. The grants were intended to help companies overcome hurdles to making substantial changes to their business, either to help the business to grow or to help it maintain its existing market position. Many small manufacturing businesses took advantage of these.

The net additional impact of the BTG on the region per year on GVA was about £113 million. The net additional impact on employment in the East Midlands was 940 jobs created and 660 jobs safeguarded.

Business Transformation Grant Case Study - Spire Brewery



Chesterfield-based Spire Brewery, established in the Spring of 2006, needed to get its bottling operation off the ground as there were big margins to be made in bottled beer sales. They needed a labelling machine and larger premises to take their business to the next stage of its development.

Having pinpointed a potentially lucrative market, Business Link helped the company to identify a Business Transformation Grant for the cost of a labelling machine. The grant helped Spire to install a bottling machine and also to send its brewing staff on a workshop to learn about the bottling process and the trade secrets behind conditioning bottled beer to give it the same taste as beer from the pump.

The BTG was not deemed compliant with the products to be included in the Solutions for Business portfolio and so the introduction of the portfolio of projects in 2009 meant that BTG had to be withdrawn at the end of the project's funding in March 2010.

emda also funded and developed a regional Business link branded Start Up service in the region. Some fledgling manufacturing businesses gained support from this service.

Individuals wanting to start a business were able to access:

▪	A dedicated telephone enquiry centre
▪	Self-help guides and skills development
▪	One-to-many workshop programmes
▪	One-to-one support from a Business Link Adviser
▪	Support from specialist start-up coaches

Between April 2007 and March 2010 the Business Link Start-up service:

- **Increased the number of individuals using the service by 16%** (18,733 in the 12 months to March 2007, 21,670 in the 12 months to March 2010).
- **Increased the number of businesses created by the service that survived for at least 12 months by 42%** (1,630 in the 12 months to March 2007, 2,310 in the 12 months to March 2010).
- **Increased the number of jobs created by the service by 21%** (4,165 in the 12 months to March 2007, 5,046 in the 12 months to March 2010).
- **The present value of the GVA impact associated with businesses started to March 2010 is estimated at £122 million.**
- **The economic impact assessment suggests a return on investment of around £18.79 per £1 of *emda* investment.**

KEY LEARNINGS

- The holistic diagnostic of manufacturing business needs was a key factor in ensuring that the businesses were signposted to the most appropriate form of support, relative to their needs.
- Grants targeted at supporting individual businesses have the potential to generate significant impacts if they are marketed in an appropriate and targeted way for transformational change.
- The development of transformational activities within the businesses receiving grants has led to innovation within the businesses, including the development of new products, processes and services.

Mainstreamed High Growth Manufacturing Support

Rapidly growing manufacturing businesses create jobs and wealth. At the same time, they often face a number of difficult issues concerning areas such as risk management, management development, access to finance and workforce development. Businesses growing at over 20% per annum frequently do not have the time to access traditional public support to deal with all these issues. They need holistic, bespoke support to ensure their growth is sustainable.

In March 2005, *emda* published a report (High Growth Business Coaching: 'Helping businesses throughout the UK meet the challenges of rapid growth') and examined the rationale and shape that such services should take. This encouraged the then Chancellor of the Exchequer to recommend in the 2005 Budget to come that "...RDAs establish a national framework for integrated coaching (based on the *emda* report) focused on the needs of entrepreneurs and small businesses with high growth prospects, and work with partners to develop regionally relevant services to be rolled out (across England) from April 2006".

emda has supported high growth manufacturing businesses through three programmes of activity. The actual investment and revised forecasted investment based on early cessation of the current programme is £6.25m.

Since 2005/06, *emda*'s high growth company support programmes have already assisted 302 businesses, developed the skills of 817 individuals and created or safeguarded 1,415 jobs. £47.56m of additional GVA has and will be generated by *emda*'s investment.

emda's first pilot programme, established in 2005, was targeted at SMEs with a turnover of between £5m-£10m and who had the potential to grow in excess of 20% per annum. They were provided with the use of dedicated coaches to help them overcome any barriers that may prevent them from reaching their growth aspirations. Between April 2005 and June 2007 the summary outputs and outcomes were as follows:

Output	Forecasted	Actual
Business assisted to improve performance	50	50
People assisted with skills development	136	158
Jobs created or safeguarded	400	387
Businesses committing to intensive support	16	20

Of the 20 businesses that committed to and received intensive support, an average growth rate of 13% was achieved, with 11 of the businesses averaging a growth rate of 24%, adding more than £21m to their combined turnover.

The independent evaluation of the programme suggested that:

<ul style="list-style-type: none"> ▪ The defined target market was over-prescriptive and prevented engagement with potential high-growth clients
<ul style="list-style-type: none"> ▪ The programme design needed to be flexible and not overly prescriptive in the support services that it provided
<ul style="list-style-type: none"> ▪ An up-front diagnostic was an essential mechanism by which the relative strengths and weaknesses of a firm can be identified and, subsequently, addressed.
<ul style="list-style-type: none"> ▪ Future programmes should be aimed at both existing growing businesses, and those with the potential to achieve rapid growth.

emda launched a new **High Growth East Midlands** programme in April 2007. It was characterised by the breadth of industry sectors represented by the participating businesses, many from the manufacturing sector. These included:

- Agriculture, horticulture & fisheries
- Biotechnology
- Clothing & footwear
- Construction
- Healthcare & medical
- Mechanical engineering

The overall performance of this programme is summarised below:

Output / Activity	Target	Actual
Number of businesses assisted to improve their performance	165	169
Number of people assisted in their skills development	420	427
Number of jobs created or safeguarded	903	938
Number of people assisted in their skills development (Growth Enabler Programme)	95	97

The independent evaluation showed that the programme had generated a GVA increase of £17.56 million. It identified that 88% of participants had experienced an increase in turnover as a result of the programme, and 82% had increased full-time equivalent employment as a result, and a further 69% had made a decision to increase their investment in innovation and research and development.

The GHK evaluation highlighted several lessons and recommendations, including:

KEY LEARNINGS

- Overall, Growth Readiness participants were less satisfied with the programme compared to High Growth participants. The differences in intensity of support offered could have played a part in this.
- Almost all participants were satisfied with the performance of their coach.
- 16% of respondents stated that “the price of the support package offered by the programme was more competitive than others that I have been looking at”. The inference could be made that whilst these participants seemed to have a higher propensity to fund external support themselves, they were attracted to the programme due to minimal financial investment required.



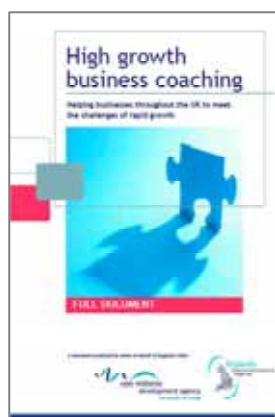
emda contracted to provide **Coaching for High Growth** (the new Solutions for Business title) support to a further 150 businesses between April 2010 and March 2013.

emda's Coaching for High Growth programme is now characterised by:

- Targeting businesses with the **potential** for high growth
- Includes a 1-2 day **strategic review** (diagnostic)
- Up to 20 days of 1-2-1 coaching, delivered by a third party coach **independent of the main contractor**

Many of the participants from the Growth Enabler element of *emda*'s previous High Growth East Midlands programme have progressed to become third party coaches on the Coaching for High Growth programme.

As the current programme is still within its first year of delivery there is not yet any formal evaluation. However, preliminary feedback indicates that:



Dynex Semi-conductors of Lincoln, winners of the 2009 High Growth Business of the Year Award.

- | | |
|--|---|
| | <ul style="list-style-type: none"> ▪ The use of third party coaches has enabled clients to access a greater breadth of expertise than if one 'in-house' organisation was utilised. |
| | <ul style="list-style-type: none"> ▪ Those participants gaining the most from the programme were identified at the diagnostic stage as having significant will and motivation to accept external support to facilitate growth. |
| | <ul style="list-style-type: none"> ▪ A targeted marketing approach, working intensively with fewer clients as opposed to a widespread campaign, leads to higher quality participants and hence better returns in respect of growth |

Coaching for High Growth Case Study - Hydrotechnik



Hydrotechnik UK, based in Nottingham, was founded in 1990 to distribute hydraulic test equipment in the UK. The company currently turns over £3m per annum and employs 21 staff. In January 2011, Hydrotechnik UK established Filtertechnik Ltd (formerly a division), as a separate trading company to manufacture filters. It will soon be launching a new, layered filter into the oils and fuels market.

The Coaching for High Growth programme conducted a detailed strategic review with Hydrotechnik, and identified three key challenges. These were a lack of a coherent business strategy to guide future growth, relatively inefficient business processes and the need to develop a sound marketing strategy for the launch of the new filtration product.

The business was then matched to a growth coach based on these challenges, their industry sector and personality profile of the senior management team. Hydrotechnik also attended several Coaching for High Growth master classes, including Vision for Growth and Market Intelligence.

Hydrotechnik are currently in the process of completing their coaching programme, having joined the programme in July 2010. The full impacts of the programme have yet to be measured.



Other Mainstreamed Manufacturing Support

There were a number of other business support products that were funded by *emda* and used by businesses. These included the:

- **Business Mentoring programme** - In 2006, *emda* developed a Regional Mentoring programme that was delivered via an external contractor up until March 2011. The project was designed to help managers develop their strategic thinking in a non-threatening environment. **The service assisted more than 1,700 businesses. An independent evaluation of the programme between 2005 and 2008 reported that for every £1 invested by *emda* a further £6.72 GVA was generated via the programme.**
- **Transformational Information and Communications Technology (T-ICT)** - Since 2003, *emda* funded and delivered ICT support programmes to regional businesses. Initially called First Steps, the original programme was a response to a regional eAdoption survey that found that “approximately 30% of small businesses in the East Midlands do not have a computer, with over half (51%) of businesses reporting that they do not appear to be interested in acquiring IT or e-business advice or support.” **First Steps and its eventual successor Transformational ICT enabled *emda* to support more than 5,300 regional SMEs in the adoption business related of ICT.**
- **Selling to the Public Sector** - Between 2007 and 2010, *emda* funded support that was focused on raising awareness and in delivering a comprehensive and informative series of events on different aspects of the public sector procurement process. The programme attracted more than 1,200 delegates. **15% of survey respondents declared an increase in their sales to the public sector within 12 months.**



Examples of the marketing material produced for the programme.

Access to Finance

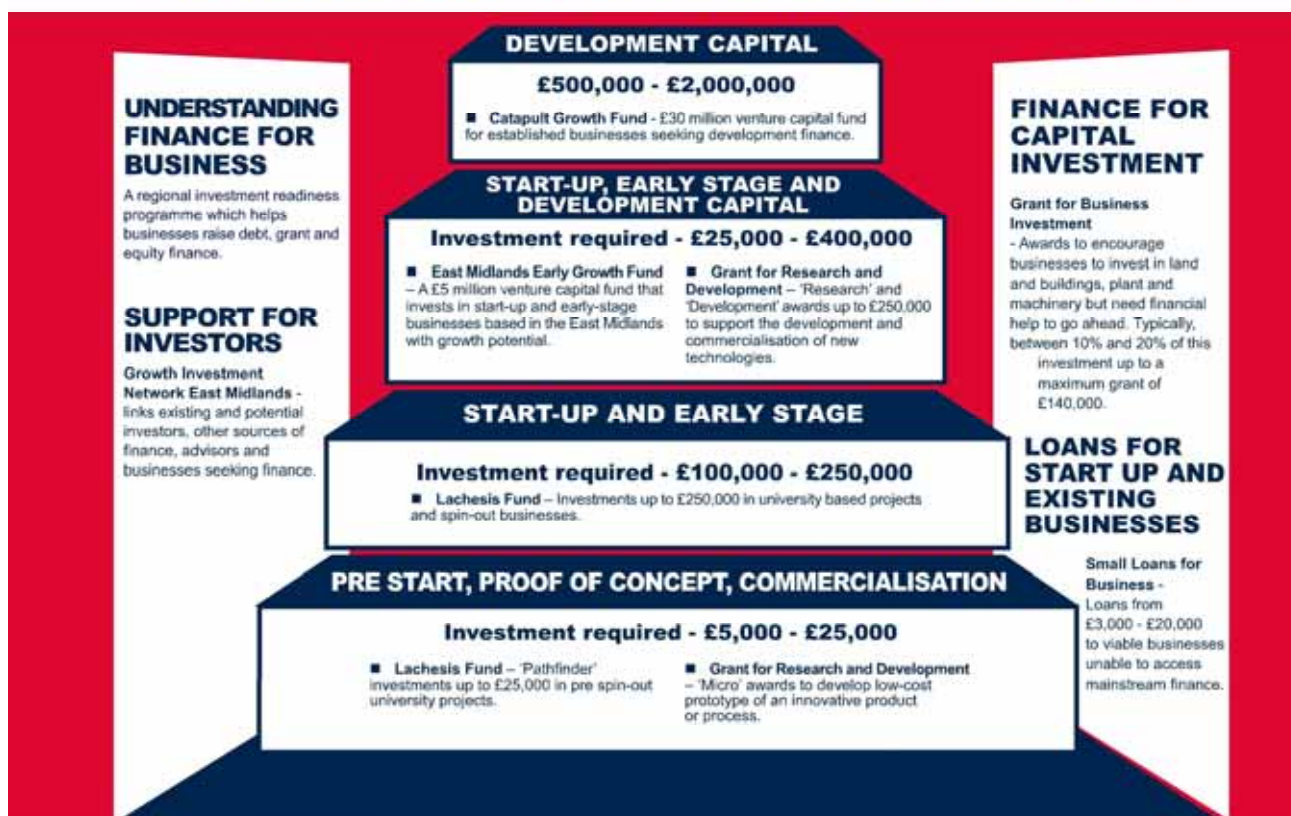
Finance is a vital ingredient in the growth of successful manufacturing businesses. Historically, most businesses have been able to access the finance they needed to start up and grow, reflecting a mature and flexible financial market in the UK. Successive Administrations have made only limited interventions in this market, but over the last 10 years Government has begun to address other specific market failures in the provision of finance in three areas:

- **Equity Finance** – The concept of an ‘equity gap’ was first identified by economists in the 1930s but has risen to greater prominence since the late 1990s. The ‘gap’ emerged as institutional venture capital firms reduced their investments of less than £2m, leading to a shortage in the supply of capital to small businesses, and a negative impact on entrepreneurship, business growth and innovation. In response, the public sector, mainly through BIS (and its predecessors) and the RDAs, have attempted to address this market failure by establishing a range of publicly-funded, commercially-delivered equity funds seeking to invest amounts below £2m in SMEs.
- **Grant Finance** – Government has also intervened in the finance market through the Grant for Business Investment (GBI) scheme. GBI was a national grant programme, specifically targeted to encourage capital investment by businesses. Separately, Government introduced the Grant for Research and Development (GRD) programme, aimed at encouraging businesses to increase their levels of investment in innovative products and processes. Reflecting the increasing role of RDAs in business support and to align with the RES, responsibility for the delivery of GBI was delegated to RDAs in 2002, with a similar delegation of GRD taking place in 2005.
- **Community Development Finance Institutions (CDFIs)** – CDFIs play an important role in fostering levels of enterprise in disadvantaged areas, and amongst groups under-represented in terms of business ownership. This has been of less interest to manufacturing businesses.

More recently, RDAs have led on Government’s response to the economic downturn experienced from 2008, with *emda* developing a Transition Loan Fund to address the problems experienced by manufacturing business in accessing finance as a result of the ‘credit crunch’.

emda’s approach to addressing the challenges highlighted in successive RESs has been to develop a Regional Escalator of Funding, integrating *emda* funded activities with those funded nationally.

SUPPORTING ACCESS TO FINANCE



The key equity finance elements of the escalator are the **Regional Venture Capital Fund (RVCF)**, the **Lachesis Fund**, the **East Midlands Early Growth Fund (EMEGF)** and the **Catapult Growth Fund**.

emda was the first RDA to launch a **Regional Venture Capital Fund (RVCF)** in January 2002. Whilst *emda* was not an investor in the fund, the Agency played a key part in securing funding of £30m from public and private sector sources. The fund's remit was to invest between £100,000 and £660,000 in SMEs with high growth potential, and to deliver a commercial return to its investors. Like many venture capital funds, the fund had a fixed life and completed its 6-year investment period in April 2008. By the end of its investment period, **the RVCF had invested £19m in 44 businesses**, with the fund managers continuing to make further investments into existing portfolio companies, whilst also focusing on realising value and achieving exits on their investments.

The interim evaluation on RVCFs (and other equity programmes), undertaken by BIS in November 2009, identified a number of key lessons and learning points related to the:

▪	Value of appointing Non-Executive Directors
▪	Adoption of staged investment strategies
▪	Need to be 'hands on', with providing investment being only part of the role
▪	Level of expertise and effort required
▪	Recognition that RVCFs had identified a real equity gap in the start-up and small business segment of the market, unlike the later Enterprise Capital Fund (ECF) programme which focused on larger, 'safer' later-stage businesses
▪	Need for Government to ensure a fair funding mechanism amongst the regions and that regional variations in equity finance need to be reflected in appropriate public finance models
▪	Public sector should take on a significant proportion of the risk when operating in the start-up and small business segment of the market but not always as the first investor, which is considered too restrictive
▪	Equity finance programmes delivered by the public sector need to be given sufficient time to generate success stories before assessing their impact.

Established in 2002, the **Lachesis Fund** is a partnership comprising De Montfort, Leicester, Loughborough, Nottingham and Nottingham Trent Universities, with the management of the fund undertaken by Spark Venture Management Limited. Lachesis provides funding of up to £250,000 for the commercialisation of research activity, and includes the ability to offer 'proof of concept' Pathfinder funding of £25,000. The fund amounts to £10m, comprising contributions from Government, the partner universities, ERDF and *emda* (£3m in February 2004).

To date £7.4m in total has been invested or committed by Lachesis in 52 enterprises and projects. These investments have already resulted in 82 new jobs created, 22 new businesses, 21 science and technology spin-outs, 64 graduates employed, and £25m co-investment and follow-on investment from other sources.

emda created the **East Midlands Early Growth Fund (EMEGF)** in December 2005, with total funding of £5m. The fund makes investments of up to £200,000 in start-up and early stage businesses, and is managed by E-Synergy Limited. EMEGF requires matching private investment, usually by a business angel, on a £1-for-£1 basis, which will effectively mean a total investment in regional SMEs of at least £10m.

Since the fund became fully operational in February 2007, EMEGF has made 40 investments in 24 businesses totalling £2.5m and is exceeding its target to leverage private investment into each company, having secured £4.25m of co-investment so far. The fund has also supported the creation and safeguarding of 208 jobs in these businesses.

East Midlands Early Growth Fund Case Study - BPR Medical



Originally formed in 1990, BPR Medical specialises in the manufacture of a range of oxygen therapy and medical gas control products for use in hospitals, ambulances and homecare applications throughout the world. The company was looking for funding to enable them to drive forward with their very ambitious growth plans.

BPR Medical secured £500k investment from Turning Point, a newly formed private investment fund, and the East Midlands Early Growth Fund to support the company drive forward with very ambitious growth plans.

As a result of the investment, the company managed to secure an exclusive distribution arrangement with BOC Medical, part of the Linde Group, the world's largest medical and gas manufacturer, for its range of integral oxygen pressure regulator, known as 'Uniflex', and company turnover is expected to reach £10m by 2014.

The equity and loan funds are integrated with a range of other support services that include **Understanding Finance for Business**, which provides specialist business support to help businesses raise finance, and the **Growth Investment Network East Midlands** (GINEM), which is charged with increasing the number of business angels investing in the region's SMEs.

The Understanding Finance for Business programme is now acknowledged as best practice by BIS. **Since 2002, the programme has helped 141 East Midlands' SMEs to raise £108m.** A full impact evaluation was undertaken on the programme in August 2008. Overall, it concluded that the programme had worked very well, reflected in positive survey results, economic impact estimates and views of stakeholders. Unanimously, those companies and stakeholders interviewed as part of the evaluation recognised the need for this type of investment readiness support. The evaluation confirmed that the programme demonstrated a good return and value for money for the public purse.

emda created GINEM in 2003. This is a regional network of finance venture capitalists, business angel groups, banks, lawyers, accountants and business support groups, which acts as a focal point to raise the profile of growth investment amongst businesses, investors and professional firms. GINEM itself provides information to link businesses and sources of finance via an events programme and a web-based 'signposting' function, and now has a membership of over 40.

An impact evaluation undertaken in April 2010 suggested that GINEM had played a pivotal role in creating and maintaining a 'networked community' of investors, business professionals and intermediaries in the region. It was recognised for the quality of the events arranged and valuable role it played in facilitating increased investment in the region's SMEs. Again, GINEM demonstrated a good return and value for money for the public purse.



The Connect InvoRed Programme has helped 141 East Midlands SME's to raise £108m.



GINEM is a regional network which acts as a focal point to raise the profile of growth investment

In addition, the two main national grant programmes delivered by *emda* formed part of the escalator. As previously described, these were the **Grant for Business Investment (GBI)** and the **Grant for Research and Development (GRD)**.

Like all RDAs, *emda* was delegated responsibility for the delivery of Government's capital investment grant scheme, **Grant for Business Investment (GBI)**, in April 2002. Formerly known as Regional Selective Assistance and Selective Finance for Investment in England, GBI was initially available only to SMEs and larger businesses located in the Assisted Areas of England, and designed to stimulate business growth and employment in these disadvantaged areas by providing grants of between £10,000 and £2m. In 2007, *emda* extended the scheme to cover the whole of the East Midlands to reflect GBI's increasing focus on supporting investment projects generating substantial growth in GVA, innovative processes and products and high quality job opportunities. However, by matching ERDF against our budget, we also maintained a focus on the region's more disadvantaged areas.

Since 2002, *emda* has made 256 grant offers under GBI, creating or safeguarding 7,450 jobs and generating £315m of private sector leverage.

GBI Case Study - Pluswipes Limited



Pluswipes is a Northamptonshire based company that specialises in the production of domestic and industrial wet wipes. It opened a new 3,964 square metres manufacturing facility in July 2009, thanks to a Grant for Business Investment (GBI) of £180,000 from *emda*. The grant enabled the company to invest in its product development work and increase manufacturing facilities for its innovative domestic and industrial cleansing wet wipes.

Pluswipes invested a total of £1.6m to develop and expand its operation at in Corby. Its two new production lines for wet wipes will increase turnover to £10m in the next five years.

emda was also delegated responsibility for the delivery of the **Grant for Research and Development** (GRD) programme in April 2005. Whilst technically, an innovation product, *emda* managed the programme through its Access to Finance team. GRD provides grants of between £5,000 and £250,000 to encourage SMEs to research and develop innovative products and processes. *emda* has significantly increased the number of research and development projects supported in the East Midlands (and other external, matching investment in these projects, including the regional equity funds), by immediately moving away from competitive bidding rounds and, more recently, matching ERDF against its budget.

An evaluation undertaken in January 2010 found *emda's* delivery of the GRD programme to be one of the most effective in the UK, with a return on investment of almost £10 for every £1 spent and a cumulative net GVA impact of £308m. Since 2005, *emda* has made 203 offers of grant under GRD worth a total of almost £19m.



GRD Case Study - Zeeko Limited



Based in Coalville, Zeeko Limited specialises in the production of machines for the manufacture of high precision surfaces often found in optical devices such as telescopes, as well as in applications ranging from flat panel TV screens to orthopaedic joints.

Zeeko Limited received a GRD of £200,000 from *emda* to develop a desk top sized polishing machine for ultra fine and small optical surfaces.

The company is looking to move to a new headquarters building alongside the National Space Centre in Leicester.

As new products have been developed since the RVCF was created in 2002, we have aligned the components of the regional escalator to ensure the provision of a structured package of support to businesses in the East Midlands. For example, a number of SMEs have been supported by investment readiness training or attended a showcase event as part of the Understanding Finance for Business programme and, then, secured investment from the East Midlands Early Growth Fund and GINEM investor groups. Others have secured investment from a regional equity fund, such as the Regional Venture Capital Fund, and matched it with a GRD grant.

In June 2007, *emda* undertook a review of the supply of, and demand for, growth finance in the East Midlands, and the mechanisms that link supply and demand (for example, business support, information and communications). **'Access to Growth Finance in the East Midlands'**, published in January 2008, centred on whether the regional escalator of funding met the needs of high growth and innovative businesses and concluded that:

- *emda* had created a coherent package of financial support, the escalator of funding, which compared very favourably with the offering available to businesses in other regions.
- Half of all venture capital deals in the East Midlands involved an *emda*-supported fund, confirming the positive contribution of the escalator to fund-raising in the region.
- There was very little need for *emda* to develop new products in the market, but *emda* should ensure existing provision is maintained. In particular, *emda* should be aware of the potential gap in provision following the imminent end of the RVCF investment period.

KEY LEARNINGS

- Although 'Access to Growth Finance in the East Midlands' concluded that *emda* had created a coherent package of financial support which compared favourably to other regions, it should be noted that this support related to a relatively small number of very specific interventions.
- This approach has not only reflected the limited funding available to the Agency, by comparison to other RDAs, but also represents a **strategic decision to strike a balance between private and public sector interventions**, supported by research indicating both **market failure and demand for the intervention itself**.
- The approach taken by the Agency has also reflected a **desire to work closely with the private sector in order to maximise leverage** from the limited funding available to *emda*. The **additionality provided by public sector funding has become increasingly important since 2008**, as a result of the credit crunch and subsequent changes in the provision of mainstream finance. The Agency has worked closely with the private sector, regularly consulting with the East Midlands finance community through the Regional Risk Finance Forum and using these channels to raise awareness.
- **The escalator of funding has enabled public sector funding to be both linked and targeted**. There are numerous examples of businesses that have benefited from the full range of specialist business support and direct funding provided by *emda*, either at various points in their lifecycle or at a critical point in the company's growth when substantial investment was required. This has often required a mix of finance, whether grant, equity or loan.
- As previously stated, all of *emda's* main finance programmes have been aligned to a number of strategic priorities within the RES. However, the Agency has **avoided developing sector-specific equity and loan funds** to reflect the fact that most investors, and potential investors, whether business angel networks or venture capital fund managers, prefer to invest across a range of sectors.
- In reality, as the region's priority sectors, including the broad manufacturing sector, have been identified on the basis of growth potential for the East Midlands, a lot of the specialist business support and direct funding has focused on businesses from these sectors. This support and funding has also **focused on early stage, innovative businesses, with growth potential** - businesses that typically continue to be poorly served by mainstream finance.

Responding to Economic Shocks

As is the case with all RDAs, *emda* had a key role in bringing together regional partners, especially when **responding to economic shocks**.

Early examples of this role, both in 2001, included the Agency's response to the Foot and Mouth Outbreak, in support of the region's rural and tourism businesses, and the leadership provided to the Rolls-Royce Taskforce, set up to deal with the economic fall-out of the loss of some 2,000 East Midlands jobs at the company, as well as Rolls-Royce's wider supply chain. More recently, *emda* launched the £750k Flood Recovery Fund with the support of Business Link East Midlands in 2007, in support of those businesses affected by the floods in that year.

Regarding specific support to manufacturers, *emda* spearheaded the **Rolls-Royce Taskforce**, alongside Rolls-Royce, AMICUS, local authorities and a range of other public sector partners. In its first six months, the Taskforce had set-up two resource centres in Derby and Hucknall, providing on-site support packages, including a three-day career transition programme and personal counselling sessions, for all the affected employees; and had secured nearly £1m from the Rapid Response Fund for workforce training. The Taskforce also implemented a short-term £220k recovery package for the aerospace supply chain, before negotiating a more substantial long-term recovery package from Government, which included the setting-up of the Midlands Aerospace Alliance with Advantage West Midlands. Lessons learnt from and recommendations made by the Rolls-Royce Taskforce resulted in the development of the Pan Regional Redeployment Project – renamed Career Chain in early 2009 – and the establishment of the Regional Hotspots Group by *emda*, providing a more co-ordinated, public sector response to large-scale job losses in the region in future years.

The Taskforce also implemented a short-term £220k recovery package for the aerospace supply chain, before negotiating a more substantial long-term recovery package from Government.

emda's position as a private sector led, public body allowed the Agency strongly to influence the region's economic agenda, taking a wider view of impact across the East Midlands and flexing financial resources quickly to meet changes in business needs. This was particularly important during the challenging economic conditions experienced globally from 2008.

As part of the response, and in direct support of the manufacturing sector, Business Link enhanced the grant aid offered through the **Business Transformation Grant** (BTG) to include specialist support to help businesses to recruit a private sector **Turnaround Specialist**. This enhancement was intended to carry out a diagnostic and action plan, specifically addressing problems as a result of the downturn and identifying agreed milestones with businesses. This grant aid was provided when businesses experienced either a significant customer becoming insolvent and leaving bad debts, the loss of a major contract, the withdrawal of planned funding or an existing bank facility, or an increased number of final demands from suppliers.

emda also developed its £6m **East Midlands Transition Loan Fund (EMTLF)** in February 2009 to support manufacturing businesses. EMTLF was a loan fund aimed at helping to address some of the problems that businesses were facing in obtaining credit through banks and other traditional routes at the time. Transition Loan Funds were first announced in the Government's Pre-Budget Report in November 2008 as a temporary intervention, pending other Government measures to stimulate bank lending, subsequently announced as part of the 'Real Help for Businesses' initiative.

The EMTLF provided individual loans of between £50,000 and £250,000, for up to three years, on a commercial basis. Business Link East Midlands acted as the first point of contact for this fund, sifting the large number of enquiries received before passing them onto the fund manager, Advantage Transition Bridge Fund Limited. These fund managers had previous experience of operating similar funds in the West Midlands.

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 - Reduce waste and save energy
- Can I find help with my finances?**
 - Find out about action for business
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The EMTLF was closed to new applications in November 2009. The fund approved 59 loans totalling £6.69 million to businesses employing 2,890 staff. As at end March 2011, Advantage Transition Bridge Fund Limited was still forecasting a return of £5.8m to *emda*.



EMTLF Case Study - Doff Portland

Doff Portland Limited of Hucknall manufactures insecticides, weed killer and garden fertiliser products. Their 2009 results were affected by unusually dry summer months impacting on the agricultural side of the business, after there had been substantial investment in plant, machinery and business development, using up the company's cash reserves. The company's bank was not prepared to provide an increased loan facility.

The fund managers agreed a loan of £200,000 over one year. This helped facilitate a move to a new bank and enabled the business to complete an equity funding round to secure its future from Turning Point, an East Midlands investment consortium, and fund managers Enterprise Ventures.

More recently, *emda* has again provided the leadership to establish the **AstraZeneca Taskforce** following the decision of the company, late in 2010, to close its research and development facility in Loughborough, which employed 1,200 staff. The Taskforce has already undertaken an assessment of the closure of the facility on the local and regional economy and put in place support to help those employees affected to find new jobs, set up in business themselves or gain new skills. Working closely with AstraZeneca, *emda* is currently identifying new uses



emda spearheaded the Rolls-Royce Taskforce, alongside, Rolls-Royce, Amicus, local authorities and a range of other public sector partners.

for the facility itself, as well as new employment and investment opportunities for Loughborough and the surrounding area to maximise the existing skills of the workforce.



KEY LEARNINGS

- The need to react positively and quickly to an economic shock, and for one body to take a strong lead role.
- This lead body should be able to bring together 'local' and national partners from both the public and private sector, providing leadership. In turn, this requires a lead body that is well connected to and respected by a range of partners, particularly those in the private sector. Economic shocks will often impact across administrative and functional boundaries. Therefore, it is important that the lead body and partners are able properly to reflect these differences and effectively deliver the response.
- Both the lead body and partners need to ensure that sufficient resources are available from the outset of the response to ensure that actions can be delivered. It is difficult to recover and maintain confidence amongst the partnership and beneficiaries if this is not the case.
- Both the public and private sector can add a different perspective and significant value to any response. However, this value is substantially enhanced through greater co-operation. When the final beneficiaries are mainly from the business community, responses are far more effective when recognised 'experts' from the private sector take a greater role. The benefits from this greater role far offset any risks associated with conflicts of interest.
- Actions relating to any response are likely to be far more successful if supported by robust evidence and research. Subsequently, it is important to evaluate and measure the impact of these actions. This includes feedback from beneficiaries.
- The infrastructure available through Business Link East Midlands, in terms of both technology and face-to-face contact, enabled a high volume of enquiries, particularly from the outset of the response, to be effectively managed. Business Link also provides a recognisable, well-established 'brand'.
- Interestingly, economic shocks actually provide access to a relatively high proportion of beneficiaries who ordinarily would not access mainstream support; and in turn, some actions have been developed into mainstream support, such as the Pan Regional Redeployment Project, renamed Career Chain.

Innovation

The manufacturing sector plays a significant part in driving innovation and the knowledge economy. Evidence shows that a number of key, mainly large companies, drive innovation performance in the manufacturing sector. Relatively low levels of domestic and SME investment suggest that there are still significant innovation and workforce development challenges to be overcome by our smaller manufacturers.

Central to *emda's* support to encourage manufacturers to increase their investment in Innovation has been the development of the **Regional Innovation Strategy (RIS)**. At the time of developing the latest RIS, 7 of the 29 SfB products were dedicated to innovation and care was taken to ensure that related RIS programmes were aligned with these products.

The RIS was structured around four strategic themes, building a framework of integrated activity around which stakeholders could organise themselves to contribute and take action. The themes were interdependent and complementary, ensuring that the innovation system as a whole operated as efficiently as possible, with the encouragement and mobilisation of public and private sector resources.

- **Theme 1 - Innovation support for business**
- **Theme 2 - Support for technology**
- **Theme 3 - Knowledge exchange**
- **Theme 4 - Environment for innovation**

Within the RIS, an evidence-based approach was used to identify the sector and technology strengths of the East Midlands, which were then used to set priorities for RIS investments. The East Midlands has a strong manufacturing base and excellence in high-value manufacturing, which involves advanced levels of design and scientific skills, adding value to technologically-complex products and processes.



Four priority sectors were identified where the region had a competitive advantage; and five cross-cutting technology areas as shown in Figure x.

Figure x: Sector and Technology Matrix

	Transport	Food & Drink	Healthcare	Construction
Materials	■	■	■	■
Engineering	■	■	■	■
Energy	■	■	■	■
ICT	■	■	■	■
Biotech	■	■	■	■

The East Midlands' strengths in the above sectors and technologies were significant and continue to give a sound basis for addressing existing and emerging markets, such as an ageing population, space technology applications and food security. The move towards a low-carbon economy means that localities in the region are well-placed to address this particular challenge, given the strengths in energy conversion, transport and construction.

The RIS provided the basis for a series of integrated innovation support activities, designed to complement each other and to integrate with related policy areas such as business support, access to finance and skills. These included:

- **Innovation Networks (iNets)**

The cornerstone in the delivery of the RIS has been the implementation of four iNets, which provide targeted and proactive innovation support to businesses and other stakeholders in each of the priority sectors of the RES. iNets are governed by a consortium made up of a cross section of businesses, universities and other strategic partners operating in the sector. They are located in a designated facility within an innovation or research centre that involves both academic and business partners.

Each iNet is staffed by a team with a high level of knowledge and experience of their relevant industry sector and who take responsibility for delivering a programme of activity. iNet advisors work closely with businesses, helping them to identify and resolve their innovation needs. Advisors have been part of the Business Link service and have worked in partnership with and made referrals to Business Link advisors, so that iNet clients who had not used BL services previously gain access to the wider SfB portfolio of support.

iNet service delivery is primarily made up of:

- Advisor support (Innovation Advice and Guidance (IAG) product)
- Sector specific and technology focused events and networking
- SME innovation grants (IAG grant equivalent to Innovation Voucher product)
- University / business collaboration grants (Collaborative Research & Development product).

• Regional Technology Framework

The Regional Technology Framework (RTF) provided an evidence-based approach to prioritising investment in new and enabling technologies. The sector and technology matrix, shown above, identified the five main areas of technology against which to make targeted investments. It also promoted a clear picture of East Midlands' technology strengths to investors, potential collaborators, and EU and national policy makers.

The RTF established the basis for targeting technology investments in the region through two forms of intervention.

	<ul style="list-style-type: none"> • Pathfinder Grants provided due diligence support, aimed at reducing the commercial risk of taking technology to market.
	<ul style="list-style-type: none"> • Demonstration Grants were for larger projects that enabled technologies to be demonstrated in a manner suitable for a market application.

• FP7 Service

The seventh Framework Programme (FP7) is the EU's investment activity for Research and Development (R&D), a 50 billion Euro fund operating from 2007 to 2013. The FP7 Service was established by *emda* in 2008 to increase regional participation in the programme and to help leverage European funding into the East Midlands. The FP7 Service provided a tailored package of support to meet the needs of individual businesses, helping to make the FP7 language easier to understand, to take the mystery out of the application process and to improve the probability of securing funding.



KEY LEARNINGS

- The RIS reflects a well-developed appreciation of market failure in innovation and the character of innovation systems. The current economic conditions imply that a strategy for innovation is at least as important as it was when first introduced, and this is further strengthened by the Government's policy statements emphasising the importance of investing in high-growth industries.
- One of the major successes has been the role of the East Midlands Innovation Council, whose membership of high-calibre, committed individuals with extensive regional, national and international connections, provides an expert, independent advisory group.
- Strategic thinking brings focus to addressing emerging challenges, for example the importance of innovation to the new growth agenda and especially securing the transition to a more resource-efficient, low-carbon economy. Government has an important role to play in facilitating effective innovation systems.
- When the Government produces its Innovation Strategy later in the year it needs to consider the extent to which there is a need for strategic frameworks for Innovation below the national level and how the LEPs will connect to the national strategy
- It is important clearly to articulate how the innovation system works, where the failures are and how to address them so that stakeholders buy in to proposed solutions.



Exploiting international markets

Achieving exports sales and inward investment from abroad are important aspects of stimulating the East Midlands manufacturing sector.

emda's remit has been primarily concentrated on creating inward investment promotion, where it had the sole responsibility for delivering this in the East Midlands, on behalf of UKTI and in conjunction with sub-regional partners such as Local Authorities. Full details are provided in the *emda* Inward Investment Legacy Handbook.

International trade services were provided by UKTI in the region. *emda* supplemented their activity by funding regionally specific activities in conjunction with them.

Inward Investment Activity

Since 2001, *emda* was involved in securing more than 300 inward investment successes in the East Midlands, with some 30,000 jobs created or safeguarded. This represents 75% of all inward investment jobs in the region over the same period. There are now over 2,500 internationally-owned businesses in the region, many of them having a significant supply chain within the region.

emda's inward investment activity was structured into three main areas:

- The **attraction of new foreign direct investment (FDI)** into the region
- The **retention and growth of existing overseas and large UK businesses** in the region
- The **provision of enabling activities such as Knowledge Management and Marketing** across both new and existing investment activity, as well as UK-based programmes.

FDI Strategy

The manufacturing sector has played a significant role in *emda's* approach to encouraging inward investment. After a number of iterations *emda* developed their most recent sectoral priorities in 2006. Particular attention was given to the opportunities in transport technologies, a RES priority sector and one with a significant manufacturing base with the likes of Rolls-Royce, Toyota and Bombardier. This prioritisation has been supplemented with the targeting of knowledge-driven, R&D-intensive companies and projects in this area, exploiting regional strengths in leading-edge technologies.

This strategy has been successful, with 40% of all *emda*-involved investment successes being transport-related businesses since the strategy launch in 2006/7. Whilst the strategic objective has been for the East Midlands to be known above all as a region with world-class capabilities in transport technologies, *emda* continued to be proactive in pursuing

inward investment opportunities in other, more niche, sectors where the region has international competitive advantage. These included drug development, medical devices, food & drink technologies, and renewable energies, which also linked into the priority sectors outlined in the RES. Again these had significant manufacturing and production business bases. A review of the RES in 2009/10 confirmed that the same four sectors (Transport Equipment, Healthcare, Food & Drink, and Sustainable Construction) were still priorities for the East Midlands.

KEY LEARNINGS

- Strong sectoral focus, and also aligning teams geographically with projects and funding, drives operational efficiency
- Financial and activity planning at a country and global regional level allows for a flexible cross-sector approach in market.

Overseas Representation

In order to provide lead generation from overseas and also to represent the region's interests, *emda* has had representatives in priority overseas markets including:

▪	North America, including Canada
▪	Asia Pacific - Japan, India, Australia, Singapore
▪	Europe - France, Germany and Scandinavia.

One of the key issues with all overseas offices, for both RDAs and UKTI, has been the difficulty in linking outputs to activities and representation. On occasions, the link between a given activity or meeting a potential investor and a successful investment is clear, but more frequently the links are less clear and may happen over a period of several years. *emda* kept its overseas office network under review and changes were made over time based on performance and changing needs.

Key priority markets for *emda* were those markets where there was a good match for the region's internationally competitive sectors, where there was historically a high level of investment into the UK and the region, and where there was good evidence of growth potential in those markets for the region.

KEY LEARNINGS

- Overseas offices' performance needs to be regularly reviewed given the difficulty in linking activities and outputs
- SME economic development specialists in market have proved to be the most successful organisations for *emda* to work with in overseas markets.

Identification of Potential New Investors

Looking at the source of *emda*-involved successes from 2001/02 through to 2009/10, it can be seen that more than 80% of total successes were sourced by *emda* – through *emda*'s overseas representatives, research and lead generation, and activities and events that *emda* organised and attended.

UKTI sourced about 30% of new investment successes, but most Investor Development successes were sourced within the region.

KEY LEARNINGS

- The conversion of FDI enquiries into successes can be a lengthy process, and in a competitive global market for new investments, the success rate can be low. The conversion rate for *emda* enquiries over the 3 years to April 2010 was 6%, or 40 FDI successes resulting from 666 enquiries; the average time to convert these was between 6 and 7 months
- Only 30% of *emda*'s new FDI successes were sourced by UKTI, and *emda* played a key role in lead generation in overseas markets. With the closure of all RDA overseas offices there is a risk that the number of FDI leads coming into the East Midlands could drop substantially.



New Investment Case Study - SOS Metals



SOS International Holdings is the US industry leading recycler of specialist materials. The company dismantles aero engines for builders such as Rolls-Royce and General Electric. *emda* first met with SOS in April 2010, following an introduction from their UK accountant. On an urgent timescale of only eight weeks, the Agency conducted a property search, hosted a property tour, and provided a range of support information.

On the back of *emda* support, SOS has taken a 13,500 Sq Ft unit at Langham Park, South Normanton Derby (J28 M1) to service their contract with Rolls-Royce. They are aiming to employ 15 members of staff over 3 years and hired 8 people within 2 weeks of set-up.

Sub-regional Partnership

emda's FDI activity has been a major source of jobs created in the region. *emda* has taken the lead on investment from overseas into the region and this work has been supported by sub regional investment teams where appropriate. Investment into the region from elsewhere in the UK has also been an important source of business and job creation. This activity has been led by sub-regional partners in Derbyshire, Greater Nottingham, North Nottinghamshire and North Derbyshire, Leicestershire and Leicester City, Lincolnshire, Northamptonshire, and Rutland.

In return for *emda* funding, the partners agreed to deliver a number of activities and services defined in an *emda*-wide Sub-Regional Investment Plan (SRIP) on an annual basis. The partners had a supporting role to *emda* in attracting FDI to the region. They also worked to attract new UK-based investments to their sub-region. Working protocols were developed and agreed to define the roles of *emda* and partners in investment activity.

KEY LEARNINGS

- There will remain a need for UKTI to continue to work with sub-regional partners, possibly through LEPs. It will be essential to create clarity of roles and responsibilities to ensure minimal duplication of activity, clarity of support for investors and a consistent service provision
- Analysis of sector strengths at both sub-national and more local levels informs development of a more robust understanding of the capability on offer for inward investors. It also supports the building of understanding for teams working with the natural tension between local, regional, and national sector focuses.

Investor Development

There are some 2,500 FDI companies in the region that can be classified as large businesses due to their global size. Of these, 370 are large employers (250+ employees) in the East Midlands. There are a further 515 UK-owned large businesses in the region, making a total target market of 3,015 companies. Many FDI operations in the East Midlands emerged from acquisition by overseas-owned businesses of manufacturing operations servicing national or regional markets. 29% of FDI firms in the region are engaged in some form of manufacturing. These range from recent Greenfield investments in highly efficient manufacturing facilities, such as Toyota, to long-standing investments to serve UK and European markets. Many are engaged in low-value operations and subject to intense cost competition.

The Investor Development (ID) function provided a business support service to selected internationally-owned businesses in the East Midlands and to large UK businesses. Through the close relationships that it built with key businesses, it identified and delivered quality, new, sustainable investment opportunities for the region, creating and safeguarding jobs in the region.

Through the close relationships that it built with key businesses, it identified and delivered quality, new, sustainable investment opportunities for the region, creating and safeguarding jobs in the region.

Using its knowledge of market needs, the ID team shaped the development of products and services nationally and within the region. This was achieved through active working with key specialist service providers/brokers including the Learning & Skills Council, JobCentre Plus, Business Link, UKTI Trade, other *emda* teams and the regional knowledge base. The team worked alongside other inward investment colleagues, UKTI overseas offices, UKTI R&D specialists and *emda*'s overseas offices to develop new investment opportunities from within the stock of existing investors.

A key feature of the ID service was the adoption of a Key Account strategy and the development of in-depth relationships with the region's strategic investors. The principal measures of this activity were account penetration and the number of key account plans developed. A qualitative review points to the development of strong relationships with a number of key investors such as Toyota, Mercedes and Siemens.

Around 270 businesses were engaged each year, equating to 11% of the marketplace. Intelligence gathered in the course of these visits was used to guide the development of products to support large firms. It was also provided to UKTI to help inform central government policy. *emda* was a significant contributor to this evidence base, consistently providing the highest number of visit reports to UKTI of any RDA or Devolved Administration.

The Investor Development project contributed a substantial proportion of all international investment outputs. It accounted for around three fifths of the total successes, and generated at least 88% of job outputs since 2001. The increased contribution of reinvestment from existing business to FDI flows is a global trend and the number of projects and jobs from investor development activity has continued to show growth over

recent years. The emergence of high-growth markets and cost-competitive locations, such as India and China, has caused global competition for new FDI to intensify, increasing the importance of retaining and expanding existing investments.

Measures of customer experience versus expectation were developed as an indicator of performance. Results improved, with overall satisfaction rising from 72% in the first wave to 81% in the latest wave.

KEY LEARNINGS

- Investor Development has consistently been the main source of job creation from inward investment, creating 25,932 jobs since 2001, and should be resourced accordingly.
- Where key account principles have been fully employed, the team has succeeded in building good relationships with firms.
- The local delivery structure has worked well and would be well positioned to maintain and further develop networks to support business growth and provide valuable local information to firms. Local engagement with statutory authorities has enhanced the credibility, legitimacy and influencing capacity of account managers.



Investor Development Case Study – Toyota



The Investor Development team has worked closely with Toyota in the East Midlands over a number of years. Toyota has two manufacturing plants in the UK, representing a total investment in excess of £1.85 billion and currently employing 3,300 employees. The site in Burnaston, Derbyshire focuses on vehicle manufacturing (including stamping, welding, painting, plastic mouldings and assembly)

In 2008, the Burnaston factory produced more than 213,000 vehicles. In 2009, this fell to 127,390 reflecting an industry-wide slump of 30.9% in car production. Faced with a need for smaller capacity, the Derbyshire factory adopted new working conditions leading to a 10% pay cut and a shorter working week. In February 2010, seeking to adjust revised projected volumes, Toyota announced that they would be introducing a voluntary release programme to approximately 750 employees from July to October of the same year.

A Large Business Support Group consisting of East Midlands Development Agency (*emda*), JobCentre Plus, Business Link and Career Chain came together to provide a cohesive package of support in areas such as training and redeployment opportunities. This programme was carefully planned alongside Toyota's appointed outplacement consultant, Eclipse Executive Ltd. to provide practical advice and support to employees.

In order to stimulate the interest from businesses across the East Midlands in the skilled labour, *emda* organised a mail-shot to over 2,000 large regional businesses. 50 good leads were generated from this. The timing of Toyota's voluntary release scheme coincided with the introduction of a new product line at Caterpillar. The new jobs created at Desford created opportunities for Toyota employees with skill sets matching CAT's requirements. Through the *emda*-funded Career Chain service it was possible to support the process of job matching and redeployment. The programme was welcomed by employees at Toyota, who were made aware of the wide range of opportunities. Local businesses that were approached also demonstrated a high level of interest in benefiting from Toyota's highly skilled employees.



International Trade Activity

UKTI have delivered the East Midlands' international trade services to help UK-based companies succeed in an increasingly global economy. Their range of services was tailored to the needs of businesses to maximise their international success. *emda* has successfully worked in a dual-key relationship with UKTI, helped not least by the regional trade team's co-location in the *emda* offices, facilitating collaboration on policy and operations.

UKTI has been supported financially by *emda* to:

<ul style="list-style-type: none"> • Give companies interested in the target High Growth markets or active in the target sectors the information and support necessary for them to enter these markets or to grow their business in their existing overseas markets, thus contributing to their improved performance and the consequent impact on the region's economic development and growth.
<ul style="list-style-type: none"> • Support the EMITA project, a not-for-profit trade association which supports International trade in the East Midlands through a series of seminars. Businesses are recruited through UKTI's Passport programme, other UKTI services, mailshots, networking at events and word of mouth.
<ul style="list-style-type: none"> • Provide language and culture support for companies as they prepared to enter overseas markets, in recognition that effective communication is the key to doing business successfully. Its primary objectives were to identify the language and cultural needs of East Midlands' businesses and, where online resources are not available, to develop appropriate resources to fill these gaps, for example, website internationalisation.

The three projects funded by *emda* between 2007-10, included the:

<ul style="list-style-type: none"> • Exploitation of High Growth Markets through trade missions to the BRIC countries, Singapore, Malaysia, Japan, Middle East
<ul style="list-style-type: none"> • Innovative Sector Opportunities Development, including meet the buyer events and missions to Germany, Romania and Bulgaria
<ul style="list-style-type: none"> • Regional Language Network, enhancing the ability of businesses to communicate effectively in their target market

All *emda*-supported activities delivered by UKTI were independently evaluated in May 2010. The evaluation came to the conclusions that the projects were "successful in providing support to businesses searching opportunities in the BRIC economies as well other high growth markets. They have enabled companies to develop business skills in language and culture." It added that "more broadly, the UKTI projects have supported business development and competitiveness by raising awareness of overseas market opportunities, enabled companies to improve their approach to exporting, which in turn has contributed to achieved and anticipated commercial outcomes." It also suggested that the

projects were “achieving their aims of supporting new and established exporters and, in doing so, contributing to RES objectives.”

The net impact of the UKTI projects was assessed as “generating a return on investment of “15:1 to date and 44:1 for cumulative outcomes.” This was seen to be “higher than other business support interventions”. And the evaluation concluded by saying that “these results along with the other conclusions as to the effective management of the projects, provide a rationale and evidence basis for future *emda* support.”

KEY LEARNING

- The potential for future regional needs to be addressed by tailoring UKTI activity to suit the regional needs, priorities and institutions is clearly worth serious consideration.

Specialist International Bureaux

emda also supported the East Midlands China and India Bureaux. Building on pilot projects in Leicestershire, these Bureaux provided specialist international trade and inward investment support targeted at the emerging Chinese and Indian economies. Based in *emda* since 2006, the work of these Bureaux complemented and augmented the work of *emda*'s inward investment and UKTI 's trade teams.

A summary of the work of the East Midlands China Business Bureau is provided in Box X.



Box X: The East Midlands China Business Bureau (EMCBB)

The EMCBB was set up in August 2006 as a Partnership between *emda*, UKTI East Midlands, the China-Britain Business Council (CBBC), Leicestershire County Council and Nottingham City Council, to develop and deliver a proactive strategy for exploiting opportunities arising from the growth of the Chinese economy.

The primary objective of the 'Opportunity China' strategy was to drive up the economic value of the region's connections with China, and the strategic priorities for the Bureau were to build on the region's existing links with Ningbo (Nottingham City), Sichuan Province (Leicestershire) and Chongqing Municipality (Leicester); and its capabilities in transport and environmental technologies.

EMCBB's tasks included: providing East Midlands' businesses with high-quality, specialist information, diagnosis, and signposting to enable them to compete successfully in China; driving up the number of companies doing business successfully in China; coordinating the region's approach to China in respect to trade, inward investment, higher education, and sports, arts and tourism; and promoting inward investment, providing direct support to Chinese companies looking to set up in the East Midlands.

Since August 2006, EMCBB has helped more than 1,500 regional companies to engage with China. The support has ranged from initial telephone advice; detailed one-to-one support sessions; themed China-related events and seminars; and Market Visits to priority locations in China. EMCBB has also provided specialist support to the *emda* to attract new investment into the East Midlands and to assist existing investors.

An evaluation conducted in July 2009 identified that EMCBB's delivery, as measured by achievement of objectives, was "very effective".

As a method of promoting regional manufacturing success, therefore, we can say that the establishment of a new regional institution which can focus the shared interests of business and government was an excellent way of:

- Maintaining long term relationships with key organisations and companies in China
- Delivering Proposals and Regional offers in Chinese
- Communicating directly in Chinese to promote the Region and its capabilities.

Developing Skills through Education and Training

Manufacturing businesses are systems in which people create products as a basis for satisfying societal needs and desires, be it a medicine, a satellite navigation service, a boat, or a pork pie. Without appropriately skilled and a competitively priced workforce, manufacturing businesses will not be able to operate.

emda has invested in education and training programmes to meet the current and future needs of manufacturers. The Agency's activities can be grouped into those addressing the educators/trainers: to change the thinking of businesses about demand; to influence the choices that individuals make; and generally to use funding to stimulate more of the right kind of activity/behaviour.

An overview of key manufacturing skills projects compiled for the purposes of the RDAs 2009 report and recommendations for reconfiguring support for Advanced Manufacturing is included in **Annex 4**. The table below overviews the main kind of activity that *emda* has undertaken.

Improving awareness and understanding

Manufacturing suffers from a poor image. Despite massive investment in modern manufacturing methods, a career in manufacturing still conjures up images of smoke stacks, repetitive and poorly paid work, as well as challenging industrial relationships amongst many of the population. Most importantly this is prevalent in the parents of the children being educated currently. Manufacturing, and more widely Engineering, is not held in the same esteem as it is in other competing European countries, for instance Germany. Our manufacturing base is less valued and it is starved of some of our most talented people as a consequence.

This is a massive cultural challenge for this country and one that cannot be addressed by one Agency alone. One way to make changes to this culture is to address it within schools and subsequent educational institutions. This is addressed in the next sub-section. Separately, steps can be undertaken to address the perceptions of the population at large.

emda has supported a range of national initiatives in order to help with achieving this cultural shift. Our funding has helped support:

- | |
|---|
| <ul style="list-style-type: none"> ▪ The establishment of Manufacturing Insight, developed by BIS in conjunction with the EEF. This initiative was cut by BIS in the last financial year in their response to the funding deficit. |
| <ul style="list-style-type: none"> ▪ Wider Enterprise Week type initiatives. For example outreach to schools from manufacturers using the MAS and working with BIS 'Manufacturing Day'. |

emda also used its general communications and marketing activities to promote the success of manufacturers and promoted manufacturing-related agendas, such as Innovation and STEM skills.

Case Study - Manufacturing Insight



Manufacturing Insight was set up in September 2009 as an independent, not-for-profit organisation, to change and strengthen the image of UK manufacturing and raise awareness of the many diverse and exciting careers the sector has to offer. It was jointly funded by BIS, the EEF and the RDA network with the aim of becoming self sustaining.

Its goals were to:

- Achieve a change in the media's perception of manufacturing – the active engagement with all media, including print, web, radio and TV at all levels, national, regional and local.
- Work with manufacturers, partners and representative bodies to coordinate and consolidate opportunities to highlight positive developments in manufacturing.
- Provide opportunities for manufacturers and young people to meet and discuss career opportunities, focusing on the diverse and exciting range of career opportunities that exist in modern manufacturing by using examples to demonstrate what manufacturing has to offer.
- Provide manufacturers with a clearer insight into the range of programmes available to assist them in engaging with the next generation of manufacturers.
- Work with partners to provide young people with insights into manufacturing through the new media channels they use most regularly and readily.

It was overseen by an advisory board consisting of a chairman; 5 government members; 4 manufacturing professional members, 2 training skills members, and a media professional.

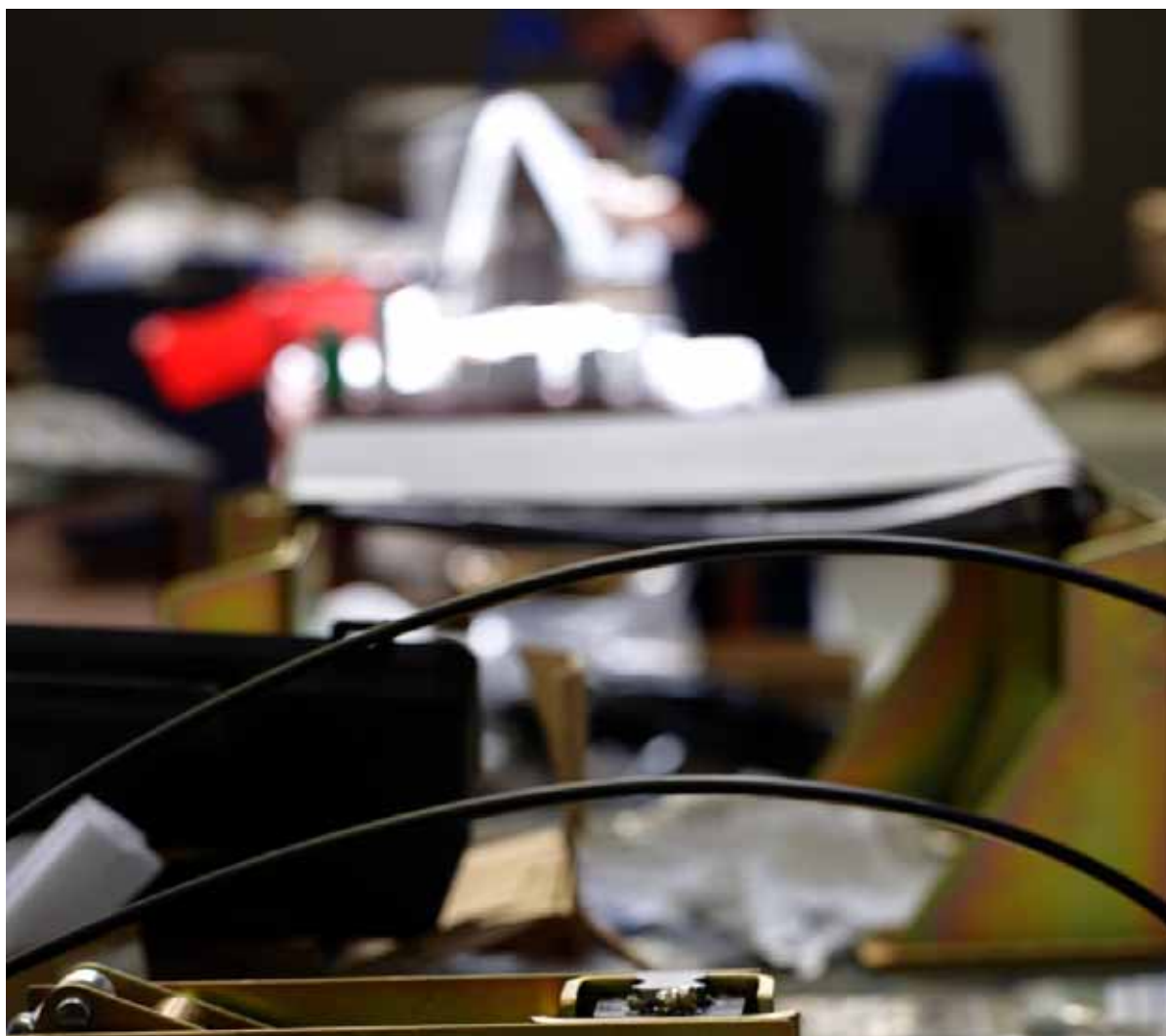
Early experience found that:

- There was an appetite to promote manufacturing within the media
- A limited resource could achieve a significant amount of coverage
- There were other initiatives, particularly around the broader engineering sector, that were competing with this initiative
- Much resource was drawn into coordinating partner and stakeholder activities, which restricted early impact
- It was difficult to gain further private sector financial support in the early stages, particularly in the light of the recession.

Despite a promising start, the board decided to wind up the company in 2010 when it became clear that the forthcoming public sector funding cuts would lead to an income reduction that would not allow the company sufficient time to become self-sustainable.

Learning Points

- Whilst there is a clear 'image deficit' for manufacturing, this is a complicated field in which to act. There is a role for one-off awareness-raising spectacles. However, these can sometimes give poor returns, e.g. if other news or events overtake them. They need to be designed carefully, be targeted in their outcome and coordinated with other on-going activity in the same area.
- This is really a national agenda and Government needs to drive it strongly if the desired cultural change is to be achieved within society. At present there are many disparate elements all operating in this or similar areas. Many are now struggling through lack of funding and evidenced impact. These need to be brought together into a coordinated programme of activity. BIS should not underestimate the resource and investment required to underpin such a change programme. To date, its attempts have not achieved their desired outcomes. In a period of tight public spending, such investment is unlikely to be undertaken. However, the change in reputation of manufacturing may remain elusive as a consequence.



Shaping Education

The most recent assessment of the needs for shaping education and training needs for manufacturing is included in the East Midlands Skills Priorities Statement (Academic Year 2011/12). This was produced by *emda* following newly delegated responsibilities to align the regional skills strategy with the RES; these responsibilities had previously fallen to the Learning and Skills Council. The Statement was designed to influence central Government's decisions on funding and curricula for 2011/12. It would have also served to refresh and revise (as appropriate) the RES and hence *emda's* and other partners prioritisation of their Skills policies, initiatives and investments.

The Statement recognised key challenges relating to education. These included the replacement demand for technician-level skills, a need for further education establishments to collaborate with large high value-adding employers, and a need to mitigate a fall in demand for manufacturing apprenticeships around Derby due to the recession.

emda's portfolio of intervention measures for schools and colleges included:

	<ul style="list-style-type: none"> ▪ The promotion of Science, Technology, Engineering and Mathematics (STEM) skills. This activity is covered in detail in a <i>emda's</i> STEM legacy handbook.
	<ul style="list-style-type: none"> ▪ Schools and qualification development, including providing grants to schools and businesses to help them partner in teaching the manufacturing diploma. Schools were often found to lack the relatively higher cost equipment needed to teach this compared to other taught .
	<ul style="list-style-type: none"> ▪ Coordinating and sharing best practice among the bodies active in the skills agenda in the region, including upwards of 500 separate STEM skills initiatives
	<ul style="list-style-type: none"> ▪ Capital investment in education/further education facilities, in cooperation with high value manufacturing industries. This is covered in the Infrastructure section.



Case Study - Catapulting Kids & Catapulting Kids Further!

emda's 'Catapulting Kids' and second phase 'Catapulting Kids Further!' programmes provided capital equipment to secondary schools and businesses. Its purpose was to stimulating interest, take-up, progression and attainment in applied and/or vocational learning relating to the region's priority sectors. These had a high manufacturing content.

The grants provided equipment that stimulated interest in the subject area; complementing existing capital infrastructure and supporting work-based applied learning. The funding was available both to schools and to SMEs (and to large businesses in exceptional circumstances) and were awarded on condition of collaboration and shared use between schools and local businesses.

A £156,000 grant was awarded, for example, to Caunton Engineering Ltd to allow them to create a dedicated multi-purpose classroom and simulated production line for use in training its own and other local business staff as well as local children using a fully-equipped production line for simulations in a safe environment.

The investment acted as a catalyst to allow a raft of employer engagement initiatives between Caunton Engineering and education institutions to take place, including placements to three schools for the 14-19 Diploma in Engineering, three teacher-industry exchanges, and an increase in its apprenticeship numbers from five to ten.



Case Study - The Learning Grid

The Learning Grid was created to meet the needs of students, teachers and industry by bringing together different programmes, and running competitions for young people. These activities were all linked to engineering, science, design, technology or mathematics. Several were included as part of the National Curriculum. The Learning Grid offered safe and effective learning opportunities for school pupils and students, giving them the chance to develop their practical scientific and technological skills.

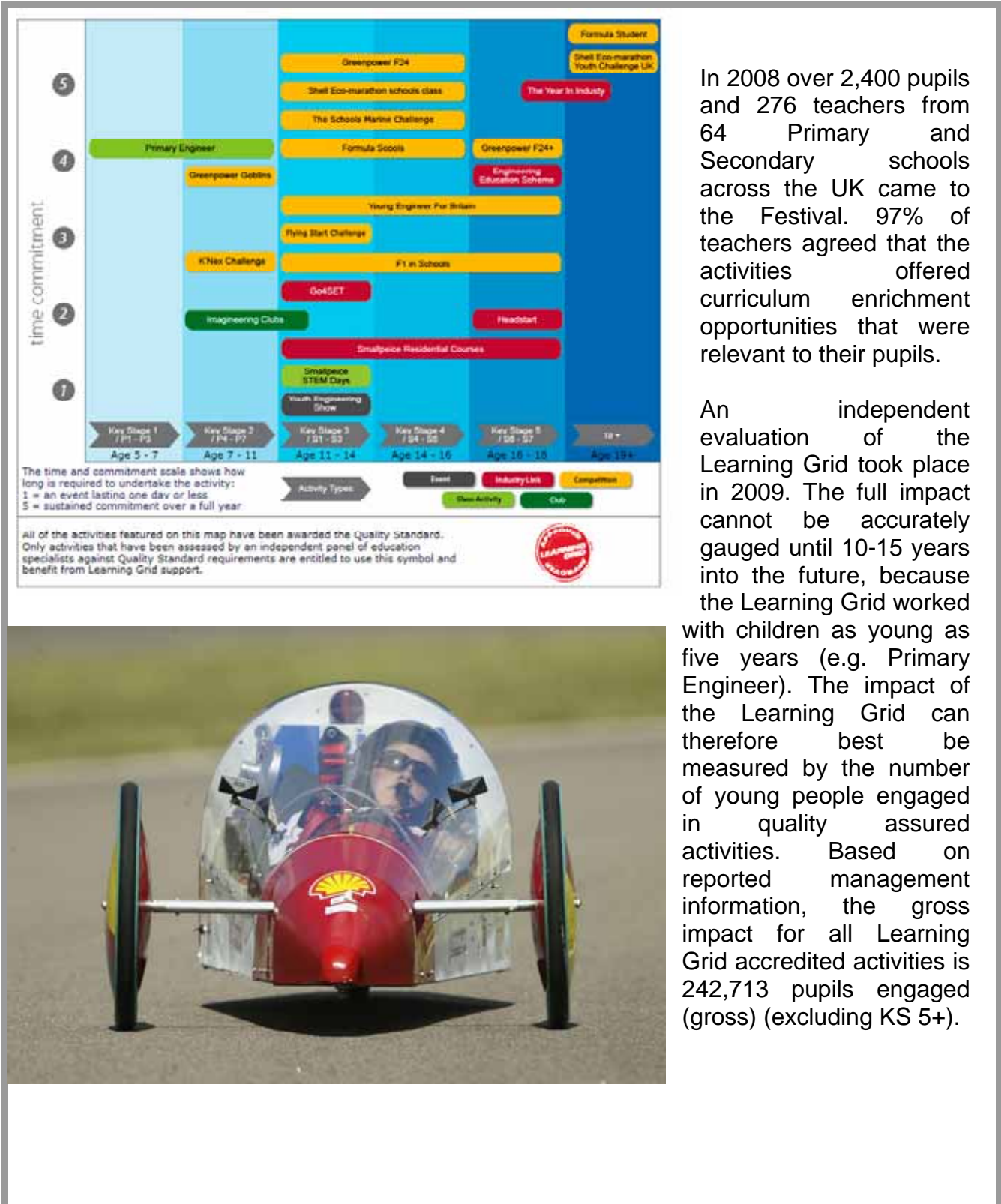
The Learning Grid was promoted and funded by Motorsport Development UK (MDUK) whose aims were to sustain and develop Britain's world-leading motorsport industry. The Learning Grid approved activities aimed to offer students a chance to get involved in engineering from its basic principles, to the design and manufacture of cars, either in model form or as actual track-worthy vehicles.

The Learning Grid Guide brought together a wide range of STEM related events, competitions, short courses and awards for young people from primary school to university. The Guide was first published in 2006 and enlarged and enhanced in 2009.

Activities covered every age group and interest and the information given included links to the curriculum. The Activity Map gave the timing of regional and national finals, together with national celebrations such as Science and Engineering Week and the Rockingham Festival, a 3-day event held annually at Rockingham Motor Speedway, near Corby. The Festival gave young people from 8 to 16 the chance to try a variety of activities including workshops, shows and race events. Each school received an activity programme for their visit to the Festival, tailored to need and age range.

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In 2008 over 2,400 pupils and 276 teachers from 64 Primary and Secondary schools across the UK came to the Festival. 97% of teachers agreed that the activities offered curriculum enrichment opportunities that were relevant to their pupils.

An independent evaluation of the Learning Grid took place in 2009. The full impact cannot be accurately gauged until 10-15 years into the future, because the Learning Grid worked with children as young as five years (e.g. Primary Engineer). The impact of the Learning Grid can therefore best be measured by the number of young people engaged in quality assured activities. Based on reported management information, the gross impact for all Learning Grid accredited activities is 242,713 pupils engaged (gross) (excluding KS 5+).

Learning Points

- *emda* established that manufacturing was a priority for skills investment, to ensure that regional needs were addressed in a way that was not be done by national Government, local authorities or schools acting alone.
- *emda*'s ability to provide facilities and incentives for industry-school collaboration and teaching/learning in manufacturing skills did much to address a shortfall in talented young people entering the industry to replace the ageing workforce.
- *emda* anticipate that the issues of investment in necessary equipment to support manufacturing based education are likely to get worse unless there is additional effort to bring together the multiple regional initiatives and to leverage more private investment.
- Recent funding cuts have led to the closure of the some key educational programmes, for example the Learning Grid project which organised highly-regarded efforts to encourage school children to learn skills appropriate to motorsports and take up employment in this growing sector. These programmes have often failed to attract priority investment in times of reduced funding as they find it difficult to evidence their direct impacts. With the increasing importance of evidence-based policy making, and a need to focus on measures that produce immediate value for money, it important that future investment in this area aims to maximise measurable outcomes and that policy makers recognise the future justification challenges for these programmes.



Support for skills in a knowledge-based innovative economy

emda's role in relation to skills was also to help stimulate business demand for skills in order to improve the capacity and capability to adopt and absorb technological improvements and advances. This meant encouraging and developing the region's knowledge economy and increasing the number of people working in sectors classed as 'knowledge intensive' (i.e. employing more than 40% graduates).

Coupled with increasing business demand for graduates, it is important to ensure that graduates themselves are equipped with the skills and knowledge that employers require. Businesses, therefore, need to be supported to develop higher-level skills in their current workforce, as well as employing graduates.

In recognition of this, the Regional Innovation Strategy encouraged FE providers and HE institutions to work effectively with businesses; delivering flexible and relevant higher-level skills training. This included *emda* support for employer-led Foundation Degrees and the development of innovative work-based learning.

Facilitating collaboration and partnership between FE and HE institutions and with employers is key to supporting the career progression of individuals, as well as the growth of the business itself. The iNets, in collaboration with HE, have provided an environment within which such progression and the necessary skills development can occur.

A highly-skilled workforce enables businesses to remain competitive and profitable by being able to adapt to change, adopt new technologies and processes, and attract investment. In addition, such a workforce is likely to be more productive, innovative, creative and more enterprising.



Case Study - STEM Scholarships



The project was developed by the East Midlands Universities Association, its members, and Aimhigher East Midlands, to provide support to students from within the region who were considering studying a STEM (Science, Technology, Engineering and Mathematics) subject at one of the region's universities. It offered two consecutive cohorts of students a scholarship to the value of £1,000 per year for each year of a 3-year undergraduate degree in one of the strategically important STEM subjects.

The project targeted potential students from groups that were under-represented in higher education, and in STEM subjects specifically. Students were also able to participate in additional activities designed to enhance employability skills and to enable those in receipt of bursaries to meet as a cohort. Annual award holders' conferences were held and covered relevant themes such as entrepreneurship, employability, interview skills and the presentation of project material in the final year of the degree.

Students were also encouraged to take part in the opportunities provided by the universities for personal development and guidance on career choices. Employers were asked to speak at the event, either to talk about their own success in STEM careers or to provide information on their graduate employment programmes. These included Rolls-Royce, 3M, AstraZeneca, Mars, Jaguar Land Rover, Price Waterhouse Cooper and the National Space Centre. Careers workshops were also facilitated by industry experts including the CBI and the National STEM Centre.

The evaluation of the project showed that the bursaries helped 143 students successfully to complete a STEM degree in a regional university from 2007 to 2011. Receipt of the award gave recipients more confidence and helped their parents to become more positive about them going to university. The project also led to increased student retention within the East Midlands, for both first degree uptake and post-graduation (either to work or to complete further studies within the region).

The project also delivered an annual conference, providing networking opportunities and practical advice about securing STEM based related employment. The conference raised students' awareness of post-graduate employment opportunities, and encouraged them to start thinking about their careers earlier than their university peers. The interaction with employers at the conference was deemed as one of its most useful aspects.

Supporting training

In the East Midlands, a key concern for manufacturing is the replacement of skilled engineers and technicians in response to an increasingly ageing workforce. In some growing markets, such as civil nuclear and composites, there are also shortages of broader shop-floor skills, for example machine operator and craft skills.

The tendency of East Midlands' SMEs to under-invest in staff training has contributed to a dearth of talented people in the job market. This led *emda* to respond (in partnership with businesses and training providers) with a number of key initiatives to address this issue.

Typical initiatives included:

	<ul style="list-style-type: none">▪ Working with universities and colleges to develop new courses for management and leadership.
	<ul style="list-style-type: none">▪ Providing launch funding for National Skills Academies, whose role is to drive up demand for training and the quality of training provided for sectors such as manufacturing, nuclear and rail.
	<ul style="list-style-type: none">▪ Providing equipment for (national) training in composites by Proskills at PERA
	<ul style="list-style-type: none">▪ Redeployment of engineers within the industry, to avoid leakage to other sectors if they are made redundant.



Case Study - Career Chain



The Career Chain programme supports the retention and development of engineering and construction skills and people across the East Midlands. It is primarily targeted at manufacturing and construction businesses.

Career chain evolved from the responses *emda* put in place on the recommendation of the Rolls-Royce Task Force, formed to respond to the challenge to Rolls-Royce and its supply chain following the drop in airline activity post '9/11'. The



project was originally known as the Midlands Engineering Industry Re-deployment Group (MEIRG). More recently it expanded to support the construction industry, following the 2008 recession.

The programme comprises a range of services, including career guidance, job search support and interview techniques, together with identifying specific training and development opportunities. The programme has been used regularly to support major economic shocks that involved the loss of skilled people, and has been part of *emda*'s wider Rapid Response initiative, working with the companies involved as well as JobCentre Plus and other government agencies. The Career Chain programme has been developed to offer a flexible and responsive support solution in advance of the formal 90-day notice period required when making redundancies and prior to any statutory response from JobCentre Plus.

Career Chain also works closely with Sector Skills Council for Science, Engineering and Manufacturing Technologies (SEMTE) and Construction Skills in the delivery of this project to businesses, using existing employer links to simplify the process for employers. It has also forged strong relationships with related industry bodies, regional and local partners and unions, to provide a co-ordinated approach for businesses and individuals.

Career Chain specially offers:

- Career Advice and Guidance
- Job Search and Job Matching
- Advice on developing a professional CV
- Support with Interview Skills and Techniques
- Training & Upskilling
- Provide individual 'Training Needs Analysis' where appropriate.

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It also provides access to the CWeb Database. This system has been designed to promote an individual's skills and experience to prospective employers and to provide a pool of live vacancies from companies in the engineering sector.

Career Chain also offers companies seeking to recruit engineers and construction professionals the opportunity to place their vacancies on an online database free of charge, which matches suitable candidates to the jobs available.

Career Chain has supported nearly 2,000 individuals facing redundancy and approaching almost 100 businesses requiring some form of support.

Learning Points

- *emda* has played an important role in helping ensure that training provision matches the needs of the region. A key concern for the future is to try to ensure that training provision is more strongly aligned with technology road maps for key manufacturing markets. This will help manufacturers – large and small – looking to diversify and develop further into the manufacturing sub-sectors that are most likely to grow in the future.

Changing business behaviour

Education and training needs for manufacturing businesses do not end with school. Particular regional issues have been found in both management and leadership skills employed within SME manufacturers and in terms of the shop-floor technical skills. *emda* recognised that there was also a need and requirement for changing mind-sets and cultures within business.

Much of *emda*'s investment in this area was embedded in the mainstreamed business support activities described earlier in the Handbook. This included support delivered by the following programmes:

- Business Link – including through its transformation grants
- Manufacturing Advisory Service
- Coaching for High Growth
- Innovation Advice and Guidance (iNets).

Much of this support was provided by private sector experts, employed on a subsidised basis by the businesses. Their influence on skills and culture were highlighted as they played a vital role in developing the management and leadership of the regional manufacturing businesses. For example, MAS 'lean transformation' projects have been evaluated as creating benefits lasting at least five years.

Case Study - MAS SEMTA Skills Pilot

In the second phase of MAS delivery (2005-08), the service provider PERA partnered with EEF to deliver a pilot training programme for the Sector Skills Council, SEMTA. MAS practitioners were encouraged to highlight where they found a need for formal training, either to make a business change-ready or to embed change. In these cases, EEF would assess the training needs and implement an appropriate programme of support. These activities were typically focused on Business Improvement Techniques. This was later taken up as the core service for the National Skills Academy for Manufacturing (NSAM). In later years, MAS and NSAM partnered in awareness-raising and delivery.

Learning Points

- Skills development is not just about achieving qualifications. *emda* has worked to ensure that close linkages between business improvement programmes that focus on research, innovation and best practice align with those that are more focused on improving the education and training provision of employees. The more aligned these programmes are, and the more clearly they are focused on the future technologies that businesses need to work with, the better we can ensure future manufacturing competitiveness.



Providing Infrastructure

emda has used its capital investment to help transform the region's infrastructure so that it is better adapted to the needs and requirements of modern manufacturers. *emda* has also worked alongside partners to ensure that the economic development position is clearly articulated when spatial planning matters and planning decisions are being made.

emda's investments have covered a number of different types of infrastructure. For example, the Agency has provided **capital infrastructure** in the form of centres of manufacturing technical excellence, suitable accommodation for new businesses, and focused investment to shape regional transport and utilities. The agency has also invested in **business infrastructure** to help the exploitation of new technology, for example. The handbook provides some examples of how these investment approaches have been applied to the manufacturing sector.

National Partnership Working

Throughout its lifetime, *emda* has nurtured a healthy investment relationship with BIS and some of its national agencies, such as the Technology Strategy Board (TSB). In this case, the Chairs of the regional Science and Innovation Councils, in *emda*'s case Innovation East Midlands, formed part of the TSB's Strategic Advisory Group (SAG). The SAG has acted to align national and regional innovation and technology investment plans.

This strategic dialogue has enabled a number of high-value, high-profile co-investments to be made into large national programmes, typically in the areas of manufacturing and the aerospace sector. Examples of this include the Manufacturing Technology Centre (MTC), the Energy Technologies Institute and the Next Generation Composite Wing (NGCW) programme.



Case Study - Manufacturing Technology Centre (MTC)



The MTC is a £40m investment by *emda* and Advantage West Midlands to create a world-class manufacturing research centre. It is one of the largest public sector investments in manufacturing for many years.

Located at Ansty Park near Coventry, it is due to be opened in the summer of 2011. Once complete, the MTC will be a world-class centre of excellence

and be operated by some of the UK's leading manufacturing companies and universities. Its aim is to help to ensure that the UK and the Midlands stay at the forefront of technology and innovation and to provide our manufacturing businesses with a vital, competitive edge. Access to facilities within the MTC is vital to support industry in developing their manufacturing processes and creating world class capability.

The regional research base has strong representation in the development and operation of the MTC, with the University of Nottingham and Loughborough University featuring as the initial research partners alongside University of Birmingham and TWI Limited. In addition, there are three founding industry members with strong regional representation from Rolls-Royce, alongside Airbus UK and Aero Engine Controls. The centre will concentrate on assembly, fabrication and joining technologies, and act as a bridge between university development and testing work and full production business.

The MTC will also be a vital component of the Government's new High Value Manufacturing Technology and Innovation Centre.



Case Study - The Energy Technologies Institute (ETI)

The ETI is an innovative and unique Limited Liability Partnership between international industrial companies and the UK Government. Partners including Rolls Royce, Caterpillar, BP, EDF Energy, Shell, and E-on work together, sharing their expertise and resources to speed up the development and demonstration of energy technologies and shorten the lead times to market. It brings together projects that create affordable, reliable, clean energy for heat, power and transport. Each private sector partner contributes up to £5 million per year for 10 years, with the UK Government (through the Technology Strategy Board) matching these investments to create a potential £1 billion investment fund for new energy technologies.

The ETI aims to demonstrate technologies, develop knowledge, skills and supply-chains, inform the development of regulation, standards and policy, and so accelerate the deployment of affordable, secure low-carbon energy systems from 2020 to 2050. They will aim to overcome major barriers to the deployment of low-carbon energy developing a focused portfolio of projects in areas such as Wind, Marine, Distributed Energy, and Transport. Due to the high potential impact of Carbon Capture and Storage technologies, they have also been added to the portfolio.

emda worked closely with Advantage West Midlands (AWM) and the Midlands Energy Consortium of the Universities of Birmingham, Loughborough and Nottingham to win the bid to host the ETI in the Midlands. The RDAs invested £5m in housing the ETI at Loughborough University. The Institute form one of the centre-pieces of the Midlands low carbon investments. It highlights the Midlands energy credentials and complements other regional investments in this area.



Case Study - Next Generation Composite Wing (NGCW)



The NGCW is regarded as one of the most significant joint aircraft research and technology programmes launched in the UK for several decades. It is expected to revolutionise aircraft technologies, improving future wing design processes and helping to maximise the eco-efficiency of future aircraft designs.

NGCW is a £103m project, bringing together 16 leading industrial companies and research bodies, to work on the 3-year programme. The programme is led by Airbus, in partnership with Advanced Composites Group (ACG) based in Derbyshire, with other partners such as Atkins Ltd, Bombardier Aerospace and GE Aviation. *emda* has invested £1.9m into this programme, with ACG's parent company (Umeco) having invested some £7m in new facilities and capability on their Heanor site prior to the inception of the project.

Support to Universities

emda has invested strongly in universities since its inception. Since 2003, more than £150m has been invested, based on interventions from a number of policy areas. Much of this has provided direct and indirect benefits to the manufacturing sector in the East Midlands and the UK more widely. Infrastructure investments include new facilities for research, technology exploitation and testing.

Much of this investment has gone into joint investment programmes that have levered further funding into the region from other sources, including research councils, ERDF and the private sector. Many of the region's universities have developed a significant portfolio of infrastructure projects supported by *emda*, using a combination of Single Programme funding and ERDF.

The *emda* funding has enabled university research teams to engage directly with regional businesses and to take forward research into development/translational stages that are often difficult to secure through other sponsors. This has enabled research groups to develop strong portfolios of activity, building relationships with regional businesses for mutual benefit. A good example of this type of investment, with links to the manufacturing sector, is the GNSS Research and Applications Centre of Excellence (GRACE) based on the Jubilee campus of the University of Nottingham.

Case Study - The GNSS Research and Applications Centre of Excellence (GRACE)



GRACE is an internationally recognised centre of excellence in surveying, positioning and navigation technologies, located in the Nottingham Geospatial Building, which was created as part of this £9m development. The Geospatial Building has been designed as a sustainable, low-carbon facility. It was funded by a combination of a £3.4 million grant from the East Midlands Development

Agency (*emda*) and University investment. It features research laboratories, testing facilities, industrial outreach and business development projects.

The striking Nottingham Geospatial Building is a significant addition to the University's successful new Innovation Park, which is set in a 12-acre site adjacent to Jubilee Campus and offers high quality incubation space for small- and medium-sized businesses and access to University researchers, facilities and support.

This building is one of a number of facilities at the University of Nottingham which house three inter-related groups — the Institute of Engineering Surveying and Space Geodesy (IESSG), the Centre for Geospatial Science (CGS) and GRACE, the GNSS Research and Applications Centre of Excellence — as well as business accommodation for companies. The IESSG is an internationally-leading postgraduate teaching and research centre, covering a wide range of multi-disciplinary research topics including satellite navigation and positioning systems, photogrammetry, remote sensing, environmental research and geographical information systems.

Funded by *emda*, European funds, research councils and industry, it has a current portfolio of around £3 million. It is one of a handful of academic institutions in Europe involved in the development of the new European satellite positioning system Galileo and was recognised in 2001 by the European Commission as the Marie Curie Training Site in The Technology and Applications of Global Navigations Satellite Systems (GNSS).

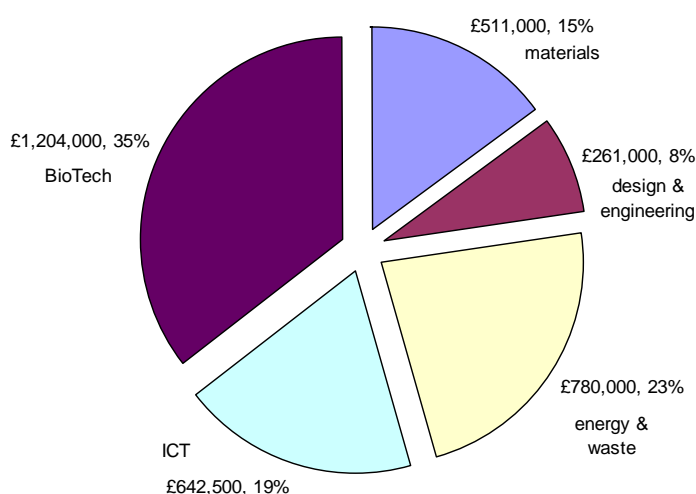
The CGS is a postgraduate centre which provides a nationally-unique research facility spanning both geography and engineering as well as employing researchers with computer science, mathematics and linguistics backgrounds. The multi-disciplinary mix is essential in addressing all areas of geoinformatics research, which combines geospatial analysis and modelling, development of geospatial databases, information systems design, human-computer interaction and both wired and wireless networking technologies.

Regional Technology Framework

Smaller infrastructure projects have been funded through the **Demonstration Grants** provided by the Regional Technology Framework. The grants were awarded to projects led by a university and which included at least one SME partner. The objective of these grants was to take well-developed technologies from the research laboratory and demonstrate their effectiveness in an application that addressed a real market need.

Figure x below illustrates the spread of these projects across the technology priorities identified by the RTF, with almost equal coverage across the five main technology areas. Many are linked to the manufacturing sector.

FIGURE x: Investment in RTF Areas, by value of projects



Given the nature of these investments, the majority of the projects will take time to realise their full market potential. The following case study gives an illustration of progress made to date.



Demonstration Grant Case Study – Vermiculite, University of Nottingham

Vermiculite is a mineral that is used in fireproofing, insulation and horticultural applications. Product preparation, 'exfoliation', is traditionally carried out in oil or gas fired furnaces, but it has been shown that processing by microwave technology leads to significant energy savings. It also reduces movement of the material as part of the process therefore massively reducing dust emissions. This has a direct and quantifiable impact on workers' health.



Researchers at the University had successfully developed a scalable 250kg/hr continuous microwave exfoliation process. The grant facilitated a significant acceleration of the project. The University were able to procure critical equipment, whilst also engaging with supply chain businesses, to build the first full commercial scale unit, run at the University site.

The University has recently licensed the microwave exfoliation technology to a global supplier of microwave generator hardware, who is now establishing a major new UK-based business unit to manufacture, sell and support the exfoliation. The project team also won the 2009 PraxisUnico award for Environmental Impact.



Wider Grant Support

Grants provided through a number of other programmes have also provided investment in smaller-scale business infrastructure. For example:

- The Pathfinder grant service, working together with the Grant for Research and Development (GRD) has allowed SMEs to invest in capital equipment for research exploitation
- The Grant for Business Investment (GBI) programme has allowed businesses to make significant capital investment.

Summary

This chapter has focused on the way in which *emda* has sought to build the competitiveness of East Midlands manufacturing in order to achieve sustainable economic development. By investing in the five key areas of strategic activity, *emda* has helped to improve the overall competitiveness and growth prospects of our manufacturing sector.



Chapter 4

The Future of Manufacturing Support

Government's Objectives for Manufacturing

As we have seen, Government and its agencies can play an important role in determining how manufacturing businesses and support organisations can respond to the opportunities and threats faced by their sector. It is able to set out a vision for the manufacturing sector and shape its development through the adoption of incentives and controls.

The current Government have confirmed their support for the sector and have indicated that they wish it to play a major role in the recovery of the UK economy. Their positioning, whilst more overtly supportive, builds on the evolving positioning seen with the previous Government. As previously discussed, changes in policy in this area have tended to be incremental rather than radical, with few fundamental changes in the past twelve years.

BIS has identified areas of market failures in manufacturing relating to:

- Skills
- Innovation
- Investment
- Supply chain collaboration
- Institutions

It has developed its thoughts on how these should be addressed through stakeholder consultation, via the 'Growth Review for Advanced Manufacturing', completed in March 2011. The outcome reinforced the BIS line taken since June 2010, through which Government wishes to rebalance the economy in large part by growth in manufacturing. This is to be achieved through the encouragement of investment, the development of value-added process, exports; and employment. Any publicly-funded measures for manufacturing will need to demonstrate how they contribute to some or all of these agendas.

There will be major challenges to achieve this within the context of significant budget constraint and when, despite sustained output growth, the sector is still behind its pre-recession output levels and is tending to take on temporary rather than permanent staff in order to minimise their risks.

Following the Growth Review for Advanced Manufacturing, the new Government's Plan for Growth has brigaded the Government's economic development activity behind four overarching objectives, to:

	<ul style="list-style-type: none">• Create the most competitive tax system in the G20
	<ul style="list-style-type: none">• Make the UK one of the best places in Europe to start, finance and grow a business
	<ul style="list-style-type: none">• Encourage investment and exports as a route to a more balanced economy
	<ul style="list-style-type: none">• Create a more educated workforce that is the most flexible in Europe

This includes a limited portfolio of measures that are consistently supportive of growth, but which are brigaded appropriately under the various chapter headings to show which are relevant to the various key agendas. Some of these are specific to manufacturing, and some more generally relevant to the sector. *emda* has made a first attempt to draw out the measures significant for manufacturing in Table 4.1 (below) using BIS' own areas of identified market failure to provide a structure.

Based on previous experience, BIS are likely to monitor progress internally by way of a control sheet, over-viewing progress on relevant key measures which in turn will be reviewed regularly by a high level advisory board or steering group. Whilst *emda* has historically played a role reflecting on the combined efforts of the RDAs in such national policy and strategy advisory groups, it is not yet clear how or whether future bodies could be represented in this way, because of their status, number and diversity. Further details of the measures for Advanced Manufacturing in The Plan for Growth are included in Annex 4



Table 4.1: Measures addressing the needs of manufacturers in The Plan for Growth

Area of Market Failure	Overarching Plan for Growth objective	Sector-specific growth measures (from reviews)		
		Advanced Manufacturing specific measures	Other relevant measures	Industry-specific focus (where relevant)
SKILLS	<ul style="list-style-type: none"> • New visa system for non-financial service industries • Funding up to 100,000 additional apprenticeship places 	<ul style="list-style-type: none"> • Expended programme of University Technical Colleges • £75 Advanced and Higher level apprenticeships in smaller companies • New degree-equivalent higher level apprenticeship incorporating engineering status and professional recognition • Strengthened strategy for promoting STEM skills 	<ul style="list-style-type: none"> • 	
INNOVATION	<ul style="list-style-type: none"> • Reduced corporation tax on income from patents • Increased tax allowance for R&D in SMEs. 	<ul style="list-style-type: none"> • Extended £50m Manufacturing Advisory Service (MAS). • Automation Advisory Service • £45m for 9 new Centres for Innovative Manufacturing • Manufacturing Fellowships Programme 	<ul style="list-style-type: none"> • Streamlined regulation of clinical trials improving the process of commercialising R&D in the UK • Develop practical guidance for life science SMEs on how embracing ‘Open Innovation’ might grow their businesses 	Life Science

Table continued on next page...

INVESTMENT	<ul style="list-style-type: none"> Reform of controlled foreign company rules Reduced reporting and audit requirements for subsidiaries Simplification of the tax system Review to eliminate unnecessary regulations Improved and accelerated planning process Open up public procurement to SMEs Improved support for growth in 21 new Enterprise Zones, including enhanced capital allowances for plant and machinery £3bn Green Investment Bank Enhanced Export Credit services 	<ul style="list-style-type: none"> Extended capital allowances short life asset regime for plant and machinery 	<ul style="list-style-type: none"> £200m new funding for rail infrastructure 	Rail
				<ul style="list-style-type: none"> Development of new markets in green goods and services
SUPPLY CHAIN COLLABORATION	<ul style="list-style-type: none"> Improved transparency about public procurement planning 	<ul style="list-style-type: none"> £7m enhancements to the Manufacturing Advisory Service (MAS) 	<ul style="list-style-type: none"> Open up information on clinical research to promote collaboration and innovation Remove barriers limiting geographical clustering to support entrepreneurship and business growth 	Life sciences
INSTITUTIONS	<ul style="list-style-type: none"> Improved entrepreneurial culture in UKTI: winning more business for the UK 	<ul style="list-style-type: none"> High Value Manufacturing Technology & Innovation Centre 	<ul style="list-style-type: none"> £10m Accelerated development of the International Space and Innovation Centre 	Space
('IMAGE')		<ul style="list-style-type: none"> New 'International Prize' in engineering London 2012 'Made in Britain' industry showcase exhibitions 		

National Support for Manufacturing

There will be major changes in the future Business Support landscape following the decision to abolish the RDAs. The Government has taken steps to reduce the budget deficit by cutting the public funding available for economic development, both nationally and sub-nationally. There is increased pressure for care to be taken over the prioritisation and de-duplication of activity, and greater reliance on people and organisations not only to take more direct responsibility for addressing their own needs, but also serving others.

Government also is committed to taking a less interventionist approach, as described above. As a consequence, we would expect the Government to support manufacturers through:

<ul style="list-style-type: none"> • An increased use of fiscal instruments and incentives (e.g. tax breaks)
<ul style="list-style-type: none"> • A heavily rationalised number of national business support schemes
<ul style="list-style-type: none"> • Concentration of investment in fewer leading centres of excellence, for example the proposed Technology and Innovation Centres
<ul style="list-style-type: none"> • A greater reliance on existing economic actors to fill the gaps through market-driven solutions (businesses, universities/RTOs, third sector), under the 'Big Society' banner.

The Government intends to maintain advisor-based support to manufacturers through a number of national services:

<ul style="list-style-type: none"> • A replacement MAS service has been announced. This will be similar to that funded by the RDAs at present. It is currently being tendered by BIS and is due to be launched in January 2012, once the regional contracts have been completed. The concept of local MAS centres is likely to be maintained.
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- A new Business Coaching for Growth service will be introduced. This will draw in previous RDA-funded programmes targeted at stimulating growth; such as Business Link, Mentoring, Investment Readiness, and Coaching for High Growth. It will be non-sector specific and likely to use a similar delivery model to MAS. The service will be targeted at companies with the potential to grow turnover and jobs quickly and is again due to launch in January 2012. It is also at tender.
- BIS have confirmed that there will be continued provision of international investment and expert trade services, delivered for UKTI. The new national investment service was launched in May 2011, with RDA staff transferring at that time. The new trade services programme is likely to be tendered to launch in 2012/13.
- Skills support programmes to business will continue through the Skills Funding Agency. These are based on management and leadership development and the training of apprentices.

These programmes are contained in a revised Solution for Business portfolio of products. This portfolio also contains wider support to manufacturing in the form of:

- Collaborative Research and Development (TSB – Call basis)
- Designing Demand (Design Council – new scheme being developed)
- Finance for Business (Capital for Enterprise – a range of predominantly ex-RDA Venture Capital and Loan Funds)
- Grant for Research and Development (TSB - Call basis)
- Improving Your Resource Efficiency (DEFRA/Carbon Trust)
- Knowledge Transfer Partnerships (TSB, previous national scheme)
- Networking for Innovation (TSB – Scheme under development)
- Rural Development Programme for England Business Support (DEFRA)
- Understanding Finance for Business (Likely to be merged with Business Coaching for Growth).

The total level of funded activity for these services will be much reduced when compared to the funding provided previously by RDAs. Capital investment in infrastructure is also likely to be much reduced.



Sub-National Activity

With the closure of the RDAs, the Government will rely on Local Economic Partnerships (LEPs) to establish the sub-national/local economic development priorities and to step into the 'gaps' created by the above changes, working to influence the role of Local Authorities. They are likely to be used to establish and coordinate new initiatives that address localised needs and priorities matching the economic geography, for example local clusters of business activity

Direct funding for LEPs is limited and they are being encouraged to influence bids into the £1.4bn Regional Growth Fund. This is one of the few sources of capital investment funding for businesses. In part it is a replacement for the now disbanded GBI scheme, albeit on a call basis. It could also be used to fund local capital regeneration schemes with job creation objectives, as well as infrastructure type programmes. Round two may also fund some further business support programmes aimed at job creation that complement the national Solutions for Business portfolio. European Regional Development Funding may also be drawn down regionally and locally to support these activities.



The Future of Manufacturing Support

Since the 2011 General Election, Government has placed manufacturing at the forefront of its objectives for Growth, with a view to using this sector to 'rebalance' the economy. Their overall aim is to reduce or eliminate the trade deficit in manufactured goods and reduce the over-reliance on the country's financial services.

Central Government can and does exert a powerful influence on the sector. It provides essential leadership and ensures commitment to key policies; in particular, pulling the 'big levers' on tax, skills, innovation, and trade.

Ahead of this re-prioritisation, the previous Government had demonstrated a gradual return to a focus on national industry policy over the last ten years. Following the lead of RDAs, their approach had increasingly aligned with regional interests in ensuring the general conditions for manufacturing success and the realisation of growth opportunities in key clusters, e.g. aerospace, bio-pharma, food and drink.

“So this is our plan for growth. we want the words: ‘Made in Britain’; ‘Created in Britain’; ‘Designed in Britain’; ‘Invented in Britain’ to drive our nation forward. A Britain carried aloft by the March of the Makers”

- Chancellor of the Exchequer –
George Osborne - Budget Speech
(March 2011)

Though concerted action to stimulate priority sectors was always part of central Government activity, there has been an increased political concern that the policy measures should result in manufacturing growth, and increased opportunity and interest over time for central Government departments to learn from the knowledge, experience and innovations in the regions; as the RDAs matured in their role as change-agents.

As support has built for manufacturing in these key agendas, so too has the number of converging initiatives and the challenge of coordinating and aligning them. Due to issues and difficulties around the definition of manufacturing, and its intimate relation with other types of business (for example logistics and services), there has been a tendency towards overlap between policy and measures impacting on manufacturing from fisheries, rural development, energy, low carbon/environmental protection, skills, innovation, defence, public procurement, public health. This has complicated matters at times.



Government policy regarding manufacturing support has, despite not always being seen as a top priority within Government, itself shown considerable consistency over time. Despite several revisions and reviews since it was first launched in 2002, Government's manufacturing strategy has been consistent in the core issues it has sought to address. Table 4.2 summarises the key policy pillars and how these have been reflected in Government thinking.

Figure Table 4.2: The evolution of Government policy and strategy for manufacturing

'Pillar' of the strategy	UK Government Manufacturing Strategy Iterations				Notes
	2000	2004	2008	2011	
Macroeconomic stability	✓	✓	x	✓	Focus on taxation, trade relations
The Right Market framework	✓	✓	x	✓	
Investment	✓	✓	x	✓	
Science and innovation	✓	✓	✓	✓	Focus generally on accelerating the commercialisation of R&D, but latterly on improving positioning in global value-chains
Best practice	✓	✓	✓	✓	MAS has been the flagship Govt productivity programme for manufacturers since July 2002. In 2008, a new emphasis on 'intangibles' was added, recognising the increasing importance of brand- and IP-management
Raising Skills and Education Levels	✓	✓	✓	✓	
Modern Infrastructure	✓	✓	x	✓	
'Image'	x	✓	✓	✓	The 2004 Manufacturing Strategy Review, led for Govt by the CBI, identified a need to overcome the obstacle that a poor image had on investment and recruitment
Green / Low Carbon industry	x	x	✓	✓	
Nominal budget*			£150m		'Headline' figure reflects the cost of selected national initiatives within the plan, not all aligned initiatives across Government

The table also demonstrates that despite the re-prioritisation of this sector, as yet the current Government has added little new to the strategic thinking from the previous one.

The 'rising star' in this suite of policy objectives has been the 'green' or low carbon economy agenda. This is covered off in much more detail within *emda's* Low Carbon Legacy Handbook.

Regional Implications

The increasing sectoral prioritisation in central Government policy has only recently started fully to reflect the comprehensive approach developed in the East Midlands, which has prioritised manufacturing since the first Regional Economic Strategy (RES) published in 2000.

emda has adopted and utilised a mainstreaming approach to manufacturing support throughout its existence which has played dividends in terms of the resources made available to the sector.

emda has had to perform a balancing act to ensure that Government policy was implemented at regional level, specifically:

▪	Aligning the interests of numerous central Government departments
▪	Ensuring that national policy was aligned with the regional needs and priorities
▪	Ensuring that additional measures were introduced, as necessary, to promote sustainable economic development.

Therefore, whilst *emda* has constantly sought to align regional manufacturing support with Government policy and strategy, our approach has always been driven by the regional needs and priorities.

This has proved somewhat challenging at times, particularly when it came to reporting our support for specific policy themes since, as we have just seen, some projects/programmes could at the same time satisfy multiple objectives.

As noted in previous chapters, *emda* has worked extremely closely with Government, industry and other key institutions to inform and implement policy and strategy. Whilst this was an ongoing process, intensive activity started in 2009, after the recession, to identify areas where Government could:

▪	Make the biggest impact on business survival and future growth by bringing forward investment to beat the recession
▪	Make immediate improvements and future savings by changing the way that support is delivered across Government.

Through the New Industry, New Jobs initiative, the RDAs took a delegated lead for BIS in reviewing supply chains, with *emda* specifically leading a review of support for Advanced Manufacturing. Over an 8-week period, a team involving representatives of all the RDAs, Technology Strategy Board, BIS, and Welsh Assembly Government agreed a manageable working definition for Advanced Manufacturing and some clear goals.

Whilst some of the philosophy of the new Government has changed, the outcome of this work links well with current policy. As a consequence, and for completeness, we have included this work in this Legacy handbook. The key recommendations that directly relate to current Government policy are outlined in **Table 4.3**.

Table 4.3: Related New Industry New Jobs Advanced Manufacturing recommendations

Policy proposal
<ul style="list-style-type: none"> Focus on ensuring uptake of key enabling technologies, or ‘Technologies of General Application’, such as industrial biotech, advanced composites, or new business models enabled by IT (including additive layer manufacturing)
<ul style="list-style-type: none"> Improve the emphasis on growing our ‘mid-cap’ companies
<ul style="list-style-type: none"> Reviewing skills strategy to make sure that delivery matches the future technologies and skills that manufacturers are going to be using, and that funding shifts towards a filling of the gaps in terms of higher level skills and stimulating more young people to take up manufacturing employment (to fill the gap that the ageing workforce will leave)
<ul style="list-style-type: none"> Concentrate more investment in fewer leading national centres of excellence in key technology areas, and ensuring that these institutions are more successful at disseminating proven technologies to more manufacturers across the UK
<ul style="list-style-type: none"> Change the geography of business support by ensuring that support for potential growth sectors is more robustly nationally managed and coordinated – with relations with larger companies being managed more from the centre and smaller ones more locally
<ul style="list-style-type: none"> Working in stronger partnership with industry networks to understand and reach out to the relevant players in key value chains.

The full list of detailed recommendations is included in **Annex 4**.

Concluding Statements

This handbook sets out to ‘unpack’ the key strategic thinking that *emda* has used to develop the competitiveness of the manufacturing sector in the East Midlands. It describes the agency’s key investments and describes some of the learning opportunities that have arisen from these.

Thorough reading of this handbook should help to illustrate that there are significant challenges in working with this sector, due to its scale and the extent of policies that interact with it. Strong and structured future leadership and partnership arrangements will be required to ensure that resources remain aligned. This will be challenging to achieve, given the increased fragmentation of leadership roles, and the ongoing reductions in Government resource. In line with Government aspirations, the likely outcome is a greater requirement for BIS to work with and around their core manufacturing support delivery structures and to be more entrepreneurial in developing market-driven solutions to needs where there is an evident need and gap in support.

Manufacturing must remain a clear focus for the region due to its economic importance, and the prospects for growth of the value chains linked to its sub-sector, for example aerospace, rail, marine, automotive and motorsport; food & drink; sustainable construction; and healthcare and bioscience. Whilst many of the key drivers and market failures have been fairly consistent for the last ten or twenty years, there are new agendas such as ‘servitisation’ which regional businesses have yet to address.

Manufacturing has been a malleable sector to work with and has given fairly immediate and significant returns. As a complement to nationally-shaped business support programmes, the region has made a significant difference in terms of additional funding, nuanced changes to delivery, and complementary programmes and delivery structures. These have addressed the need to develop and exploit new technology; improve business innovation and best practice, transform education and training to match current and future needs; develop an appropriate physical and business infrastructure; and help our businesses penetrate international markets (and bring key capability and much-needed investment to us from abroad). Effective leadership by *emda* and its business-led board has helped ensure that these measures are brought together in an efficient and effective way, combining or adding initiatives as required.

The handbook concludes by describing how the current Government policy is shaping the environment. There are some real similarities in its approach to that proposed by *emda* to BIS in 2009. However, challenges remain. It will be hard to secure targeted growth when manufacturing employment and output has still not yet caught up to its pre-recession levels. Despite positive prognoses for post-recession manufacturing from various parties, it is hard to see Government’s objective being achieved without a sea-change in behaviour by businesses, investors and people to back their vision.

BIS Local and LEPs will need to work closely with the remaining Government bodies that act in and across the regions. They will have to have a greater influence and impact on the economic development of the manufacturing sector following *emda*’s abolition. It will be

important that these bodies work closely together in order to inform and align their strategies such that the best possible outcomes can be secured from their investments. Specifically, BIS and UKTI will need to review their communication with foreign-owned and large manufacturing business following *emda's* closure to avoid perceived inefficiency.

The Government will need to continue to address the 'image deficit' for manufacturing. This is not easy to influence and Government needs to drive it strongly if the desired cultural change is to be achieved within society. BIS should not underestimate the resource and investment required to underpin such a change programme. Perhaps most vulnerable to the deficit reduction cuts are the schools' programmes aimed at addressing this. Some key educational programmes have already closed.

Given the tighter constraints on public funding and the justification provided by the high returns realised to the regional economy by investing in manufacturing support, this is truly a time for entrepreneurship, close partnership between Government departments and programmes, and local community action. In doing so, the legacy of the East Midlands Development Agency's work can be retained.



Annexes

- 1. Key Enabling Technologies and Organisations in the East Midlands (2007)**
- 2. Links to useful documents and websites (2011)**
- 3. *emda*'s propositions to the Secretary of State for reconfiguring support for Advanced Manufacturing (September 2009)**
- 4. Details of the measures for Advanced Manufacturing in The Plan for Growth (2011).**

Annex 1:

Key Enabling Technologies and Organisations in the East Midlands

Technology area/application	Regional Assets		
	Universities	Businesses	
MATERIALS	<p>Lightweight and composite materials: Encompassing new and existing forms of metals, plastics and composites and their fabrication, including those with advanced properties in areas such as reduced weight, improved strength, durability and vibration resistance.</p> <p>The market for such composites is growing rapidly and exploitation by the region's businesses could be greatly enhanced.</p>	<p>A number of the region's universities have research strengths and engineering expertise in this technology area, several of which host interdisciplinary centres to support research and development; notably UNIMAT (the University of Nottingham Institute for Materials Technology) and Loughborough University IPTME (Institute of Polymer Technology and Materials Engineering).</p>	<p>Honda Racing F1 Team, Force India, Advanced Composites Group, Scott Bader, Formax, Fibre Technology and Fairline Boats.</p>
	<p>High-temperature materials: Incorporating materials capable of withstanding high temperatures and associated with technology developments in areas such as thermodynamic properties of materials, kinetic reactions and new processing methods.</p>	<p>There is a strong research base in this technology area within the leading engineering departments of the University of Nottingham, Loughborough University, University of Leicester and De Montfort University, including interdisciplinary centres such as UNIMAT (Nottingham) and the IPTME (Loughborough).</p>	<p>Rolls-Royce Bodycote HIP</p>
	<p>Construction materials: Comprising materials technologies used in construction projects which can address a range of challenges, such as the need for improved thermal properties, improved characterisation and fabrication readiness, durability, weather properties and water/gas transport/electrical conductance.</p>	<p>The region has internationally recognised construction materials expertise within its universities, for example in Loughborough University's Department of Civil and Building Engineering and the School of the Built Environment at the University of Nottingham.</p>	<p>We also have a significant number of companies that rely on advanced materials technologies, including large construction groups and manufacturers of materials, such as Lafarge, Hanson, Tarmac, British Gypsum, Dow Hyperlast, Wilson Bowden and Bowmer and Kirkland. Plus, there is a range of companies in the region's construction supply chain that undertake technology development activities.</p>

	<p>Biomaterials: This area focuses on natural or man-made materials employed in, or used as a medical device which performs, augments or replaces a natural function within a living organism, for example building scaffolds for tissue engineering.</p>	<p>Our real strength is in the research base - in institutions such as the University of Nottingham (School of Pharmacy), University of Leicester (School of Biological Sciences and Leicester Medical School) and Nottingham Trent University (Biomedical Research Centre).</p>	<p>Biomaterials are being developed by a number of leading technology-intensive SMEs in our region (for example Attenborough Dental, Regentec, Orthogem).</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">DESIGN, ENGINEERING AND MANUFACTURING</p>	<p>Design and rapid manufacturing: Design and rapid manufacturing focuses on the computer-aided design, prototyping and rapid manufacture of physical components. The production process may use a range of additive technologies, with most building up models through a layered process. Such technologies make it easier to test the validity of a design and they speed up the overall design and production process.</p>	<p>There is considerable expertise in our universities including at Loughborough University (the Innovative Manufacturing and Construction Research Centre, Centre for Rapid Manufacturing within the Wolfson School of Mechanical and Manufacturing Engineering, De Montfort University (Centre for Manufacturing) and University of Nottingham (Rolls-Royce University Technology Centre in Manufacturing, Nottingham Innovative Manufacturing Research Centre).</p>	<p>This technology has a strong exploitation base in some of our region's leading companies, for example Rolls-Royce, Thales, Cosworth, Datalink Electronics, Gardner Aerospace – Ilkeston Ltd, SPS Aerostructures Ltd and Meridian Technologies.</p>
	<p>Process engineering: Process engineering is concerned with the design, operation and maintenance of chemical, material and food manufacturing processes. It includes the development of new processes, project engineering and troubleshooting.</p>	<p>Academic expertise, including at De Montfort University (Centre for Manufacturing), University of Nottingham (Innovative Manufacturing Research Centre, Rolls-Royce University Technology Centre in Manufacturing Technology) and Loughborough University (Innovative Electronics Manufacturing Research Centre, Innovative Manufacturing and Construction Research Centre).</p>	<p>This technology is core to our region, with strong development expertise in many manufacturing companies that operate in our region, from automotive and aerospace to food and drink. Major companies include Toyota Motor Manufacturing UK, Rolls-Royce, Caterpillar (UK) Ltd, Bombardier Transportation, Pandrol, PepsiCo and Laing O'Rourke.</p>

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ENERGY AND WASTE	<p>Energy efficiency: This priority refers to those technologies associated with products or systems designed to use less energy for the same or higher performance than regular products or systems. Such technologies can be used in a number of contexts for example insulation, lighting, equipment and machinery, energy generation and distribution as well as Combined Heat and Power (CHP) and engine design.</p>	<p>Within the academic research base, there is expertise at University of Nottingham (Institute of Sustainable Energy Technologies, Institute of Building Technology, Rolls-Royce University Technology Centre for Gas Turbine Emissions), Loughborough University (research groups within the Department of Aeronautical and Automotive Engineering, and Cenex – the Centre for Excellence in Low Carbon Technologies), University of Lincoln (Centre for Sustainable Architecture and Environments) and De Montfort University (Institute of Energy and Sustainable Development).</p>	<p>Companies developing new products and services for energy efficiency include Xtratherm and Ibstock Brick in the construction sector and Zytek Engineering, Mahle Powertrain in the motorsport sector.</p>
	<p>Fuel combustion: Includes all technologies associated with fuel combustion engines. In particular, the focus is on reducing carbon fuel consumption and the associated exhaust gas emissions and increasing utilisation of biofuels. This technology is core to our region, with strengths evident in both exploitation and research.</p>	<p>In our region’s university base there are a number of strengths, including Loughborough University (various research groups within the Department of Aeronautical and Automotive Engineering; Rolls-Royce University Technology Centre in Combustion Aerodynamics) and University of Nottingham (Energy Technologies Research Institute and the Thermofluids research group within the Department of Mechanical and Manufacturing Engineering).</p>	<p>Example of companies active in this technology area include Rolls-Royce; Bombardier; Perkins, Mercedes Benz High Performance Engines; Cosworth; Ilmoor Engineering and Zytek Engineering.</p>
	<p>Energy storage, integration and distribution: Technologies and systems that enable energy storage, allowing it to be drawn upon at a later time. Such technologies include hydrogen storage, batteries and supercapacitors.</p>	<p>Our universities are also developing expertise in this area through research, for example University of Nottingham’s Energy Technologies Research Institute, Nottingham Fuel and Energy Centre and Loughborough University’s Centre for Renewable Energy Systems Technology.</p>	<p>This is an emerging technology area within our region, with a number of innovative companies working on exploitation, for example Zytek Engineering, E-On UK and Intelligent Energy.</p>

<p>Renewable energies: Technologies that generate energy from renewable sources such as biomass, solar and wind, and integrate renewable energy systems into buildings.</p>	<p>Examples of research expertise evident in the activities of University of Nottingham (e.g. the interdisciplinary Energy Technologies Research Institute, and the Institute of Sustainable Energy Technologies), Loughborough University (e.g. Centre for Renewable Energy Systems Technology) and De Montfort University (Institute of Energy and Sustainable Development).</p>	<p>Examples of companies active in this area include Rolls-Royce Fuel Cells.</p> <p>Research to identify our region's strengths in low carbon technologies has found that East Midlands companies are active in the principal alternative energy technologies but with a preponderance in the area of micro-generation (solar sources and heat pumps).</p>
<p>Waste minimisation, management and recycling: Technologies that minimise and reduce waste output and increase recycling, for example via bioremediation.</p>	<p>Our universities have recognised research expertise in relevant science areas including in environmental sciences and chemistry, notably at the University of Nottingham (e.g. School of Chemical Engineering and Environmental Management), Loughborough University (Centre for Environmental Studies), whilst the University of Northampton (SITA Centre for Sustainable Wastes Management) has developed a particularly relevant focus.</p>	<p>Waste minimisation, management and recycling are areas in which companies such as Northern Foods (which has located its Technical Services Centre within BioCity), Toyota and Recresso have been active in introducing innovative approaches. There is also demand for technology solutions from food and drink manufacturers in the region in response to changes in the regulatory environment for waste and emissions.</p>

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INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs)	<p>Instrumentation, measurement and imaging: This priority area refers to instruments and or methods used to measure, capture, store, process, analyse, transmit or produce data, including images. It includes the technologies associated with global positioning and earth observation that are highly relevant to future development in areas such as satellite navigation, and medical imaging.</p>	<p>In global positioning, earth observation and imaging, the University of Nottingham and the University of Leicester have both generated new developments as a result of collaborations between physics, mathematics, computer science and the natural sciences. At Leicester, an example of this is the Space Research Centre, which hosts the University’s Bioimaging Unit. At Nottingham the Institute of Biophysics Imaging and Optical Sciences and the Institute of Engineering Surveying and Space Geodesy are examples of centres that support multi-disciplinary research. (The latter hosts GRACE, the GNSS Research and Application Centre of Excellence, which provides training and support for industry in response to the growth in applications for satellite navigation and positioning systems).</p>	<p>A number of innovative companies serve transport equipment and healthcare markets in particular. Examples of companies include Delta Rail, Cosworth, Race Technology, Infoterra, Nottingham Scientific Limited (all in transport equipment sector) and GE Medical (healthcare).</p>
	<p>Intelligent systems: Technologies that support multi-media data handling (the processing of multiple streams of information), gathering and processing of distributed information (i.e. from different geographical locations), information storage and retrieval and data security. This <i>includes the integration of information and communications technologies into transport infrastructure and vehicles, as well as healthcare applications such as medical robotics.</i></p>	<p>Emerging research strengths in our region, based on the expertise of our universities in electrical and mechanical engineering and in computer sciences. Examples here include Loughborough University (Department of Computer Science), the University of Nottingham (School of Computer Science) and De Montfort University (Department of Computer Science and Engineering). Nottingham Trent University’s School of Computing and Informatics has also been building up its expertise in the areas of networks and computational intelligence.</p>	<p>Key companies include: Bombardier Transportation, Balfour Beatty and Delta Rail.</p>

<p>Sensors and controls: The interconnections of components that form system configurations intended to provide a desired system response as time progresses. Such systems typically comprise a computer, process control equipment and process interface systems. Use of sensors and control technologies are core to our region's manufacturing companies, which rely on them for accurate monitoring of production and distribution processes. Although industry use of sensors and control technologies is well-established, advances in engineering, electronics and materials continue to lead to fresh developments.</p>	<p>The expertise of our region's universities in electronic and mechanical engineering and in computer sciences means they are well placed to support technology development in this area. Several universities have interdisciplinary centres relevant to sensors and control technologies, including Nottingham Trent University (General Engineering and Applications Science Group), De Montfort University (Centre for Manufacturing), Loughborough University (Research School of Systems Engineering) and University of Nottingham (Innovative Manufacturing Research Centre).</p>	<p>Companies in the East Midlands that produce sensors and control technology are Laserail, Deltarail and GE Sensing.</p>
<p>Computation: Associated with the use of combined techniques such as applied mathematics, informatics, statistics, computer science, artificial intelligence, chemistry and biochemistry. Computational technologies support activities such as finite element analysis, computational fluid dynamics, aerodynamics, engineering simulation and visualisation, Computer Aided Design (CAD) and software programming for engineering applications. Computational technologies are important in civil, mechanical, aerospace and electronic engineering and also have applications in biosciences (e.g. bioinformatics).</p>	<p>Universities undertaking research of relevance include University of Nottingham (Spencer Institute of Theoretical and Computational Mechanics, Centre for Structural Engineering and Construction), Loughborough University (various research groups within the School of Aeronautical and Automotive Engineering), University of Leicester (Thermofluids and Environmental Engineering Research Group in the Department of Engineering, plus research groups within the Department of Computer Science) and De Montfort University (Mechanical Engineering Research Centre in the Faculty of Computing Science and Engineering).</p>	<p>Companies with expertise in the development and application of computational technologies include Rolls-Royce and Honda Racing F1.</p>

BIOTECHNOLOGIES AND THERAPEUTICS	<p>Microbiology and hygienic environments: Food and medical related applications of industrial microbiology, with a focus on hygienic environments. Such technologies are associated with testing, measurement, cleaning, products and safety procedures in such environments, for example textiles with antimicrobial properties.</p>	<p>Microbiology and hygienic environments have a strong research base in our region's universities. Nottingham University (Schools of Molecular Medical Sciences, Medical and Surgical Sciences, Pharmacy and Biosciences), Leicester University (School of Biological Sciences and Leicester Medical School) and Nottingham Trent University (School of Biological and Natural Sciences) all have expertise in microbiology relevant to medicine and pharmaceuticals. In food science and technology, there are research groups at University of Nottingham (School of Biosciences' Division of Food Sciences) and Nottingham Trent University (Schools of Animal, Rural and Environmental Sciences and Biomedical and Natural Sciences). In addition, the University of Lincoln's Holbeach Campus is recognised as a specialist food technology and food manufacturing centre in the region.</p>	<p>Companies active in this area include FDAS (Food and Drug Analytical Services) and Safepharm.</p>
	<p>Tissue and cell engineering: Technologies that use a combination of cells, including stem cells, engineering and materials methods and suitable biochemical and physio-chemical factors to improve or replace biological functions, for example cell culture technology, matrix technology and scaffold technology. Technologies emerging from this area of bioscience are likely to have diagnostic and therapeutic applications in the longer term (circa 10 years +).</p>	<p>Key assets in the region include the School of Pharmacy at the University of Nottingham, and the University's interdisciplinary Centre for Biomolecular Sciences. Research is underway into new methods of engineering liver, nerve, cartilage, muscle and bone tissue for drug screening and medical applications.</p>	<p>Commercialisation of new technologies by companies has been limited to date, but there is potential for greater business activity over time.</p> <p>Examples of companies active in this area include start ups such as Regentec and Evocell.</p>

<p>Bio-nanotechnology: New areas of research, technology and application are expected to arise from this cross-over in the bio- and nanosciences; for example, new applications in biosensing, biocontrol, bioinformatics, genomics, medicine, computing, information storage and energy conversion.</p>	<p>Our region has research strengths relevant to bio- and nanosciences. For example, Nottingham Trent University has an interdisciplinary centre (Biomedical Research Centre) which conducts research in cell biology and pathology, immunology, cancer, neuroscience, food microbiology, pharmacology and toxicology, and the University of Leicester is an internationally recognised centre of research in computer science, medical and biological sciences. The University of Nottingham also has an international reputation in these areas and has recently established an interdisciplinary Centre for Biomolecular Sciences that brings together researchers from the University's faculties of Engineering, Science and Medicine and Health Sciences.</p> <p>In addition, seven of our region's universities are collaborating in EMINATE, a research and innovation centre based at BioCity in Nottingham that supports take-up by industry of micro- and nanotechnologies, particularly for incorporation into new products and processes. Application areas supported by EMINATE include pharmaceuticals, medical devices, coatings and food.</p>	<p>Examples of companies active in this area include 3M and Astra Zeneca.</p>
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<p>Drug discovery and drug development:</p> <p>Technologies associated with the discovery and testing of drugs for safe use in humans and preparing them for commercial-scale manufacture. It includes technologies that support provision of specialist services associated with this process.</p>	<p>Drug discovery and drug development technologies have a strong base in university research, with several institutions producing internationally-recognised research in disciplines relevant to this area. The University of Nottingham has several interdisciplinary centres, including the Centre for Biomolecular Sciences (led by the School of Pharmacy) and the Institute of Pharmaceutical Sciences and Experimental Therapeutics (led by the School of Medical and Surgical Sciences). The University of Leicester is home to the Medical Research Council Toxicology Unit, the largest academic establishment for toxicology in the UK. In the University itself, the School of Biological Sciences undertakes important research in biochemistry and pharmacology, whilst Leicester Medical School has departments specialising in cancer studies, cardiovascular sciences, and infection, immunity and inflammation. Nottingham Trent University has expertise in pharmacology and toxicology, whilst De Montfort University's School of Pharmacy has expertise in drug action and novel drug delivery mechanisms.</p>	<p>Our region has a wide company base: several multinational companies undertake technology development in our region, including AstraZeneca and 3M Healthcare, and there are significant numbers of small companies such as Peakdale Molecular, Pepceuticals and Sygnature that pursue exploitation or provide services to support drug discovery and drug development processes.</p>
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Annex 2:

Links to useful documents and websites (2011)

- *emda* Legacy documents for:
 - STEM
 - Innovation
 - Low Carbon
 - International
 - Business Support (all in *emda* archive).
- *emda* Business Support Strategy, 'Encouraging Business Success 2008 -11', *emda* (2008) - (in *emda* archive)
- Manufacturing and Materials Unit, Department for Business, Innovation and Skills - <http://www.bis.gov.uk/policies/business-sectors/manufacturing-and-materials>
- *emda* Regional Innovation Strategy, (2009) - (in *emda* archive)
- Growth Review for Advance Manufacturing, BIS (2010)
- East Midlands Skills Priorities Statement, Academic Year: 2011-12, *emda* (2010) - (in *emda* archive)
- 'Advanced Manufacturing', BIS (2009)
- 'Manufacturing Our Future – Building a Balanced Economy on a Secure Manufacturing Base', EEF (2009)

Annex 3:

emda's propositions to the Secretary of State for reconfiguring support for Advanced Manufacturing (September 2009)

- 1.1. This report set out to clarify what Advanced Manufacturing is, where its strengths are in the UK, and how we can improve the realisation of these opportunities with appropriate joined up government support.
- 1.2. This work has established a basis on which the work of the SWRDAs' consultants can complete the mapping exercise and analyse the opportunities and constraints. It will also help RDAs to improve our understanding and analysis of the relevance of our portfolio of support, outlined in the previous section.
- 1.3. The report presents initial analysis and proposals and is concerned mostly overcoming the obstacles to robust strategic management of this agenda going forward. This and other key recommendations of the Task and Finish Group are presented below.
- 1.4. **Recommendation A: Use the planned new RDA influence on regional skills funding to accelerate alignment of education and training development around specific Advanced Manufacturing requirements, with more direct input from large and middle-size businesses, covering progression from school onwards, and focusing on:**
 - New Industry, New Jobs priorities
 - Key enabling technologies/technologies of the future (shared and regional)
 - Progression through each stage of skills development.
 - Leveraging training investments by larger businesses (e.g. in-house training centres)
 - Requirements for increased prioritisation nationally of investment in key initiatives for the sector, such as Manufacturing Insight, and investment in equipment for schools and colleges
 - Improved mechanisms to identify and propagate regional skills pilots into simplified national solutions, whilst retaining scope for regional innovation relating to local gap-filling and supplementary funding behind priorities.

Ideally, there would be the wide inclusion within engineering degrees and other courses of New Industry, New Jobs-orientated modules, e.g. hybrid power train, fuel cells, industrial biotech (as also identified in Recommendation C).

1.5. Recommendation B: The RDAs should continue and reinforce our investments to promote development and adoption of tomorrow's technologies for advanced manufacturing:

- RDAs should work with TSB and BIS to ensure that there is a consistent vision of enabling technology needs across the regions, whilst recognising and building on regional or multi-regional strengths through management of a joint strategic plan. This should build on ongoing work by TSB and the RDAs to identify a mechanism for identifying when new technology investments should be concentrated, and when dispersed, i.e. to recognise when it might be better to have a single pillar of excellence rather than a scattering of small R&D investments across organisations to achieve necessary critical mass and retained international comparative advantage.
- TSB should establish and propagate the messages from the proposed National Emerging Technologies Steering Group¹, to identify and exploit further opportunities of national importance.
- RDAs and TSB should review their risk strategies to ensure that they are targeting a proportion of higher risk projects reflecting their respective regional or national priorities, which could potentially realise more significant/radical opportunities (similar to those identified for Printable Electronics in the North).
- Consideration should be given to increasing support for innovation platforms that can stimulate emergence of new technologies and markets from cross-disciplinary, and industry-academic cross-fertilisation of ideas, whilst ensuring that this is done based on SMART objectives and demonstrable added value.
- The technology centres that are best placed to take these technologies from low technology readiness levels to production should be comprehensively mapped, developed and promoted.
- The proposed joint BIS, TSB and RDA study into barriers and solutions for the diffusion of proven new technologies should be completed and appropriate action taken. This will tell us how best we can use our funds to accelerate the uptake of new technologies from leading centres of technology and publicly-funded collaborative R&D, e.g. through closer MAS linkages or increased investment in dedicated technology validation centres.

1.6. Recommendation C: The importance of large businesses needs to be recognised; both as a highly effective route to applying and commercialising innovation and as a “motor” for stimulating wider industry growth and innovation:

- Large international businesses should be encouraged by all government partners, including the RDAs, to:
 - Increase their own and their supply chain's innovation activity in the UK
 - Ensure that UK based businesses represent a significant part of their strategic supply chain.
- We recognise the importance within UK manufacturing of **existing** foreign-owned international businesses as an effective exploiter and catalyst of innovation. We should therefore apply more resource to “investor development” (encouraging these businesses to make continued and additional investments) as well as on new inward investment.

¹ TSB Interim Strategic Review, 2008

- Building on the initiatives proposed by the National Economic Council to account manage the global top 100 companies and to establish a national committee to ensure unblock major projects by working across government, we should review and enhance our account management resources (national and regional) for large international businesses. Wherever possible, BIS should take a lead in relations with multi-site large companies located across regions, whilst region-specific large enterprises and strategically important medium sized companies would be a focus for the RDAs. This would help secure necessary wins for the UK, as with recent investment support brokered by BIS on behalf of Government with Rolls Royce and Airbus.
- BIS and the RDAs should work strategically with large enterprises through account management to support and promote the strategic development of UK supply chain. This could support the case for BIS proposals to reinstate the National Supply Chain Development Programme, which would play a key role in engaging large companies at the head of significant UK supply chains, and in organising appropriate support packages, including from sources such as The Manufacturing Advisory Service.
- An RDA 'clearing house' arrangement should be established to ensure that new support for significant national supply chains is consistent and inclusive in line with regional priorities and supply chain needs. This will overcome inefficiencies for business and the RDAs, e.g. significantly different models for regional roll-out of SC21 support; late entry to supply chain support for local large enterprises.

1.7. Recommendation D: Increase regional focus on, and flexibility in support of, the UK's 9,500 Medium Sized manufacturing businesses; in order to realise their prospects for growth and protect their position in international supply chains.

- A review is required on the strategic opportunities to realise greater strategic returns through support for medium sized enterprises, e.g. as innovators and nodal supply chain companies
- Review the use of *de minimis* and state aid regulations in the funding of support to non-SMEs, which can comprise a significant proportion of key supply chains (75% of East Midlands Automotive)
- BIS and the RDAs should collectively act to ensure that medium sized manufacturers are equally represented alongside LEs and SMEs in policy debates/reviews.

1.8. Recommendation E: Ensure that Advanced Manufacturing policy is prioritised and managed in a way that truly reflects its strategic importance for sustainable economic development and realised through action to:

- Reinforce linkages between EU and UK policy-makers, as well as key partners and stakeholders including the RDAs, to ensure we retain and develop the Advanced Manufacturing capability. This is required to ensure the success of the UK in realising the future market potential identified across New Industry, New Jobs opportunity areas including Digital, Life Sciences, and Low Carbon, as well as composites and plastic electronics.
- Work closely with the EU Manufacture Technology Platform/Factory of the Future PPP to implement and develop the Manufacture technology road map, which should ensure that a wide range of manufacturing businesses master the key enabling technologies required for competitive business models, products, processes and associated services.

- RDAs should be sufficiently engaged in support of future strategic planning exercises to mobilise their resources appropriately in support of emerging priorities.
- Ensure that all RDA strategies and projects are reviewed against the requirements for competitively sustainable Advanced Manufacturing, following a more consistent direction, to ensure relevance and alignment.
- Use our interventions for Advanced Manufacturing to support other New Industry, New Jobs themes, including Low Carbon, Digital, Life Sciences, Ageing Population, Professional Services, as well as those representing an aspect of manufacturing, including Aerospace, Composites and Plastic Electronics.
- Review our financial governance in order to ensure that we can respond in an agile way to emerging needs and opportunities, avoiding over-strict application of state aid regulations and developing innovative commissioning and procurement mechanisms to allow us to avoid the long lead times relating to appraisal and tendering. This review should address the following issues, in particular:
 - The approach to funding for businesses needs to take into account the strategic added value in particular markets and sectors, rather than focus solely on the financial return from a single business or an individual investment.
 - Funding processes are too lengthy. They do not recognise the importance of timeliness in working with businesses and of the added value which accrues through early response to opportunities. Many manufacturing windows of opportunity are very narrow.
 - ERDF and other EU funding is complex and can be long winded and difficult to understand. It compels RDAs to establish complex projects which are focusing on inappropriate deliverables and have unwieldy governance structures. It forces RDAs frequently to put universities in the driving seat rather than industry. ERDF should be radically simplified and made more flexible for businesses to access and utilise.
- Review and eliminate unnecessary duplication of coordination and support activity within and across regions, in particular where this can help ensure better strategic management of the Advanced Manufacturing agenda across the entire RDA portfolio.
- Actively report on opportunities, achievements and issues relating to the RDA masterplan.
- Implement the further detailed recommendations in this report concerning:
 - Improving education and training for Advanced Manufacturing
 - Promotion of technology investment for the day after tomorrow
 - Reviewing the approach taken to Large Enterprise support
 - Prioritising RDA support for middle-sized companies
 - Enhancing supply chain development.

Annex 4:

Details of the measures for Advanced Manufacturing in 'The Plan for Growth' (HMT/BIS, 2011)

Actions:

1) To bring forward investment in new equipment, the Government will extend the capital allowances short life asset regime for plant and machinery from four years to eight years, from April 2011.

The Government recognises the importance of new capital investment in improving productivity and growth, particularly in the manufacturing sector. This change to the capital allowances regime will allow businesses to write off the cost of assets for tax purposes more quickly, where those assets are disposed of within eight years, more closely aligning tax and economic depreciation

2) The Government will expand the University Technical Colleges (UTCs) programme, to establish at least 24 new colleges by 2014.

University Technical Colleges (UTCs) will provide leading edge technical training opportunities for 11-19 year olds. Top UK companies and universities will help set curricula to match the needs of the local economy and of their sectors, provide high quality work placements, and allow the colleges to use their specialist facilities. To enable more young people to gain the technical skills that employers need, the Government will expand the programme from 12 to at least 24 new UTCs by 2014.

.....These institutions ... will build on the success of the JCB Academy in Staffordshire, the forerunner of the UTC model.

3) The Government is announcing a High Value Manufacturing Technology and Innovation Centre (TIC).

This is the first of an elite network of centres and will benefit UK manufacturing by enabling businesses to access state-of-the-art equipment and technical skills, which individual companies and universities could not afford to invest in on their own. By bridging the gap between research and technology commercialisation, TICs will help make new technologies investment ready and better able to attract venture capital or other forms of investment, shortening their time to market. The High Value Manufacturing TIC will integrate the activities of a number of existing high performing centres in Rotherham, Coventry, Strathclyde, Sedgefield, Redcar and Bristol helping large companies and SMEs to work individually or together to develop and commercialise their technology. The integrated centres will take a wide cross sector approach and embrace all forms of manufacture using metals and composites, in addition to process manufacturing technologies and bio-processing. The Technology Strategy board will set out plans to select further TICs in May.

4) The Government will fund nine new university-based Centres for Innovative Manufacturing by 2012.

These Engineering and Physical Sciences Research Council (EPSRC) funded Centres will support emerging science in areas of strategic opportunity for manufacturing. These Centres will feed new ideas and discoveries through to business and Technology and Innovation Centres, helping to open up new industries and markets in growth areas. This year, EPSRC will invest a further £45 million to establish nine new EPSRC Centres in areas such as biological pharmaceuticals, novel composite technologies, and intelligent automation.

5) The Government will fund a programme of new Manufacturing Fellowships to forge links between business and the research base.

EPSRC Manufacturing Fellowships will provide five years' support for at least six exceptional engineers and technology specialists from business who are able to bridge university and industrial cultures. Each Fellow will lead a £1 million programme of research with real commercial potential.

6) The Government is announcing an accelerated launch of the new enhanced Manufacturing Advisory Service with an additional £7 million to deliver its services over the next 3 years

The Manufacturing Advisory Service (MAS) provides companies with direct access to experts who work with them to identify and implement productivity and innovation improvements to their business. The Government has committed £50 million over three years from April 2012 to provide an enhanced service through MAS, tailored to suit the needs of the individual business and the local economic environment. The Government is introducing the new service from 1 Jan 2012, so that manufacturers can access it 3 months earlier than planned. Working with expert partners where appropriate, BIS will develop additional specialist services for firms in developing markets such as offshore wind, and low carbon cars.

7) The Government is launching a new £75 million programme of targeted support to help smaller employers access Advanced Level and Higher Apprenticeships.

This scheme will help address the concerns of small manufacturers who struggle to access Higher Apprenticeships under current delivery models. This funding will support businesses across the supply chain to build Advanced and Higher level apprenticeship schemes, covering some of the costs associated with setting up new training frameworks and putting in place training arrangements with other businesses, including large companies in the supply chain. This will complement investment in apprentices already made by SMEs and the Government. This scheme will help employers to create around 10,000 additional higher apprenticeships over the next 4 years.

8) The Government will support the development of a new degree-level Higher Level Apprenticeship which will include incorporating engineering status and professional recognition for successful apprentices when they graduate.

The Government has committed to expanding Higher Apprenticeships across all sectors from current numbers (around 1,500 starts in 2009-10), which will include looking at proposals to support the Advanced Manufacturing sector - in particular developing a new

Level 5 framework, which would provide a route for Apprentices to achieve professional accreditation as an engineer, is supported as a priority.

9) The Government will strengthen its strategy for promoting STEM skills.

The Government recognises the importance of STEM skills for industry, in particular the manufacturing sector. In order to strengthen the STEM skills of young people in the UK and improve student awareness of STEM careers, the Government will:

- support the Careers Profession Alliance to improve training for careers professionals in subject-specific specialisms, including STEM, to ensure young people have access to high quality, independent guidance to make informed decisions about STEM subjects and careers;
- Increase the number of industry-school visits (e.g. by Apprenticeship Ambassadors). The Government will work with the Education and Employers' Taskforce to remove excessive bureaucracy and other barriers to these visits
- Improve the teaching of STEM skills, by raising the quality of new entrants to the teaching profession. This will be done by reforming teacher training and protecting bursaries for trainee teachers of science and maths; and
- Strengthen STEM promotion activities, including STEMNET, which coordinates a range of activities between business and schools to raise the profile of STEM, including a STEM Ambassadors programme.

10) To promote the UK manufacturing sector, the Government will launch a high profile industry showcase alongside the 2012 Olympic and Paralympic Games and roll out a programme of 'Made in Britain' exhibitions.

An industry showcase will be open to the public and the international audience visiting London before and during the Games and will help change perceptions for young people seeking careers in the sector and international perceptions about UK industrial and design capability. A rolling programme of 'Made in Britain' exhibitions developed by the Department for Business Innovation and Skills will showcase the best of British manufacturing across the UK, including museums, public spaces and online.

11) The Government is seeking to promote a new international prize in engineering and is working with private sector partners to create an endowment to support such a prize

The Government's aim is to make engineering a desirable profession again, where young people aspire to be great engineers. The Government's concept of 'engineering' is modern and wide. It includes every type of science applied to improving human life and sustaining the natural world.

The Government believes that an international prize, as prestigious as the Nobel Prize, based in the UK could help to create the excitement that would help give British manufacturing a brighter future.