



SECTOR: TRANSPORT EQUIPMENT MANUFACTURING

## D2N2 SECTOR ACTION PLAN 2014-2023

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PREPARED FOR D2N2 BY TRANSPORT INET IN ASSOCIATION WITH CENEX



Derby  
Derbyshire  
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## EXECUTIVE SUMMARY

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This Sector Action Plan is one of a series being prepared for D2N2 Local Enterprise Partnership to explore in detail how action can be developed to meet the opportunities and challenges within the key sectors it has identified for promoting jobs and growth.

The Transport Equipment Manufacturing (TEM) sector covers the production of aerospace, marine, automotive and rail transport vehicles and is significantly more productive (by 40%) than elsewhere in the UK. It is characterised by the presence of a small number of Original Equipment Manufacturers (OEM) or Primes, linked to complex and highly sophisticated supply chains that operate on a global scale. The D2N2 area has a strong association with the transport equipment manufacturing sector, given the presence of a number of large and globally significant employers such as Toyota, Rolls Royce and Bombardier, with JCB plants straddling the border.

The sector plan has been prepared by the East Midlands Transport iNet and has involved extensive background research to understand the overall context; interviews with the four main OEMs; interviews with SMEs and a further electronic survey with 45 replies; interviews and consultations with trade organisations, Universities, Catapult centres, and Local Authorities. Finally a sector workshop was held with local SMEs to review the evidence and explore and prioritise possible action.

**Key findings:**

The four OEM/Primes are responsible for over half the estimated 20,000 D2N2 jobs in the sector and therefore make a highly significant contribution to economic vitality in the area

They have a supply chain that is global in reach – perhaps unsurprisingly, there are very few Tier 1 suppliers in the region, let alone the LEP area and it is very difficult for SMEs to engage directly with businesses of this scale

There are national strategies in place or being developed for each of the sub sectors, along with well resourced support programmes, but these

are primarily driven and focussed by the larger businesses and local SMEs find them difficult to access

There are a large number of firms that contribute to the lower end of the supply chain but many of these operate across a number of sectors and not just Transport Equipment Manufacturing, so support for a broader Advanced Manufacturing and Engineering SME initiative is needed – boundaries, both geographical and sectoral, should not be come barriers to accessing support

Local SMEs are also active in supplying OEM/Primes and their supply chains outside the region, such as Jaguar Land Rover and Bentley and a national and international perspective is important to consider; supply chain initiatives are an important element in promoting long term business growth

Consultation with local Councils has pointed out that there are a large number of very small engineering companies with prospects for growth who need support, but are not aligned to any particular sector

Skills challenges are the number 1 issue for many businesses consulted and have been for a decade or more

Additional innovation support; more hands on business support and more accessible financial support were ranked in the next tier of priorities.

Joint commissioning with other LEPs to implement strategic support programmes should be developed to ensure both access to specialist expertise and economies of scale.

There is now a real prospect of significant inward investment being attracted, particularly in the automotive sector due to the sustained rise in volume of production predicted to reach its highest levels ever from 2017 and the interest of OEMs in securing greater supply from within the UK, but agencies operating within D2N2 need to collaborate to develop a clearly articulated and differentiated local offer.

The importance of providing continuity for proven programmes and delivery mechanisms is a common theme.

## ACTION PLAN SUMMARY

The outcome of consultation and discussions has resulted in proposals for a 7 point Action Plan, with one of these on Skills and Training, being prepared separately.

### **1. Ensuring OEMs/Primes have any local needs met**

- Maintain effective local liaison with Prime/OEM senior representatives to ensure that any local issues are identified and addressed and opportunities realised
- Ensure local awareness of national support schemes that Primes/OEMs sponsor as part of local business support arrangements and that D2N2 firms are encouraged to participate
- Continue to support supply chain development to help Primes/OEMs develop new suppliers to ensure that business critical components can be sourced and where feasible, from local firms

### **2. Enhancing Supply Chain Development**

- Develop and fund programmes to ensure that SME potential to participate in supply chains is maximised and their business capabilities enhanced by making these firms aware of opportunities and then support them with consulting ,workshops/events and training to help them get to the point where they are able to bid and win work ,with a focus on Advanced Manufacturing and Engineering, (AME) in recognition that many SMEs work in other sectors
- Run Meet the Buyer events and annual tech-exchange for companies to pitch their technology developments to help local firms understand entry requirements for becoming suppliers
- Provide support to improve SME tendering/sub-contracting skills
- Work with other LEPs to support integrated programmes on supply chain developments within the East Midlands and wider
- Assess extending the delivery model used by NATEP in aerospace to other sub sectors

### **3. Developing Business Support that Works for Businesses**

- Develop specific provision appropriate to AME businesses linked to the proposed Business Growth Hub, that features high value and bespoke support to individual companies, including next day information problem solving; face to face contact with informed business advisors where desired; marketing support; and the ability to develop bespoke packages of support, including practical help with securing funding
- Aim to transform the capacity, delivery performance and capability of existing SMEs by supporting management and leadership development programmes
- Design and implement a programme to enhance capacity in manufacturing engineering
- Support seed corn funding for business led peer learning networks that help business managers to share experiences and collaboratively address challenges

#### **4. Addressing Challenges in Access to Finance**

- Develop a portfolio of financial support that has certainty and longevity, so that a full escalator of growth funding is available, including equity finance, integrated with business support where possible and seek to extend common provision across D2N2, where feasible
- Explore if it is possible to provide loans secured against grant offers, to cover advanced payments of deposits for capital equipment and non-recoverable VAT to help speed up investment in growth
- Review best practice across public sector grant schemes with a view to streamlining any paperwork and avoiding unnecessary complexity from the businesses perspective
- Explore developing programmes with other LEPs to create economies of scale and impact

#### **5. Realising Opportunities to Attract Inward Investment**

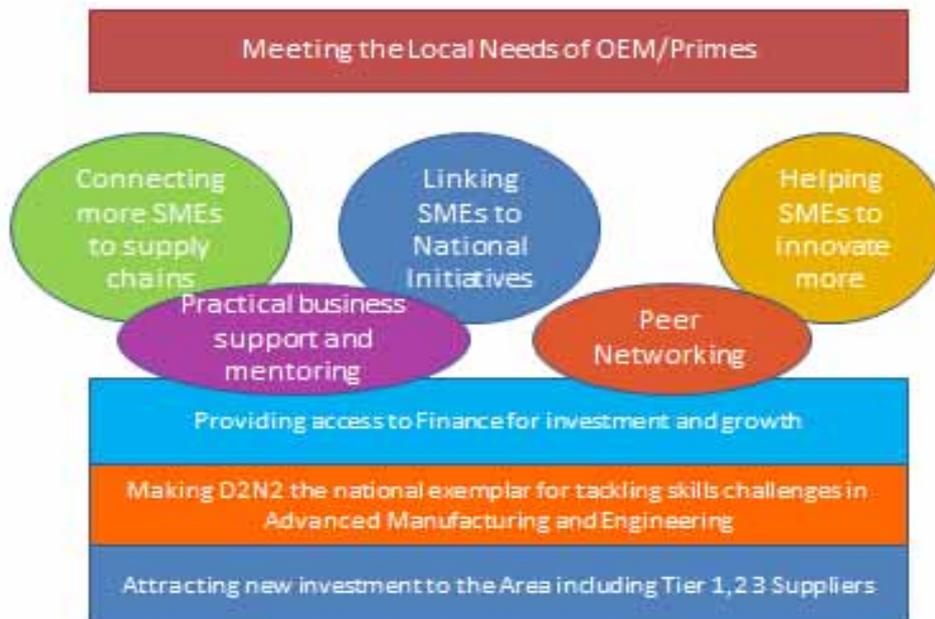
- Ensure that the inward investment teams and Local Authority partners articulate a common understanding of the attributes and distinctiveness of the D2N2 offer by working collectively and ensuring that they link effectively to UKTI activity
- Make TEM/AME a key priority for D2N2 inward investment and develop an active local programme of events attendance and lead generation in conjunction with national initiatives to secure new investment
- Seek to fund a marketing programme to work with UKTI to explore potential overseas investor leads for the TEM/AME sector appropriate to key strategic sites in D2N2
- Build co-ordination of Trade Show attendance into the work of the Business Growth Hub (sector support) so that SMEs can collaborate and have a presence on a larger D2N2 or relevant branded stands, sharing costs and increasing impact

#### **6. Creating More Opportunities for Innovation**

- Develop a grant aid/financial support programme to overcome cost barriers for D2N2 SME access to Catapult Centres
- Provide direct innovation support to SMEs across D2N2, through grant aid and advice and also actively linking them to the most relevant part of the knowledge base i.e. University or Research & Technology Organisation, irrespective of geographical location, to reduce the risk of investing in unproven technologies.
- Develop a programme for innovation mentors to help business owners/managers tackle challenges and seize opportunities for innovation
- Seek to establish a TSB Launchpad programme focussed on the TEM sector and related AME businesses
- Encourage support for long term relationships between SMEs and Universities beyond by designing support activity beyond 2 day assists
- Assess the case for local provision of centres of excellence that can help SMEs to develop new products and processes eg the proposed Low Carbon Transport Technology Centre
- Develop programmes with other LEPs to create economies of scale and maximise impact

**7.0 Meeting Present and Future Skills Needs** - A separate Skills Action Plan is being developed for D2N2 by Employer First

The key elements of the overall Sector Action Plan are summarised graphically below.



**Next Steps and Communications**

This report forms the basis of the TEM Sector requirements and feeds into the EUSIF Implementation Plan. It will be considered by the D2N2 Board as part of its programme of developing action in its key sectors. In particular it will be used to develop the details of potential funding packages and the design of calls for proposals for EU funds later in 2014/15.

A wide range of contacts have been established during this study with a number of individuals willing to get involved and provide ideas and expertise. At this stage the aim is to establish a broad Reference Group that will be kept informed of progress, facilitated by the Transport iNet. They will provide input when new developments and opportunities arise. Martin Rigley of Lindhurst Innovation Engineers will chair a core SME private sector led Group that will provide advice and guidance on the overall development of action, with the likelihood that future meetings will have a specific theme and all relevant key agencies invited to participate.

## 1. INTRODUCTION

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The D2N2 Strategic Economic Plan (SEP) sets out one single target – to support the creation of an additional 55,000 private sector employee jobs in D2N2 by 2023, shifting the balance to more private sector jobs. Every action proposed in the Strategic Economic Plan will help to move towards this target, by inspiring economic growth and supporting firms to innovate, invest, export, grow and create sustainable jobs.

This report is one of a series of plans being prepared for the priority sectors to add detail to present thinking and will help to identify the priorities of the next round of EU funding from 2014 – 2020, where D2N2 has an allocation of £214m, including £20M on Innovation and £70M for business support & access to finance. The Sector Action Plans will help to inform how these resources should be directed. Work is also being carried out on a Skills Plan for the sector by Employer First and the authors of this report have collaborated fully with this process.

## 2. SECTOR BACKGROUND - GLOBAL CONTEXT AND LOCAL PICTURE

Transport Equipment Manufacturing was highlighted as one of two industrial specialisms in the D2N2 LEP area in the LEP Network review<sup>1</sup>. The D2N2 sector focus covers the production of aerospace, marine, automotive and rail transport vehicles and is significantly more productive (by 40%) than elsewhere in the UK. It embraces business processes and technologies that are “through-life” and multi-disciplinary involving Concept, Design, Production, Service, Re-cycle, Materials, Software, Electronics & Controls. It is characterised by the presence of a small number of Original Equipment Manufacturers (OEM) or Primes, linked to complex and highly sophisticated supply chains, operating on a global basis. Supply chain structures involve a broad spread of products from High Volume Auto, Off-highway, to Niche Vehicle. In rail it includes rolling stock, infrastructure, maintenance, operation and repair. This definition is consistent with national studies e.g. SEMTA.<sup>2</sup>

The D2N2 area has a strong association with the transport equipment manufacturing sector, given the presence of a number of large and globally significant employers such as Toyota, Rolls Royce and Bombardier and their supply chains.

The sector is highly significant for Derby City where it is responsible for a substantial number of quality jobs and the concentration of jobs in aerospace and rail is eight times higher than nationally. Both County Councils recognise the importance of the sector and of high integrity engineering more broadly – TEM is a key priority for South Derbyshire and Mansfield and Ashfield Districts. There are some important TEM businesses operating in the TEM supply chain particularly in High Peak and Bassetlaw whilst in Nottingham City, Amber Valley and Newark and Sherwood, engineering firms are important elements of the economy in Advanced Manufacturing and Precision Engineering. Bassetlaw, Chesterfield, North East Derbyshire and Bolsover all report a strong engineering base, but often in micro businesses not aligned to any particular sector. There are some distinct TEM concentrations along the M1, A50 and A38 but also broadly dispersed in places such as Worksop and Chapel en le Frith. Whilst a number of SMEs are known to participate in TEM supply chains they are also active in a number of sectors.

A review of overall economic performance is now being prepared by Ekosgen to update their State of the Local Economy Report, last published in June 2013<sup>3</sup>. Over the last decade, TEM largely remained constant in employment terms. In contrast, one third of the D2N2’s manufacturing base was lost over this period, equating to over 67,000 jobs. In this context, maintaining jobs whilst improving productivity is a major achievement. Given the area’s industrial heritage and ongoing reliance on manufacturing for major sources of employment, Ekosgen has commented that slowing the loss of manufacturing jobs over the next ten years will be particularly important to achieving the area’s economic ambitions, with a headline aim to create an additional net 55,000 jobs. Ekosgen reported in March 2014<sup>4</sup> that during the period 2009 to 2012, the sector experienced growth in employment of 400 jobs, 2.1%. This masks underlying variation, with the majority of growth in the manufacture of other transport equipment sector

<sup>1</sup> LEP Network Review of LEP Economies 2012 Report

<sup>2</sup> Sector Skills Assessment for Science, Engineering and Manufacturing Technologies, December 2010

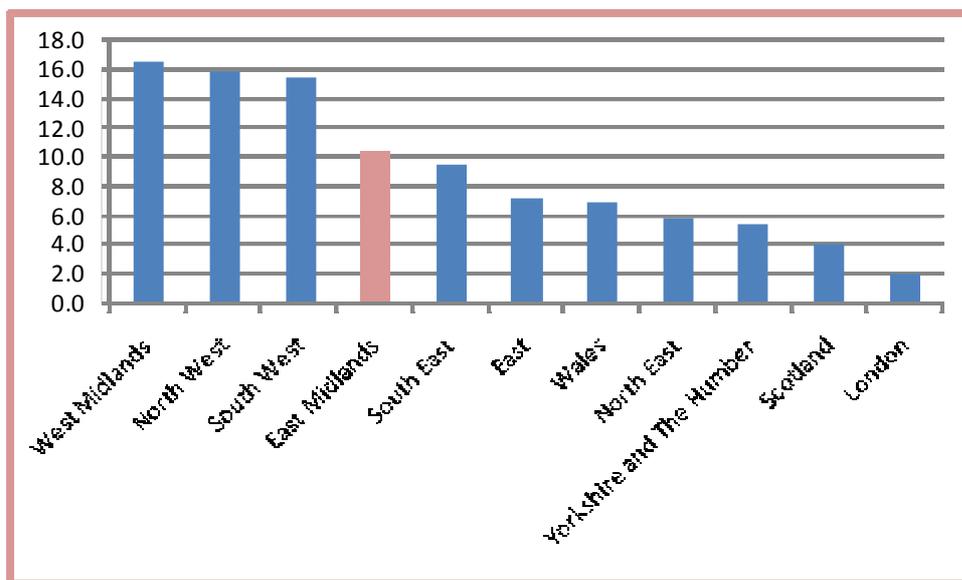
<sup>3</sup> State of D2N2 Economy Report, Ekosgen June 2013

<sup>4</sup> Draft State of D2N2 Economy Report, Ekosgen, March 2014

(1,300 jobs, 9.7%), a large proportion of which was countered by decline in manufacture of motor vehicles and trailers sector (900 jobs, -15.1%). Nationally, both sectors have declined in employment (-9.9% and -5% respectively), which further highlights the importance of other transport equipment manufacturing to the D2N2 economy.

With its industrial history and current strengths in advanced manufacturing sectors, the D2N2 economy is well placed to benefit from future growth, but it is important to recognise that other regions will also. The chart below drawn from independent review of Transport iNet operations indicates that TEM is also a significant sector in several other parts of the UK.

**Percentage of national employment in transport manufacturing per region 2012,**



(from iNet Evaluation) (BRES, Nomis 2012)

### 3. NATIONAL PROGRAMMES, ISSUES AND SUB SECTOR DRIVERS

#### **3.1 National Context**

The policy focus on supporting the UK's advanced manufacturing sector is evidenced by the Technology Strategy Board's (TSB) commitment to ensuring that high value manufacturing is a key driver of the UK's future economic success and ability to create private sector jobs growth<sup>5</sup>. Despite historic manufacturing strengths and promising current performance, globalisation has continued to drive production activities towards countries with the lowest labour costs and/or the largest markets, and the UK remains vulnerable to eroding manufacturing investment and capability. This, coupled with an over-dependency on service sectors, has led the UK Government to aim to increase the role that manufacturing plays in the growth of the economy. Innovation in manufacturing, through commercialising the world-class output of the UK science base, is fundamental to these long-term growth ambitions.

The TSB Delivery Plan for 2014/15 notes that considerable help and multiple forms of support are available but the innovation ecosystem is fragmented and difficult for business to navigate, particularly for small and early-stage businesses. As a result, TSB is broadening its role and building relationships with other UK organisations, to help join up all the players in the innovation-support landscape and create a more effective innovation environment. TSB has recently published a 2014/15 Transport Action Plan.

TSB is investing heavily in a series of "Catapults" alongside existing programmes. A Catapult is a technology and innovation centre where the very best of the UK's businesses, scientists and engineers can work side by side on research and development, transforming ideas into new products by commercialising research. The programme is a strategic initiative with seven areas of focus, one of which is High Value Manufacturing, which in turn is comprised of seven technology and innovation centres.

High Value Manufacturing is the application of leading edge technical knowledge and expertise to the creation of products, production processes, and associated services which have strong potential to bring sustainable growth and high economic value to the UK. The TSB intervention is organised around investment in five strategic themes:

- resource efficiency
- manufacturing processes
- materials integration
- manufacturing systems
- business models.

TSB expect to invest at least £50m a year to deliver the HVM strategy, with at least £25m allocated to HVM Catapult core funding and around £25m for business investment in process and product-related collaborative R&D projects and other innovation support activities. The HVM Catapult's network consists of seven technology and innovation centres, three of which are of particular interest to the Transport Equipment Manufacturing sector.

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<sup>5</sup> High Value Manufacturing | 2012-2015, Technology Strategy Board

The **Manufacturing Technology Centre (MTC)** at Ansty Park, Coventry is a partnership between some of the UK's major global manufacturers and the universities of Birmingham, Nottingham and Loughborough and specialises in a range of manufacturing technologies and processes that are important to the high value manufacturing sector and in commercialising research.

The University of Sheffield **Advanced Manufacturing Research Centre with Boeing** focuses on advanced machining and materials research for aerospace and other high-value manufacturing sectors. It identifies researches and resolves manufacturing problems on behalf of its industrial partners. Around 70 companies have joined as members, from global aerospace giants such as Boeing, Rolls-Royce, BAE Systems and Messier-Bugatti-Dowty, to local small businesses.

**The National Composites Centre (NCC)** at Bristol provides industrial scale Research and Technology Development facilities to meet the needs of all sectors wishing to capitalise on the high-strength, low weight, corrosion-resistant qualities of composites materials.

Whilst the investment and focus on Transport by the Technology Strategy Board is very welcome, it does not entirely address the issues facing the Equipment Manufacturing sector and the contents of this action plan identifies where additional action can be taken.

### **Transport Equipment Manufacturing Sub Sectors**

Beta Technology (Beta) was engaged by the Transport Knowledge Transfer Network (KTN) to undertake a short mapping exercise of the transport sector and its sub-sectors with a focus on determining the primary drivers and effectors within the sector and the headline findings have been made available by Cenex<sup>6</sup>. The general conclusion from this work was that each of the industries under consideration is influenced to implement efficiency savings, with activities seemingly focused on innovation to both enhance current technologies and introduce new technologies. There is clearly some commonality and cross cutting technology and thus potential for technology and/or knowledge transfer, not just within transport areas but also with non-transport sectors.

The TEM sector comprises some distinct sub sectors. The prospects and issues relating to these are reviewed in the following sections.

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<sup>6</sup> Industry Mapping Exercise March 2014; Report prepared by Beta Technology for the Transport KTN.

### 3.2 *Aerospace*

**The Aerospace Industrial Strategy**<sup>7</sup> has been developed jointly by Government and industry working together through the **Aerospace Growth Partnership (AGP)**. The UK aerospace sector is the European leader and global number two and has created a high-tech and high-skill industry of 3,000 companies and 230,000 employees in the UK that creates major UK economic benefits. It will seek to access support from the €3.6bn **Clean Sky 2** programme that seeks to drive innovation in EU in the sector for the next decade.

The Industrial Strategy notes UK aerospace industry is expected to grow at a rate of 6.8% over the next few years. This is driven by a global increase in air traffic, which is expected to be sustained at a rate of 4.7% per annum between now and 2030, meaning a doubling in air traffic in the next 15 years. CBI analysis indicates that just by maintaining the current market share, air traffic growth in Asia alone has the potential to contribute an extra £4.7 billion in UK exports annually in the next ten years, adding 20,000 high-value jobs. This scenario underpins a forecast for 27,000 new passenger aircraft with the demand for greener, more fuel efficient aircraft, presenting a challenge to which the UK aerospace industry must respond.

The strategy is based on the analysis that despite growing international competition, the UK has developed a strong comparative advantage in the four key, high-value, highly complex areas of modern aircraft – wings, engines, aerostructures and advanced systems – stemming from its highly skilled workforce, institutional knowledge and strong science and research base. The sector benefits from having a strong lead trade association – ADS – that has helped bring the industry together to facilitate engagement with Government.

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<sup>7</sup> Lifting off: implementing the strategic vision for UK aerospace; BIS, March 2013



The wider Midlands is home to one of the world's biggest aerospace clusters comprising 250 companies and the East Midlands contains approximately one half of the overall Midlands aerospace cluster, dominated in scale by **Rolls Royce**.

Derby is home to Rolls Royce, a major global brand. The company has been established in the city for 100 years and is the largest single employer in the City with 12,500 employees, the majority of which are employed in the aerospace sector. It is the world's number two engine manufacturer overall and market leader for commercial jet engines. Research for Derby City Council indicated that in 2009 it supplied 650 airlines and serviced over 12,000 engines worldwide, 3,500 of these from its Derby facilities.<sup>8</sup> With an order book of £71Bn and increased profitability it is well placed to maintain its place within a highly competitive industry.

Long-term relationships between customers and suppliers in supply chains are critical to the structure and functioning of the aerospace industry and barriers to entry are significant. Small and medium sized enterprises (SMEs) are generally peripheral to the structure, dynamics and innovation drivers of aerospace. When the Midlands Aerospace Alliance (MAA) conducted a mapping exercise for the Transport iNet in 2009 it found that whilst a number of companies are very dependent on aerospace markets,<sup>9</sup> a larger number, however, are less than 50% dependent on aerospace markets. (this is referred to in more detail in the following section on Supply Chain issues)

<sup>8</sup> Planes, Trains and Automobiles Research; URS, for Derby City Council and emda, 2009

<sup>9</sup> Aerospace in the East Midlands: industry structure, industry dynamics and innovation drivers; MAA, June 2009

It is also important to recognise the unique nature and timescale of the aerospace product life cycle. Some of the world's currently most successful civil aircraft were designed over 40 years ago. The design and development of a new civil aircraft takes typically some 6 to 7 years. Potential suppliers of parts and equipment must get involved at the earliest stages offering the most innovative technical proposals and creative and competitive commercial packages. With the lifecycle of a new aircraft typically then extending more than 25 years following entry into service, it is important for suppliers to win contracts from customers to produce new aircraft parts and thus win a share of the available business emanating from the programme. The MAA mapping report suggested that failure to do so means that companies are excluded for the lifetime of the aircraft. However, Rolls Royce representatives have pointed out that many contracts for new aircraft parts are let on a fixed period basis, typically 3-5 years after which the contract is re-bid. This allows other companies opportunity to win this business if more competitive. There are some "life of type" contracts, however this tends to be for a limited number of parts where the supplier has some unique capability that cannot be found elsewhere and usually involves the supplier being involved in the design of that component. Even these contracts tend to have competitiveness clauses that allow OEM/Primes to re-bid the contract if necessary.

The Beta Technology report found the aviation sector is very heavily driven by cost, especially for the airline industry. A number of costs have significant impact on the sector including: landing fees, fuel costs and ground support services. Fuel efficiency and fuel savings are a key variable within the business models and the airline business models seem quite fragile and very sensitive to outside influences, such as increased security requirements and volcanic ash clouds.

This pressure from airlines to reduce operating costs, combined with the need to reduce the environmental impact of aircraft, indicates that future aircraft will be based on very different product and manufacturing technologies from those currently in use. The UK needs to be positioned at the forefront of these new technologies or its present pre-eminent position will be at risk. At the top end, the sector is dominated by a small number of multi-national prime contractors, whose investments are mobile and whose decisions affect companies across all tiers of the supply chain. For example, each sale of an Airbus aircraft or an aircraft powered by Rolls-Royce engines currently supports approximately 1,700 UK companies for Airbus and 3,000 for Rolls-Royce in their respective supply chains. The national strategy notes we are entering a critical stage in the evolution of the sector as these prime contractor companies start to take decisions on the design and manufacture of the next generation of aircraft and engines, which will replace existing, ageing platforms.

Some examples and details of major initiatives now under way or being actively planned are listed in Appendix A. These include **UK Aerospace Technology Institute (ATI)** a joint industry and Government investment of £2 billion across the next seven years to give certainty and stability for technology and innovation; **Sharing in Growth** a programme to raise the capability of UK Aerospace suppliers in order to share in the anticipated growth of this global market and other associated high value manufacturing sectors. It is sponsored by Rolls Royce and receives £50M support from Government through the Regional Growth Fund; **NATEP** is a £40m Technology Development Programme aimed at small and medium sized suppliers to help them develop their own innovative technologies to enhance their capabilities and increase their ability to win new business with higher tier companies anywhere in the world. This builds on the successful regional technology programme run in the Midlands and managed by the MAA, who play a key role in supporting NATEP delivery.

### 3.3 *Automotive*

Britain is the fourth largest vehicle producer in Europe, making 1.58 million vehicles in 2012. Over 80 per cent of these are exported to more than 100 countries. The challenge is to maintain this momentum to secure the long term future of the sector by growing the UK share of the value chain and by getting ahead of the game in research and development (R&D) on ultra-low emission vehicles. Of all of the sectors the move towards a lower carbon future seems to be well advanced with clear visions shared by most of the players and individual vehicle manufacturers offering clear routes forward. As a result of this, the introduction of new technology and vehicle variants into the market place is steadily increasing. There has been a sustained increase in vehicle production and by 2017 the Trade body Society of Motor Manufacturers & Traders (SMMT) forecasts that the UK will make more than it has ever done.

A long-term partnership approach between industry and government was established in 2009 with the creation of the Automotive Council. It has worked with Government to identify a long term strategy published in July 2013<sup>10</sup> focused on four key areas to address challenges and opportunities:

**Innovation and technology:** By 2040 almost none of Europe's new cars will be powered solely by a traditional petrol or diesel engine. This once in a lifetime technology change offers the UK an opportunity to create tomorrow's vehicles, increase its market share and create new supply chain companies. To deliver this the UK needs not only an increase in R&D investment, but also to capitalise on this – securing production in the UK. This requires innovative small and medium enterprises (SMEs) to be nurtured and investment by multinational companies.

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<sup>10</sup> Driving success – a strategy for growth and sustainability in the UK automotive sector; Automotive Council, July 2013

**Supply chain:** The domestic supply chain is relatively weak. On average only a third of the parts that go into vehicles manufactured here are sourced from the UK. For cars built in Germany the equivalent figure for locally-sourced content is 65%. Stepping up the amount of UK content in UK-built cars is dependent on a stronger automotive supply chain in the UK ; UK suppliers could take a much bigger share of the market as the Automotive Council has identified £3 billion of contracts per year which UK-based OEMs want to source from the UK but are currently unable to. There may be opportunities to attract key elements of the supply chain – Tier 1 suppliers that have considerable autonomy over design and production – to locate within the UK as part of a process of “re-shoring” – bringing back activity that used to be here but has moved overseas. Supply chain issues are discussed in more detail in section 4 later in the report.

**Skills:** The scale of these future opportunities and meeting increasing production demand has highlighted a shortage of engineers and other skilled workers. The UK needs to build up a comprehensive talent pipeline including in the supply chain, starting in schools and encouraging a career path to apprenticeships, graduates and post graduates. Failure to do this will make the UK less attractive as a place to invest and will restrict supply chain growth.

**Business environment:** The UK faces stiff competition from other countries that strategically support advanced manufacturing. This can include significant R&D spending and tax breaks and strong incentives to encourage investment by suppliers. Strategic partnership is key to improve the business environment for the UK automotive sector.



Regionally, employment is dominated by Toyota but a sector mapping exercise in 2009<sup>11</sup> suggests that 25% of the employment in the East Midlands is in SMEs. 759 companies were assessed as being in the SME segment. It is estimated that there are around 7,500 jobs in the manufacture of motor vehicles & trailers in D2N2, but a large number of firms work across the wider Transport Equipment sector which employs 20,200 and is in turn, part of Advanced Manufacturing sector that employs 50,000 (BRES 2012). The number of D2N2 companies working in and supplying components and products in the automotive sector is estimated to be over 400.

Derbyshire has been home to Toyota Motor Manufacturing (UK) for 20 years at Burnaston. The award-winning Avensis and Auris models are manufactured here and Toyota was the first car manufacturer to produce a full hybrid vehicle in Europe – the Auris Hybrid Synergy Drive (HSD). Burnaston is the only plant in the world to manufacture the Avensis and the Auris Hybrid models. Today the company manufactures approximately 140,000 cars every year at the Burnaston plant, which employs a workforce of over 3,500.

The D2N2 business base includes Niche Vehicle manufacturers e.g. Gardner Douglas, and an established culture of Motorsport innovation, exemplified by the new Formula-e HQ at Donington Park, which overlaps with the Leicester and Leicestershire LEP border and Norton Motorcycles nearby. There are also strong links to Silverstone, which forms part of the largest concentration of automotive and high performance engineering businesses in the UK. As such, there is a strong relevance to D2N2 TEM sector SMEs through their expertise in composites, alloys, precision machining and additive manufacture.

In addition, D2N2 is home to SMEs offering advanced manufacturing and engineering technologies, delivering products and services relevant to key Automotive challenge areas such as:

- advanced materials and manufacturing process development in support of “lightweighting” (e.g. strong composites cluster including Cytec (nee Umeco) and EPM Technology in Derbyshire)
- energy efficiency and usage management throughout the product life cycle to minimise environmental impact

The importance of Composites as the “materials of the future” which could be used by all vehicle platforms was raised in developing the parallel D2N2 Low Carbon Sector Plan. However, this importance to local SMEs can be overplayed because Composites remain low volume, high cost (and value) with re-cycling challenges to meet and therefore remain stubbornly elusive to make economically viable. It has great growth potential, but probably over decades and needs considerable investment, whilst applications of metals continue to compete and improve. This is one of many examples of issues that are cross cutting and cross sector.

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<sup>11</sup> Mapping of the East Midlands Automotive Industry & Identifying the Main Innovation Driver; Knibb, Gormezano and Partners 2009

National Initiatives are again listed in Appendix A and include The **Advanced Propulsion Centre**, a £1bn initiative to have a hub based at Warwick University and will position the UK as the global centre of low carbon propulsion development and production and the **Automotive Investment Organisation (AIO)** set up to attract inward investment in the supply chain and in R&D to the UK.

### 3.4 Rail

A thriving UK rail sector makes an important contribution to the UK economy, both in terms of direct economic and employment contribution (£7bn and 80,000 supply chain employees), and as a critical enabler for UK growth and productivity.

**The Rail Supply Group** aims to strengthen the capability & competitiveness of the UK rail supply chain to win business at home & abroad. It is working to develop an industrial strategy by 2017. It is doing so in the context of a major long term European initiative - SHIFT<sup>2</sup>RAIL will be the first European rail joint technology initiative to seek focused research and innovation (R&I) and market-driven solutions by accelerating the integration of new and advanced technologies into innovative rail product solutions.

The RSG suggests that international market demand for rail is growing at greater than 2.5% pa, and UK market demand is also forecast to grow at greater than 2% pa to 2030 with a number of major planned UK investments in heavy rail. However there remains some caution with regard to the perceived stability of national long term development plans for heavy rail and there is no long term Light Rail/Tram/Metro (LRTM) plan. Even limited improvements in sector growth and export competitiveness resulting from capability improvements would have £100m's of economic impact for UK plc as a whole. However, the impact of the planned demand increase on the UK supply chain will also be highly-dependent on the degree of success of UK-based primes in winning key procurement competitions.

Evidence of a more open and collaborative approach to working in the sector includes Network Rail's Innovation and Suggestions Scheme, which encourages suppliers to view their challenge areas and submit ideas for improving their service through their Innovation Portal.

Preparatory work on the UK Strategy by the Future Railway / Enabling Innovation Team (EIT) included mapping capabilities and markets for the rail sector. It has identified that whilst the UK supply chain has some weaknesses relative to international competitors, there are some specific capability areas where the UK is already strong and there is potential to build further strength. These are candidates to be designated as "Early Growth Technologies" and include:

- Control systems
- Energy Management
- Simulation/Synthetic Environments
- Whole Life Systems Management

There are other areas where the UK has good potential to develop world class strengths in rail over the next 10-30 years, reflecting strengths in other sectors and in R&D. These include:

- Big data analytics
- Customer experience
- Propulsion systems
- Transaction management

However, it suggests that there are a number of common barriers to be overcome to develop capabilities. These include the following:

- Lack of confidence in the stability of UK's long-term rail investment strategy and policy
- Railway structures and business models which do not necessarily match returns from innovation with investment; for the parties involved or within the timescales of interest
- Generally the UK rail supply chain is fragmented and lagging in equipment/component and systems manufacturing capability versus international competitors (despite pockets of strength). Whilst UK is strong in advisory services, there is no means for UK to offer a full turnkey railway
- There is still an "innovation gap" at the technology scale-up and demonstration phase; risk aversion and conservatism is still seen as a barrier to introduction into operations

The work to date notes there are a number of mission critical projects which offer significant opportunities for suppliers - HS2, Crossrail; Underground and Network Rail investment

The HS2 Phase One Outline Procurement Strategy has recently been published (the "OPS") and describes a high-level procurement approach, covering the following commodity categories:

- Tunnels;
- Surface Route;
- Stations;
- Enabling Works;
- Railway Systems;
- Design Services; and
- Elements of Rolling Stock, Depots and Signalling.

Of the sectors under consideration in TEM the rail sector is the most highly centralised with Rail Operators purchasing licenses to operate from a central regulator. With this in mind there are a variety of business and infrastructure models from the high speed network [few stops, slow passenger turnover] to the mass transit models e.g. London Tube [many stops, very high passenger turnover]. Again the sector is driven by legislation which looks for efficiency gains. The industry has set its own policy challenges described as the four C's [Capacity (increases), Carbon (reductions), Cost (reduce), Customer Experience (improve)] which neatly encapsulates the drivers applied to the industry. These challenges are in fact probably applicable to all transport areas.



Derby-based Bombardier is only one of two rail manufacturers operating in the UK and has recently won the £1Bn Crossrail contract. As such it is a dominant presence in the area in terms of jobs and also a focus for supply chain activities. Derby and Derbyshire has an international reputation for excellence in rail engineering, design, manufacture and consultancy.

The regional scale of the rail sub sector was assessed through a mapping exercise in 2009 and indicates that there are around 450 companies<sup>12</sup>. This noted that a substantial number of East Midlands rail sector companies are relatively small, and many are not easily classified since they cover a range of niche offerings. The companies' precise position in the supply chain can vary depending on the nature of work undertaken. This type of company typically has insufficient resource to keep well informed regarding wider rail strategy and so tends to innovate according to customer demand, and only when an order appears to be close, or when won, thus importing risk potential into projects. The action identified within this Plan seeks to address these issues.

**Derby and Derbyshire Rail Forum (DDRF)** represents a globally significant cluster of over 100 rail related businesses across the East Midlands, and is described further in section 6.

### 3.5 *Marine*

The UK marine industry has been very much reduced in scale in recent years. The ability to undertake large ship building in the UK is now limited, along with skills and knowledge in this area. A number of smaller ship yards focus on specialist vessels and services such as super yachts and new wind farm support vessels.

<sup>12</sup> Mapping of the elements of the rail sector supply chain in the East Midlands and identifying the main innovation drivers; DDRF 2009

The British Marine Federation (BMF) estimates that the UK leisure and small commercial marine industry consists of approximately 35,200 full time equivalent (FTE) employees. The majority of companies – 73.4% - have 5 employees or less. The industry in the East Midlands accounts for 9.8% of the industry total for the UK – placing the region fourth behind the South East, South West and East of England consecutively<sup>13</sup>. The marine industry is diverse and companies of all scales are involved. From major employers in the region – such as Fairline Boats plc which characterises the top of the supply chain at Oundle and Corby – to the many “cottage style” industries supporting other aspects. Amongst these are traditional family run lifestyle businesses which rely on local business as well as international SMEs who compete in worldwide markets.

In addition, Rolls-Royce has world-leading capabilities in the marine market, encompassing the design, supply and support of power and propulsion systems. The bulk of the business is focused on Offshore Oil & Gas vessels and the merchant fleet and has its headquarters in Bergen, Norway. Rolls-Royce Marine Power Operations Limited forms a small but important part of the total marine business of Rolls-Royce plc and is based in Derby.

The UK Marine Industries Alliance has developed a technology roadmap to identify future priority gaps, opportunities and capability needs for the UK Marine Industries.<sup>14</sup> It contains six main themes with a further theme identified for development;

1. Development of a unified voice and supporting image for the Marine Industries with Maritime UK (underpinned by common statistics and data).
2. Deliver the Marine Industries export trade contribution to sustainable UK growth.
3. Identify the priorities for marine technology and innovation investments by Government and industry, building on the roadmap.
4. Development of a skills roadmap focused on delivering the long-term skills which will be required by industry.
5. Exploit the potential for offshore renewables based industries, and share knowledge on opportunities.
6. Identification of risks and opportunities from existing and emerging regulations.

The Marine Industries Leadership Council will also develop a theme to improve the supply chain.

BMF Midlands is one of the 12 Regional Associations within the British Marine Federation (BMF) and works on behalf of members to promote their interests in the marine industry.

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<sup>13</sup> Mapping of the main elements of the marine sector in the East Midlands and identifying the main innovation drivers; TBAT February 2008

<sup>14</sup> A Strategy for Growth for the UK Marine Industries; 2011. (funded by the Technology Strategy Board and Transport KTN with support from Department of Business, Innovation & Skills)

#### 4. *Supply Chain Issues*

As noted earlier, the sector and its sub sectors are characterised by sophisticated and complex supply chains that have a global footprint. Similar supplier characteristics are often found across the TEM sectors and indeed, a number of others. For illustrative purposes, this section largely focusses on Automotive, where the UK has been steadily losing market share, so that on average only around a third of components are sourced from the UK. This is particularly significant given that SMMT estimates that around 75% of the value of a finished vehicle is comprised of parts supplied.

A report for the Smith Institute and SMMT<sup>15</sup> notes that the supply chains of automotive OEMs are component based. Typically the UK supply chain for an OEM will be split by commodity (trim, body and chassis, powertrain and electrical). Electrical components tend to be sourced from the Far East. Sub-frames tend to be sourced locally due to their weight with local assembly of suspension modules. While engines tend to be assembled in the UK, there is limited capacity. Exhausts, radiators and cooling systems tend to come from the UK as they do not ship well. Gearboxes come primarily from Germany and Austria. Most trim and bodywork comes from the UK supply base. The tools on presses come from India and China.

However, the report comments that in recent years major suppliers with a UK base have reduced significantly. There was a trend in the early 2000s to offshore activities in Eastern Europe at the request of the car companies on grounds of cost. Following the 2008/9 financial crash many major Tier One suppliers also retrenched to their European homelands and consolidated their operations to match the capacity for demand in the market. This acceleration of a longer term “hollowing out” of suppliers has had a knock on effect at lower tiers in the UK supply chain. OEMs see attracting these European suppliers back to the UK as critical as well as luring major Tier One suppliers based in China, India and South Korea who have sufficient financial resources for the scale of investments required. But the volume of business must be significant to be attractive to an inward investor. For relatively low cost components the economics of preferred locations can fluctuate quite quickly.

A locally relevant example of off-shoring was Johnson Controls (JCI) which established a car seat cover production plant employing 500+ at Mansfield in 1995, based on the principle of delivering an order to Toyota within 2 hours of receipt. However, in 2000 JCI closed the plant and moved production to Eastern Europe, based on lower production costs there, and using a large UK central warehouse from which to do Just-in-Time (JIT) delivery.

Another dimension was reported by JCB Powertrain, who cited their history of sourcing castings from a foundry in Derby which was then acquired by Thyssen-Krupp and closed down, then transferring to Beans Foundry, Tipton, also since closed with castings now sourced offshore due to a lack of alternatives.

<sup>15</sup> Give them some credit! a survey of the barriers to funding the UK's automotive supply chain; Andrew Rumfitt for Smith Institute June 2012

No UK vehicle manufacturers publish details of their supply base, so it is not possible to know for certain how many Tier 1 suppliers to Toyota are located locally or in the region, but it is generally understood that there are very few in the East Midlands. Being part of a “local” automotive supply chain can mean the whole of Europe. In discussions initiated through implementation of the Low Carbon Sector Plan, Toyota believe that the continued success of the hybrid technology in European markets may in future mean that Japanese manufacturers of components such as batteries, inverters and engines will bring such production to a European location. It is possible that the ability to attract such inward investment will be influenced by not only the support on offer from local agencies but also the extent to which the perception can be substantiated that, the D2N2 area is an emerging national and international centre of excellence for low-carbon vehicle technology research, development and manufacture. The recommendations made within this Action Plan seek to make that perception a reality.

Currently UK-based automotive OEMs’ most sought after components include plastic injection moulded components, trim interiors, vehicle upholstery, forgings and stampings. The report notes that there is no clear reason why alloy wheels and satellite navigation systems, which are currently sourced from Belgium and Portugal, could not be manufactured locally as there is now considerable scale demand for these products in the UK. By way of example, the supply chain for a driver’s seat for Nissan is relatively complex with 95 components being sourced from 17 different suppliers in 18 different locations in the UK and worldwide. The Automobile Investment Organisation will be leading on this issue and it will be important for D2N2 inward investment teams to establish effective links.

After deciding which products it can make and which ones it needs to source in, the Tier One supplier’s key criteria for selecting suppliers were quality run rates, risk management, strategic and regional footprint. However, in some instances, Tier 1 companies can be guided by OEMs as to which supplier firms to deal with.

The 2009 mapping report for Transport iNet noted earlier gave examples of how the supply chain for automotive was constructed. The table below has been adapted to indicate the location of those chosen and it is interesting that there are a number of D2N2 examples. What is also equally significant is that when these are explored in detail, it is clear that these suppliers often operate across the TEM sectors and indeed, a number of others. For instance, in Tier 2, Guilford Europe in Alfreton supply specialist textiles to automotive, but also to sports shoes and window blinds and Otter Controls in Buxton supply thermostats and switching to automotive, but also domestic appliances and industrial products such as air conditioning.

**Table – Examples of Local Supply Chain**

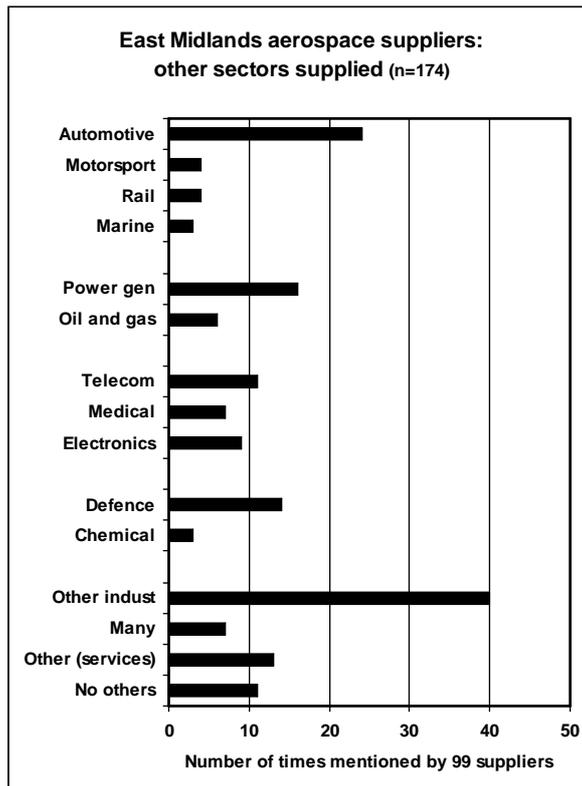
Segment	Examples
Vehicle Manufacturers	Toyota, Burnaston Derbyshire
Tier One	JCB Power Systems, Futaba, both Foston, Derbyshire
Tier Two	Otter Controls, Buxton; Guilford Europe, Alfreton
Tier Three	Autofil Yarns, Ashfield, Nottinghamshire
Material Suppliers	HJ Enthoven, Matlock, Derbyshire
Off Highway Vehicle Mfrs	Caterpillar, Leicester
Engineering Services	Romax, Nottingham; Zytek, Repton Derbyshire

Adapted from Automotive mapping Report for Transport iNet, Knibb, Gormezano and Partners 2009

Attracting more Tier 1 suppliers back to the UK makes sense as the volume of production is rising and is forecast by trade body SMMT to achieve record levels in 2015. In addition, the Fukushima disaster in March 2011 had profound implications for supply chains, as some key electronic companies were badly impacted by the disaster which in turn caused line stops at the car companies and led Japanese-owned producers to revisit policy toward supply chain management. More locally based supplies also overcome some of the problems of long lead times and address rising logistics costs. The focus should be in areas where the UK is best placed to compete such as advanced engineering and also where items are heavy or bulky to transport and difficult to store. Overall, it offers a unique opportunity to support the development and growth of the TEM sector and D2N2 is geographically well placed.

Whilst the above has focussed on Automotive, the Aerospace sub sector has some important elements worthy of note. There are over 700 companies in the aerospace supply chain in the Midlands employing approximately 45,000 highly skilled workers. Over half of these firms are located in the East Midlands cluster. Rolls Royce in Derby is the driving force behind the success of this sector in the region. The URS report noted earlier indicates the company supports around ten supply chain firms in Derby and 75% of the 700 Midlands supply chain firms are directly connected to Rolls Royce.

The Midlands Aerospace Alliance (MAA) mapping exercise in 2009 noted earlier in Section3 (page 10) found that a number of companies are very dependent on aerospace markets, but a larger number, however, are less than 50% dependent on aerospace markets. East Midlands aerospace suppliers have linkages with other transport sectors, especially automotive. There are some links to rail and motorsports; marine links tend to be for large-ship gas turbine engine technologies. Significantly, links to non-transport sectors are at least as important, including power generation and oil and gas. Relatively, the Midlands is not a defence-dependent region.



Source MAA 2009

Due to the complexity of supply chain issues, it will be important to consider the challenges and opportunities of operating across a number of sectors rather than assume a simple, vertically integrated system.

The Midlands Aerospace Alliance has commented on the success of the Aerospace Technology Programme (NATEP) model and the merit of extending this to other sectors. This is aimed at small and medium sized suppliers to help them develop their own innovative technologies to enhance their capabilities and increase their ability to win new business with higher tier companies anywhere in the world. This builds on the successful regional technology programme run in the Midlands. The collaboration must involve a supply chain partnership and may include HVM Catapult centre (or other academic partner) The Technology developed must have exploitation potential – with end user involvement. The delivery model has been proven over time and involves expert industry based peer assessment with consistent representation over the life of a project as it develops.

As detailed later in the report, (page 24) Derby based **ENSCITE** is already focussed on helping local supply chain companies understand and get themselves ready to sell into their existing sector or into adjacent sectors (e.g. an automotive supplier moving into rail) . Consultations suggest that there is as much, if not a lot more, scope for local businesses to sell into UK wide OEMs rather than focussing on the big 4 local ones. This is reinforced by input from District Councils – High Peak emphasises that many of its firms supply to larger businesses in Greater Manchester and the same point is made by northern D2N2 districts in respect of the South Yorkshire conurbation. ENSCITE's activities make these firms aware of those opportunities and then support them with consulting (around 4 themes of technology, supply chain management, workforce development and diversification), workshops/events and training to help them get to the point where they are able to bid and win work. Its £1M Technology Fund to support investment is largely committed and ENSCITE will be seeking both capital and revenue funds to continue this work beyond 2014.

In Rail, there are now prospects for a prolonged period of investment which could provide the basis for longer term relationships between manufacturers and suppliers. The impact of this forecast demand increase on the UK supply chain will also be highly-dependent on the degree of success of UK-based primes in winning key procurement competitions. The rail sector has a less developed supply chain tradition and there is potential to build capacity for the mutual benefit of manufacturers and suppliers. There is scope for DDRF to play an important role here although current resources to do so are modest. As part of the consultation process for this report, Bombardier has welcomed the possibility of regular meetings with their procurement department, to identify and address current local supplier shortages.

### **5. Innovation**

Innovation is widely identified as a key element of successful strategies for businesses to thrive within the TEM sector. The Technology Strategy Board (TSB) comments that to innovate in manufacturing, new knowledge must be applied to generate a new product, process or service, or new technology utilised to improve an existing process. In each case, businesses face the challenges of securing the supply of resources as well as the need to take risks to achieve significant impact. Innovation can occur in the research base, in industry or through collaboration between the two. The recent commitments in Engineering and Physical Sciences Research Council Centres for Innovative Manufacturing and TSB's Catapults aims to increase and facilitate these interactions. Manufacturing new products or adopting new manufacturing processes both require demonstration at commercial scale and this step up is often expensive and risky. This so-called 'Valley of Death' – where many innovations fail – represents a significant barrier to innovation in manufacturing, and is one which the Catapult centres are designed to address.

Lack of time, skills and finance are often quoted by businesses, particularly smaller companies, as the main barriers to innovation. The private sector rarely provides funds for unproven innovations. Innovation is by definition an uncertain business. Those with ideas for creating a new product or process cannot be sure that the technology works, that there will be a market demand or that others will not get to the market beforehand with a similar or better product. An SME is often vulnerable financially because its success is tied to its core business and it cannot diversify its risks.

Another key factor is that many businesses will be unaware of the support that is available to them to help them innovate – and, even if they are, the routes for accessing knowledge and expertise are currently not easy for businesses to navigate.

D2N2 has a number of strengths to build on. There is a strong knowledge base in the area, primarily in its three universities, which already work closely with businesses. This ranges from strategic relationships with major global businesses to programmes designed to address the specific challenges and needs of SMEs. The universities have differential and complementary expertise in a range of fields, some of it leading the way nationally or internationally. There are other Universities very close by at Loughborough, Leicester (2) and Sheffield (2) which add considerably to locally available knowledge.

**Changan**, one of China's biggest car companies, has its UK research and development centre at Nottingham Science Park. Established in 2010, its focus is on automotive engine and transmission systems, including hybrid and electric cars. **Romax**, Nottingham is one of the world's leading providers of advanced simulation technologies, design expertise and consulting services for gearbox and driveline systems and is now based in new premises at the University of Nottingham's Innovation Park (UNIP).

The strategic relationship between major manufacturers and their supply base is another potential driver of innovation and this was explored in the consultation phase of the project, particularly in relation to sector specific national programmes. The industry sub-sector mapping reports prepared for the Transport iNet in 2009 then suggested a focus on Tier 3 suppliers as being the most receptive to locally supported innovation programmes directed at SMEs.

D2N2's emerging Business Growth & Innovation Hub, which will offer businesses coherent online information and adviser support will be an important resource, with potential for creating an integrated D2N2 network of innovation support providers underpinning the Hub. It is expected to continue working with the providers of the **Manufacturing Advisory Service** and the **Growth Accelerator** to ensure that national funding earmarked for the D2N2 area is targeted effectively on the needs of local businesses. It is recommended that D2N2 work with the **Technology Strategy Board** to ensure that the area maximises its potential for drawing on its programmes of support. One way in which this could be delivered is through the proposed local Sector Hub which could support by signposting relevant programmes and calls for proposals, assist in bid writing and exploring opportunities to access Horizon2020 funds.

Another highly relevant TSB programme is **Launchpads**. These help technology-themed clusters of young, early-stage companies to develop and grow in specific locations around the UK. They act as catalysts for companies with exciting and innovative projects to share knowledge, develop their entrepreneurial skills and attract further investment to bring their ideas to market. Concentration of expertise brings advantages of speed and knowledge transfer. TSB funding can help by;

- creating opportunities for SMEs (often including those that are not yet revenue-earning) through funding for innovative projects
- working with others in the cluster to provide a programme of business support (including coaching and mentoring) that will help the businesses to develop solid growth strategies and to access finance
- providing a letter of intent to fund projects; businesses can use it to attract new private sector investment, because they will probably need to raise other forms of finance (including debt or equity-based solutions), either to match the grant or to support later scale-up plans.

An example of potential locally originated projects is emerging from the D2N2 Low Carbon Sector Plan, where there is a clear cross-over with this Plan through the former's interest in low carbon transport technologies, one of three areas of strategic focus. Discussions have recently been held on how the area can be positioned as a leading UK location for low-carbon vehicle technology development and manufacture. An initial concept that has emerged is that of a **Low Carbon Transport Technology Centre (LCVTC)** - an engineering Centre focused on the deployment of electric, fuel cell and hybrid powertrain and smart system integration in low volume vehicle applications for example bus, rail, commercial, off-highway, military and marine. Compared with passenger cars low volume vehicle applications have lower sales numbers from which to undertake development, test and validation activities - however the lifetime requirements and durability of such a vehicle is significantly higher giving rise to cross cutting engineering service needs.

Although there are a wide range of research projects and programmes across the UK there are few which bring together and explore the application of emerging technologies across the road, rail, aero and marine sector. The Collaborative R & D programme delivered by Transport iNet is a notable exception, albeit at a sub-national level. Such a collaborative cross sectoral approach could be a D2N2 USP and differentiator from that of other areas. However, comments received during consultations have pointed out that a number of national initiatives are already working on aspects within this topic area so trying to create something unique with a proposition that industry will actually use and pay could prove challenging. Cross sectoral approaches are also likely to be challenging beyond generic manufacturing process problems. Discussions are continuing to test and refine the concept and explore the feasibility in more detail and will need to work closely with the Catapult Centres in particular, to ensure local added value and avoid duplication.

## 6. *Existing Local Centres and Support organisations linked to TEM Sector*

The TEM sector is of particular significance in Derby. The City Council has a long and productive track record in maintaining strong working relationships with key industrial sectors.

**Cenex** is a national initiative that is locally based and was established in 2005 as the UK's first Centre of Excellence for Low Carbon and Fuel Cell technologies and whilst locally based, operates nationally. Cenex runs as an independent not-for-profit consultancy specialising in the delivery of projects, supporting innovation and market development, focused on low carbon vehicles and associated energy infrastructure. Cenex helps companies develop projects and leverage Government funding available as part of the broader framework of innovation policy aimed at ensuring UK leadership in low carbon vehicle technologies. Current innovation support activities include the delivery of the Niche Vehicle R&D programme and consultancy services to industry.

**Derby and Derbyshire Rail Forum (DDRF)** represents over 100 rail related businesses across the East Midlands who employ over 25,000 people and contributing £2.6 billion to the local economy. DDRFt was formed in 1993 to promote the area as a world class centre of rail excellence. It provides support to help DDRF members locate and access new markets and promote international expansion. It also helps bring new organisations to the region, to continue the growth and reputation of the regions rail industry.

**The Midlands Aerospace Alliance (MAA)** was formed in 2003 to support and represent the aerospace industry across the Midlands region and is now supporting NATEP delivery. It

- shares knowledge in order to improve the market and business support opportunities of members;
- delivers targeted and effective business support programmes to directly improve the performance of members
- coordinates an overall Midlands aerospace cluster strategy through pro-active partnering among our members and between private and public sectors

Its recent annual conference was focused on the issue that current "continuous" global growth in civil aircraft brings both opportunities and threats. The opportunities come from the booming market in passenger aircraft. The threat is that the big players increasingly want to buy their parts and components from large suppliers that can operate at the same global scale they do. The Midlands 700 or so smaller manufacturers still have huge experience and know-how to offer, but many may need to up their game, and others may need to find new market niches in the production system where their talents can excel. The actions outlined within this Action Plan are designed to address this challenge.

**University of Nottingham - Institute for Aerospace Technology:** To allow for future growth and to address the most critical issues facing the aerospace sector, the University established the Institute for Aerospace Technology to provide a focus for its aerospace activities, to facilitate increased activity and deliver impact from research. This has resulted in the Aerospace Technology Centre, a dedicated research and knowledge transfer facility.

This was launched in 2012 with a £9.2M investment to establish Nottingham as a world leading University for aerospace R&D, with the specific objectives

- To implement major infrastructure development and continue to invest in the research base
- To establish new research and technology transfer activities with a strong fit to sector priorities
- To strengthen strategic relationships with funding bodies and key industrial partners

**University of Nottingham the Institute for Advanced Manufacturing:** The Institute is driving development of cutting-edge technology with the aim of radically improving all aspects of advanced manufacturing. It encompasses an international, multidisciplinary team of established academics in their respective fields. Its research portfolio presents an integrated, holistic approach to manufacturing. Operations management, logistics and life cycle management The Institute has excellent links with industry and has partners in such diverse sectors as aerospace, automotive, medical, instrumentation, defence, power engineering, sustainable energy, textiles and clothing, recycling and consumer products. Major global stakeholders include Airbus, BAE Systems, Bosch, GE Aviation, HP, IBM, Rolls-Royce and Siemens. Our advanced manufacturing expertise focuses on next generation knowledge-driven manufacturing methods, technologies, systems and services. The department has supported over 200 regional companies across the supply chain through access to the European Regional Development Fund (investing in your future). Nottingham is one of the founding university partners of the MTC and the High Value Manufacturing (HVM) Catapult. These centres provide new opportunities for manufacturing knowledge and technology transfer, allowing accelerated testing, demonstration and industrialisation of manufacturing concepts, technologies and processes, including those developed at Nottingham.

**University Enterprise Zone Nottingham** - The Government announced in July 2014 that The University of Nottingham is to become one of the first University Enterprise Zones (UEZ) in the UK, helping to create dozens of new high-tech businesses and hundreds of new jobs in the city and LEP area. As part of the award of UEZ status, the University will also receive £2.6m government funding to build a new Technology Entrepreneurship Centre at its Innovation Park, which will provide accommodation and intensive incubation support for external business start-ups and early-stage small and medium enterprises.

The Technology Entrepreneurship Centre will focus on supporting businesses which operate in sectors of key local and national importance, such as Big Data & Digital, Advanced Manufacturing, Aerospace and Energy. Companies based in the new Centre will be able to take advantage of the University's leading centres of excellence in these areas and the ready supply of high quality postgraduate students.

The **University of Derby** have recently established the **Institute for Innovation in Sustainable Engineering (IISE)** as a flagship project for business engagement. It is aimed at stimulating innovation through collaborative working with SME's, and providing access to the very latest technologies to help them develop products and processes to become increasingly competitive. This represents a direct response to support the requirements of the key industrial partners and provide leading-edge solutions on an accessible and appropriate scale, to the challenges faced by SMEs.

**ENSCITE** is a new organisation created to support SMEs in the aerospace, automotive and rail sectors' supply chain. It is a collaboration between Derby City Council, The University of Derby, Aston University, and Cranfield University. Utilising the expertise of partners, it delivers practical business improvement programmes, runs supply chain workshops and can leverage funding to support investments in new technology, including access to a £1m Technology Fund. It is seeking further revenue support to continue these activities and also capital to top up the Technology Fund which has proved to be very popular alongside the wider services offered.

**Transport iNet** – (Innovation Network) has an emphasis on working across sectors, covering advanced manufacturing and engineering including transport applications of space technologies. Based at Loughborough University and established in 2009 in recognition of the importance of the sector and concentration of capabilities, it operates across 6 LEP areas in East Midlands including D2N2. The Transport iNet brings together businesses, sector organisations and universities, with common areas of interest in innovation, expertise and capability across the sector.

The iNet offers free advice through a team of specialist advisors working with SMEs to help ensure their innovation is successful. It has built up a deep knowledge and understanding of the wider challenges and opportunities facing the sub sectors, and has engaged with over 700 SMEs of which 172 are based in Derbyshire and 106 are based in Nottinghamshire. These D2N2 businesses have completed 110 innovation projects with ERDF part-funding from Transport iNet. The iNet has been instrumental in establishing "iRail" – an initiative to attract young people to careers in the Rail industry – held at Derby College and now in its 5th year and being extended nationally.

The **Transport iNet** itself has over 5 years practical experience to draw on, with programmes to provide direct support to SMEs and also bridge the gap by linking them to the University knowledge base. By reducing the cost of innovation activity, grants provided by the Transport iNet and the impartial advice provided, directly reduce the risk of investing in unproven technologies and thereby encourages more SMEs to carry out R&D and invest in improved processes and capability. It is now in the third phase of delivery with experience to date showing SME investments to be:

- Phase 1 & 2: 60% relating to new Product Development ; 40% to Manufacturing / Business Process improvement.
- Phase 3 to date: 65% relating to Manufacturing Process investment

The industry & technology drivers identified are evenly split between adding capability in the business and responding to legislative or sectoral requirements. Around half of SME project beneficiaries are in Derbyshire & Nottinghamshire.

### Other Local Enterprise Partnerships

As part of background work, a brief review of activity in other LEPs in the East Midlands and elsewhere has been undertaken and this is included in Appendix B . During the consultation process there was a strong interest from a number of respondents to the idea of cross LEP collaboration. This would enable common programmes to be developed and specialist provision procured through achieving economies of scale. The existing work of ENSCITE and Transport iNet are examples of how specialist programmes can be developed on a regional basis that would simply not be viable solely on a single LEP basis.

There is scope for exploring collaboration across the themes identified within this Action Plan, particularly supply chain development, innovation, access to finance and inward investment. The process for seeking proposals for EU SIF is still being developed, but discussions suggest that the following approach may be possible.

- LEPs agree to collaborate on a specific theme and agree in a detailed specification) on what activity they were seeking – the joint regional work on Financial Instruments is a case in point
- Calls for proposals could be co-ordinated so there is a common start date and specify desirability/need to operate across x LEPs
- Explore potential for one appraisal and contracting process
- Would need to consider how outputs and funding would link to notional allocations, but as money is not passed to LEPs to manage directly, this could be a task for the Managing Authority to resolve.

The relevant other LEPs with an interest in TEM and AME are Leicester and Leicestershire, Greater Lincolnshire, South East Midlands, Northampton in the East Midlands and Coventry and Warwickshire, Greater Birmingham and Solihull, Black Country in the West Midlands and Sheffield City Region.

### **7. *Developing a Sector Plan to Guide Future Action***

D2N2 is keen to ensure that as far as possible its future programmes should be business led. In addition to work to understand the national and local context outlined in previous sections, the Transport iNet has organised a series of consultations (lists in Appendix C)

- interviews with senior representatives of Rolls Royce; Toyota; Bombardier; and JCB Powertrain;
- face to face interviews with SMEs and a further electronic survey sent to 260 businesses with 45 replies (summary in Appendix D)
- interviews and consultations with trade organisations and Universities and
- Face to face meetings with representatives within City and County Councils and a questionnaire to all District Councils with replies from 10 out of 14. Local Councils have a close relationship with their business base and have provided some valuable insights.
- Finally a sector workshop was held, hosted by D2N2 Board member Trevor Fletcher at Hardstaff's Head Office, with 10 local SMEs present plus MAA and DDRF representation, to review the wider consultation findings and explore and prioritise possible action

The proposed Action Plan arising from this work is summarised below, with specific recommendations highlighted in the boxes.

### 7.1 *Ensuring OEMs/Primes have any local needs met*

The four OEM/Primes employ over half of the estimated 20,000 people in the D2N2 sector and therefore make a highly significant contribution to economic vitality in the area. Ensuring that business needs are met locally wherever feasible will be an important element of D2N2 efforts to develop the sector. Meetings with representatives of the OEM/Primes have taken place and this has confirmed that cost and capability are major considerations for the future of their business. Investment decisions are made on a global basis and the area needs to have a competitive local offer. It is important to have a supply chain that is continually upgrading its capacity and capability to meet the demands of global competition. The OEM/Primes confirmed that it is generally very difficult for SMEs to have a direct relationship with them and due to the volume of their requirements; realistically SMEs have to be involved in contributing to other suppliers' products. However, in the rail sector which has a more dispersed supply chain system encompassing vehicles and infrastructure, opportunities for a greater degree of direct relationships are possible.

All are heavily engaged in existing or developing national strategies for their sub sectors and have helped to devise and shape many of the significant national programmes that are now operating to develop new technologies and future capability within the UK. From their perspective, it is important to ensure that there is strong local take up and participation in these initiatives, although they tend to be most accessible to larger firms.

The area has a strong tradition in engineering skills and it remains a good place to operate from, but the future pipeline of skills is an important issue for them and local suppliers. In Automotive there are major opportunities for Tier 1, Tier 2 and Tier 3 suppliers to locate in the UK, including the "re-shoring" of those who previously had a UK presence but left when the market contracted after the financial crisis of 2008. As noted above, the rail sector has a less developed supply chain tradition and with market opportunities improving, there is potential to build capacity for the mutual benefit of manufacturers and suppliers. As part of the consultation process for this report, Bombardier has welcomed the possibility of regular meetings with their procurement department, to identify and address current local supplier shortages.

#### **Recommendations**

- 7.1.1 Maintain effective local liaison with Prime/OEM senior representatives to ensure that any local issues are identified and addressed and opportunities realised
- 7.1.2 Ensure local awareness of national support schemes that Primes/OEMs sponsor as part of the Business Growth and Sector Hubs and that D2N2 firms are encouraged to participate
- 7.1.3 Continue to support supply chain development to help Primes/OEMs develop new suppliers to ensure that business critical components can be sourced and where feasible, from local firms

## 7.2 *Supporting Supply Chain Developments*

Consultations suggest that there are understood to be very few Tier 1 suppliers to the locally based OEM/Primes in D2N2 or the wider region, but there are understood to be a significant number of vibrant smaller D2N2 businesses that contribute to supply chains both locally and also to manufacturers in other regions. The work of ENSCITE will help to provide a more detailed picture of the scale of this as their project develops.

Some SMEs operate predominantly in the TEM sector but many are also active across other manufacturing sectors. Their “official” description through Standard Industrial Classifications can be quite arbitrary and often relates to historic circumstances that are no longer relevant. The Action Plan aims to ensure that the needs of these SMEs are not excluded by not having a TEM label. A number of organisations consulted considered the label of Advanced Manufacturing and Engineering was a more appropriate description of the business for focus. A majority of those responding to the SME Survey (54%) also supported such a proposal, whilst 31% were in favour of retaining the TEM label. Whilst the sector is a particular strength in D2N2 there are also important groupings elsewhere. It is recommended that D2N2 explores cross LEP collaboration in TEM which would further support D2N2 businesses.

As technology changes, there are opportunities for local businesses with “fast make” capabilities to demonstrate that designs and materials are appropriate, without necessarily being the final supplier for series production, with all the accreditation involved. In order to do so, there needs to be visibility with OEM/Prime buyers and support for Meet the Buyer or Technology Exchange events to facilitate this process.

Getting more businesses to participate in supply chains is a significant opportunity for their growth. There is also the potential to extend the business model to involve not just making, but also maintenance and aftercare – so called “servicification” - and to build in sustainability principles at the concept development stage. High Peak Borough has pointed out that it is important to think about companies that are not currently part of the supply chain but that work with green or emerging or existing technologies that could add value to the TEM sector in new ways.

In response to the consultation process the SMMT commented from an automotive perspective, they are very keen to see the LEPs working in a collaborative way. Given the complexity of the landscape and the variety of approaches taken by the LEPs in terms of engagement with industry, consistency will play a key factor for LEPs to be successful, particularly in the eyes of large, cross LEP organisations. The supply chain issues the LEPs will be working against don't respect LEP borders,

## Recommendations

- 7.2.1 Develop and fund programmes to ensure that SME potential to participate in supply chains is maximised and their business capabilities enhanced by making these firms aware of opportunities and then support them with consulting ,workshops/events and training to help them get to the point where they are able to bid and win work with a focus on Advanced Manufacturing and Engineering, (AME) in recognition that many SMEs work in other sectors
- 7.2.2 Run Meet the Buyer events and annual tech-exchange for companies to pitch their technology developments and help local firms understand entry requirements for becoming suppliers
- 7.2.3 Provide support to improve SME tendering/sub-contracting skills
- 7.2.4 Work with other LEPs to support integrated programmes on supply chain developments within the East Midlands and wider
- 7.2.5 Assess extending the NATEP delivery model used in aerospace to other sub sectors

### **7.3 *Developing Business Support that Works for Businesses***

Since the demise of Business Link there has been a lack of a locally focussed, universal Business support offer, dealing with aspects of information, advice guidance and more intensive programmes to facilitate business growth. LEPs are being encouraged to develop Business Growth Hubs and there are plans to build on a web based signposting to include sector specialisms through a Sector Support Hub. To help businesses find the support they need, D2N2 has worked with DNCC to develop 'The Business Advice Website', designed to help identify local business support information to aid businesses looking to develop, with an ambition to grow. It will also provide links to key national sources of business information and aim to simplify the business support landscape. The website will be constantly developed to ensure all local and national business support initiatives are showcased in a single location. D2N2 is also looking at "Opt Ins" to secure additional local activity from national programmes such as the Manufacturing Advice Service (MAS), UKTI and Growth Accelerator. Increased access to UKTI services will help increase the already high level of exporting by supporting more manufacturing businesses to enter (a wider range of) international markets.

To date, many SMEs remain confused about what support is available and how to access it. In the SME survey a significant minority (44%) feel that the support on offer is too difficult to access, the schemes on offer were not suitable or that they did not know where to look. Whilst web based solutions that provide simple and understandable information have their place, many businesses feel they just don't have the time to search. There is strong demand for an ability to pick up a phone and get information provided quickly and accurately. In addition, face to face contact with an ability to search for packages appropriate to the business, rather than simply off the peg products. It is recommended that D2N2 provide a programme of relevant and accessible support/workshops (say within 20 mile drive time). Developing localised business networks for AME businesses linked to existing District Council activities would also be a productive way forward.

The short lived nature of some support programmes was driven by funding conditions and a requirement for action to be new – there was a desire for what works to be retained and built upon. It was also recognised that many smaller businesses did not know what support they needed and there was a requirement for a diagnostic service to guide people through what was available. Of those that had been able to find the support they needed, the most popular service (44%) was in prototyping & developing demonstrator products, indicating the appetite for innovation that exists.

A number of consultees pointed out the existence of many technically skilled engineering businesses that lacked the commercial “nous” to develop the potential for their business, often through lack of space to think about planning the next stages of growth.

The Goldman Sachs 10,000 business programme has a good take up in the West Midlands but is presently not operating in this region and there may be an opportunity to introduce this or something similar. In the SME Workshop there was a view that meetings with other managers in similar situations and learning from their experiences was a positive tool for improving business skills.

The Goldman Sachs 10,000 Small Businesses UK program is designed to provide high-quality, practical support to the owners and leaders of established small businesses and social enterprises as they seek to grow. The program is delivered through a network of local partners who combine relevant academic expertise and extensive experience working with the owners and leaders of small businesses. It brings together leaders of small businesses from across industry sectors and creates unique networking and peer learning opportunities. During the course of the program which lasts around 100 hours over 12 sessions, every small business owner develops a customised Growth Plan to direct their organisation’s business strategy and expansion. 10,000 Small Businesses in the UK is currently only open to applications from small businesses and social enterprises in London, West Midlands, North West and Yorkshire.

There were several comments from District Councils that access to support needs to take on board the needs of smaller firms (with fewer than 50 employees) and those in small firms but who owned/operated as part of a larger multi-national group. Too often support is geared towards UK Medium enterprises only – and is actually not suitable for either the smaller firms or those who are part of a larger group but which can deliver local growth with additional support.

In response to consultations, the above paragraphs were endorsed and a strong point made that growth comes only with capacity availability. Even where finance, innovation and other support has been accessed, businesses need good manufacturing engineering support to develop a robust plan and execute so it delivers. Such an SME support isn't being served nationally and if one can be designed and implemented, D2N2 will have a differentiator that will make an impact quickly.

## Recommendations

- 7.3.1 Develop specific provision appropriate to AME businesses linked within the sector and Business Growth Hub, that features high value and bespoke support to individual companies with ambition to grow, including next day information problem solving; face to face contact with informed business advisors where desired; marketing support; and the ability to develop bespoke packages of support, including practical help with securing funding
- 7.3.2 Build the capacity, delivery performance and capability of existing smaller SMEs (say, fewer than 50 employees) by supporting management and leadership development programmes
- 7.3.3 Design and implement a programme to enhance capacity in manufacturing engineering
- 7.3.4 Support through seed corn funding, business led peer learning networks that help business managers to share experiences and collaboratively address challenges

### **7.4 Address Challenges in Access to Finance**

The challenges of accessing appropriate financial support at the right time for a business has consistently been a theme of business support for a number of years, exacerbated by the financial crisis post 2008. The results of the SME survey indicate that many of those that had been able to raise finance over the last three years (57%) found the process protracted and difficult. One responded that it took 510 days from initial contact to receipt of first funds and pointed out that if this was replicated more widely, it was damaging to international competitiveness as those in other countries often had much more responsive support. There is also some confusion with the range of public sector schemes available with different conditions in different areas that are often short lived with tight deadlines to access and then to implement. However, take up has been generally high with grant aid particularly welcome, although most of the resources available are for capital or external consultancy and a wider availability would be welcome. Whilst accepting the need for accountability in the use of public funds, the paperwork needs to be commensurate with the level of funding. The practice of requiring money to be spent by a business before any grant was received can have an impact on cash flow and ways of funding deposits for equipment up front could be usefully explored. In this sector especially, there may be a need for businesses to purchase new equipment that does not immediately create any new jobs (and may actually reduce them) but does improve efficiency and competitiveness. It will be important to develop funding mechanisms that recognise this through outputs related to wider competitiveness and not just job creation and also take account of the needs of micro-enterprises that only need small amounts of money.

Agencies providing financial support commented that accessing growth finance is an issue across all sectors of the local economy, but that it is particularly challenging in sectors such as Transport Equipment Manufacturing where there may be new technologies and products to fund that produce a return over a longer period of time. Where finance can be accessed for banks and other financial institutions, the lending terms on offer are reported to be often significantly more onerous than they were pre 2008.

For some businesses, access to equity funding would be valuable, e.g. the Foresight Fund managed fund available in Nottingham/shire. The Derby Enterprise Growth Fund was intended to have an equity dimension but the scale of demand for loans meant that this had to be shelved. Over 97% of firms responding to the SME survey would welcome a simplified local funding platform that was easy to access. Whilst a less confusing number of schemes would be welcome and greater consistency of availability, in reality it is difficult to influence the sources of funds on offer. In addition, there is a view that funding streams reflect 'local' priorities, as supported by business, and agencies wouldn't want to lose this emphasis.

An important initiative that is being explored in more detail is a proposal by the five East Midlands LEPs to work jointly to create a regional financial instrument aimed at addressing gaps in the commercial market. Representatives from both the British Business Bank and BIS have been fully engaged and are supportive of the projects objectives and process. Core funding options to underpin the project include potential release of legacy RDA investment funds and applications for European Structural Investment Funds.

### Recommendations

- 7.4.1 Develop a portfolio of financial support that has certainty and longevity, so that a full escalator of growth funding is available, including equity finance, integrated with business support where possible and seek to extend common provision across D2N2 where feasible
- 7.4.2 Explore if it is possible to provide support for deposits (e.g. loans secured against grant offers) for equipment and non-recoverable VAT to help speed up investment in growth
- 7.4.3 Review best practice across public sector grant schemes with a view to streamlining any paperwork and avoiding unnecessary complexity from the businesses perspective
- 7.4.4 Share the EM research work on Access to Finance when developing programmes to create economies of scale and impact

### 7.5 *Realise Opportunities to Attract Inward Investment*

Inward Investment is one way in which economic growth can be boosted, providing a large number of jobs directly and also in supply chains. However, large scale inward investment as typified through Toyota has significantly declined in recent decades with a focus on re-investment from previous investors. However, there is renewed interest in attracting investment from Tier 1 and other suppliers and a strong interest in re-shoring – attracting back companies who once had a presence here but who have moved elsewhere as market conditions became challenging. A new national initiative, the Automobile Investment Organisation has been established within UKTI to focus on attracting automotive investment from overseas. It is a partner in a new initiative co-ordinated by SMMT for the automotive sector to connect with selected LEPs, including D2N2, to link local and national actions more effectively – the LEP Leadership Forum.

Attracting such investment is an issue that is more the focus of inward investment agencies than business representatives and there are four principal organisations operating in the D2N2 area. These are Marketing Derby, the Derbyshire Economic Partnership and Invest in Nottingham (& Nottinghamshire) as well as the Sheffield City Region. Some District Councils are also active in promoting their own localities and whilst there are concentrations of TEM related businesses along the M1 and A50 corridors, in reality they are widely dispersed. Given this complex picture there is a need for collaboration and sharing information.

There is a wide range of large employment sites now becoming available that can provide a focus for new investment as well as existing firms seeking to expand or develop new operations. Infinity Park in Derby is a major new provision in close proximity to Rolls Royce, as is the land at the former Hucknall Airfield in Nottinghamshire. The Dove Valley Park in Southern Derbyshire has already proved attractive to TEM businesses including JCB Engines. Nottinghamshire & Derbyshire County Councils and Districts Councils are planning to review all their strategic employment sites in the near future to assess how they can be marketed and promoted. In addition to sites, the density of the local cluster of related businesses is significant and here the tradition and heritage of the area is very valuable, including links to world class expertise at local and nearby Universities. The availability of appropriate skills is also a critical factor along with the FE infrastructure.

Discussions with the Automotive Investment Organisation indicate that at a LEP level, it is important to be able to identify an accurate and distinctive offer and summarise it succinctly. Within D2N2 work has already commenced on this but needs to be refreshed, refined and kept up to date. Where active overseas promotion is undertaken it should be coordinated with existing initiatives e.g. D2N2 and resident businesses attending events such as Farnborough and LCV2014, so that it can gain the benefit of scale and also avoid inadvertently disrupting wider initiatives.

### Recommendations

- 7.5.1 Encourage the inward investment teams and Local Authority partners articulate a common understanding of the attributes and distinctiveness of the D2N2 offer
- 7.5.2 Make TEM/AME a key priority for D2N2 inward investment and develop an active programme of events attendance and lead generation by local agencies in conjunction with national initiatives to secure new investment
- 7.5.3 Seek to fund a marketing programme to work with UKTI to explore potential overseas investor leads for the TEM sector appropriate to key strategic sites in D2N2
- 7.5.4 Build co-ordination of Trade Show attendance into the work of the Business Hub so that SMEs can collaborate and have a presence on a larger D2N2 or relevant branded stands, sharing costs and increasing impact

### 7.6 *Creating More Opportunities for Innovation*

Innovation can occur in the research base, in industry or through collaboration between the two. The D2N2 Innovation theme has its own plan under development, led by the three Universities. This section feeds a sector specific view into the D2N2 Innovation Plan.

The extensive national programmes and the investment by the Technology Strategy Board in the seven Catapult Centres are an important element of government investment but in local discussions, it is clear that these are perceived to be focussed on the needs of larger businesses and there are some barriers in SMEs engagement, including costs. There could well be opportunities to help a number of firms to develop collaborative projects to share development costs. Managing R&D and managing innovation and risks are valuable training that could be offered under the skills agenda.

Improving products and processes is a major element of increasing competitiveness and providing direct innovation support to SMEs is very important. Grant aid linked to advice and signposting to University assets on a “user –chooser” basis, such as that provided by the Transport iNet, has been identified in the consultations as a useful mechanism. 70% of those responding to the survey would welcome improved access to University expertise and many highlighted the need to have a better understanding of where capability relevant to their business lay. The research and development services at nearby regional facilities such as MIRA and Millbrook are also important assets and it is important that these are accessible to D2N2 companies.

The former SMART model where support up to 75% was available and grant was allocated on merit rather than through a competition was also welcome. Universities are increasingly encouraged to have an SME focus in business engagement strategies and there is willingness to enter into long term relationships rather than just focus on the minimum EU funded intervention of 2 days of assistance. A programme that supported sector focussed innovation mentors would be welcome, undertaking problem solving and provide managers short of “thinking space” with an expert view on how to deal with challenges and seize opportunities for innovation over a 12/18 month period. It will be important to design any programme to ensure that paying for mentors embeds capacity in the business and helps address the root problem – skills and competencies.

The Technology Strategy Board Launchpad programme for supporting a cluster of innovative companies in specific geographies could present some exciting opportunities and it is recommended that this be explored in more detail by D2N2 as part of the implementation of this Action Plan so that they can develop a proposition for TSB consideration.

Discussions developed within the Low Carbon sector group have identified the opportunity to consider action to support to help to commercialise the local knowledge base in the form of a Low Carbon Transport Technology Centre. This could be an engineering Centre focused on the deployment of electric, fuel cell and hybrid powertrain and smart system integration in low volume vehicle applications. For example bus, rail, commercial, off-highway, military and marine, where the lifetime requirements and durability of such vehicles gives rise to cross cutting engineering service needs. Comments received during consultations have pointed out that a number of national initiatives are already working on aspects within this topic area so trying to create something unique with a proposition that industry will actually use and pay could prove challenging. It is suggested that a feasibility study would be needed to explore these issues in more detail. A further idea put forward for consideration is there might be a case for an auto battery scale up centre for long term chemistries that are being proven out now, but no European production exists for.

### Recommendations

- 7.6.1. Develop a grant aid/financial support programme to overcome cost barriers for D2N2 SME access to Catapult Centres
- 7.6.2. Provide direct innovation support to SMEs across D2N2 through programmes that offer grant aid, advice, active linking to the most relevant part of the knowledge base i.e. University or Research & Technology Organisation, irrespective of geographical location, to reduce the risk of investing in unproven technologies.
- 7.6.3. Develop a programme for innovation mentors to help business owners/managers tackle challenges and seize opportunities for innovation
- 7.6.4. Seek to establish a TSB Launchpad programme focussed on the TEM sector and related AME businesses
- 7.6.5. Encourage support for long term relationships between SMEs and Universities by designing support activity beyond 2 day assists
- 7.6.6. Assess the case for local provision of centres of excellence that help SMEs to develop new products and processes eg proposed Low Carbon Transport Technology Centre
- 7.6.7. Develop programmes with other LEPs to get economies of scale and maximise impact

### 7.7 Meeting Present and Future Skills Needs

A separate D2N2 Sector Skills Plan is being developed by Employer First and some of the consultations in support of that work have been linked to the development of this sector plan. It is worth noting that the importance of addressing skills issues has been ranked as very high (86%). Whilst OEM/Primes have the resources to address their own training and skills needs, they recognise that it is also important to their supply chains viability. Making D2N2 the national exemplar for tackling skills challenges in Advanced Manufacturing and Engineering would be a major achievement.

## 8. *Next Steps and Communications*

Following consultation on the Sector Action Plan, this report will be received by the D2N2 Board as part of its programme of developing action in its key sectors. In particular it will be used to develop the details of potential funding packages and the detailed design of calls for proposals for EU funds later in 2014.

A wide range of contacts have been established during this study with a number of individuals willing to get involved and provide ideas and expertise. At this stage the aim is to establish a broad Reference Group that will be kept informed of sector progress providing input when new developments and opportunities arise. Martin Rigley of Lindhurst Innovation Engineering Ltd will chair a core SME Sector Group that will provide advice and guidance on the overall development of actions, with the likelihood that future meetings will have a specific theme and all relevant key agencies invited to participate.

A more detailed Communications Plan will be prepared once the Action Plan has been finalised. This will be designed to ensure that information for and about the sector is communicated effectively to a range of audiences within D2N2 and will need to be integrated into the work of the Business Hub and the proposed Sector Hub provision.

Targets will include

- **Existing businesses within D2N2** - The SMMT has suggested that most companies they have dealings with, particularly the SMEs suggest they've little engagement or awareness of their LEPs activities, priorities, contacts etc. They would welcome a proactive approach for LEPs to engage with their regional supply chain - to reach the companies that are time pressed enough they haven't been involved this far. The work of the Business Growth and Sector Support Hubs should make a major contribution to addressing this issue. SMEs having participated in consultation would wish to see action taken to address challenges and opportunities and for them to concentrate on running their businesses. In addition, direct consultation on this sector plan suggests that low awareness of LEPs role and activities is also very evident amongst many senior people in large, internationally recognised businesses. Action 7.1 to ensure OEM/Primes have any local needs met will help to improve this perception.
- **Potential investors** - as well as a strong internal focus, there is also a need to communicate clearly about investment opportunities nationally and internationally and this has been identified already within the theme on Inward Investment.
- **National Agencies** – to ensure that any programmes developed within D2N2 are compatible and supportive of nationally designed programmes and initiatives
- **Other LEPs**, particularly in the East and West Midlands, to explore if there are opportunities for joint working and sharing good practice
- **Local Partners**– there are a number, already actively involved in delivery within D2N2 and the consultation has indicated that there is a strong appetite for further engagement to assist in developing the TEM and wider AME sector through the actions identified within the Action Plan

## APPENDIX A

### SUMMARY OF NATIONAL INITIATIVES AND PROGRAMMES

The following section summarises the large number of national programmes that are underway. Their scale is an indication of the importance the sector has within national strategies. It will be important not to duplicate these programmes and waste valuable local resources. Similarly, the work of the Business Growth Hub and Sector Support Hub should seek to ensure that D2N2 businesses are aware of the programmes and encouraged to participate where relevant. However, during the consultation, a number of comments were received which suggested that there is a perception that some of these programmes were only accessible to larger firms and that the considerable number of D2N2 smaller SMEs would find it difficult to participate. The range of recommendations made in this Action Plan seeks to address these challenges where feasible.

#### **Aerospace**

- **UK Aerospace Technology Institute (ATI)** will be the Research and Technology focal point. The ATI will represent a joint industry and Government investment of £2 billion across the next seven years to give certainty and stability for technology and innovation.
- **Sharing in Growth** is a programme to raise the capability of UK Aerospace suppliers in order to share in the anticipated growth of this global market and other associated high value manufacturing sectors. The programme provides concentrated training and development aimed at driving competitive capability to tackle barriers to growth, boost exports and grow the number of high value jobs in the UK. It is sponsored by Rolls Royce and receives £50M support from Government through the Regional Growth Fund.
- **NATEP** is a £40m Technology Development Programme derived from a bid by the Aerospace Growth Partnership to the Government's Advanced Manufacturing Supply Chain Initiative. It is aimed at small and medium sized suppliers to help them develop their own innovative technologies to enhance their capabilities and increase their ability to win new business with higher tier companies anywhere in the world. This builds on the successful regional technology programme run in the Midlands and managed by the MAA, who now play a key role in supporting NATEP delivery.
- Investment, announced in the 2012 Budget, of £60 million to create a new **UK Aerodynamics Centre**, with a commitment from industry to invest an additional £40 million to support the Centre's R&D programmes under the ATI umbrella.
- £100 million of investments by Government and industry in **low carbon aero-engine technology and other innovative aerospace technology projects** announced in July 2012
- AGP has launched a new initiative, jointly funded by Government and industry, to train **500 new aerospace engineers to Masters level** over three years.
- Working with the banks, professional services firms and aerospace companies, the AGP has created an **Aerospace Finance Forum** to help address sector-specific issues relating to access to finance. This has already delivered a commitment from one of the major banks to create a network of regional aerospace finance specialists.

### **Automotive**

- The **Advanced Propulsion Centre (APC)** was announced in the Automotive Industrial Strategy in July 2013. The APC is a £1bn initiative and will position the UK as the global centre of low carbon propulsion development and production. Over the next 10 years the APC will allocate funds principally via competitions to collaborative projects, which will enable advanced propulsion technologies to be ready for on and off road applications, turning technologies into products. In addition to the R&D programme, the APC will be a facility that strategically encourages communication, collaboration and coordinated investment in the technologies of the future; as well as showcasing the UK's capabilities to the global automotive community. The APC is an industry-led innovation centre, company neutral, technology agnostic and open to all. It is considered that a single centre model is inappropriate and a hub and spoke approach is likely to achieve the best coverage of the organisation. The location of the hub has now been confirmed as located at the University of Warwick, which in July 2014 launched a £65m research programme in partnership with Jaguar Land Rover for an 'Advanced Propulsion Research Laboratory'. The spokes (satellite locations) could be determined spatially/geographically or by function
- **Automotive Investment Organisation (AIO)** set up to attract inward investment in the supply chain and in R&D. It forms part of UKTI and takes its strategic direction from the Automotive Council and is led by executives with high level experience in the industry.
- The UK automotive sector has secured a share of government-backed **Advanced Manufacturing Supply Chain Initiative (AMSCI)** funding worth £45.5m to UK-based suppliers. The SMMT bid, submitted on behalf of the sector, has delivered £13.3m in government funding, which leverages £32.2m of industry contributions. AMSCI is a funding competition run through the Department for Business, Innovation and Skills, and is designed to improve the global competitiveness of UK advanced manufacturing supply chains
- **The Proving Factory** has been created to bridge the market 'gap' that exists between SME technology developers making innovative, low carbon prototypes and the requirements of global vehicle manufacturers for medium and, ultimately, the high volume manufacture of technologies that they need to meet emissions legislation. Its purpose is to create a new, trusted manufacturing, assembly and validation environment and facilities for SME technology developers, major vehicle manufacturers and their Tier 1 supply partners, that brings new, low carbon products through to manufacture at global automotive cost and quality standards. It is located in Coventry and is a collaborative venture led by Productiv & Tata Steel, with partners MIRA and the Manufacturing Technology Centre. Other supporting partners include: Jaguar Land Rover, Schaeffler, and the Midlands Assembly Network

***Rail***

- **The Rail Supply Group** aims to strengthen the capability & competitiveness of the UK rail supply chain to win business at home & abroad. It is working to develop an industrial strategy by 2017. It is doing so in the context of a major long term European initiative - SHIFT<sup>2</sup>RAIL will be the first European rail joint technology initiative to seek focused research and innovation (R&I) and market-driven solutions by accelerating the integration of new and advanced technologies into innovative rail product solutions.
- Preparatory work on the UK Strategy by the **Future Railway / Enabling Innovation Team (EIT)** included mapping capabilities and markets for the rail sector. It has identified that whilst the UK supply chain has some weaknesses relative to international competitors, there are some specific capability areas where the UK is already strong and there is potential to build further strength
- **Network Rail's Innovation and Suggestions Scheme** encourages suppliers to view their challenge areas and submit ideas for improving their service through their Innovation Portal.
- The **HS2 Phase One Outline Procurement Strategy** has recently been published and describes their proposed high-level procurement approach

***Cross Sector National programmes***

D2N2 has options to use allocations of EU Structural and Investment Funds to secure additional local activity from national programmes such as the Manufacturing Advice Service (MAS) and Growth Accelerator. Increased access to UKTI services will help increase the already high level of exporting by supporting more manufacturing businesses to enter (a wider range of) international markets.

## Appendix B

### Adjacent and other LEPs

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There is a strong interest in TEM across the East and West Midlands areas. This section summarises background research undertaken during development of the Action Plan to understand what action other LEPs are promoting and also to identify the competition that exists for attracting new investment. During the consultation process there was a strong interest from a number of respondents to the idea of cross LEP collaboration. They made the point that supply chains do not recognise local boundaries. In the summary below there is reference to joint programmes being delivered in the West Midlands, possibly facilitated by the recent history of regional collaboration in response to extensive plant closures such as at Rover.

**Leicester and Leicestershire LEP** has identified advanced engineering as a priority and has a particularly strong asset in the **MIRA Technology Park** at Hinckley in Leicestershire. This received Enterprise Zone status from Government in 2011, which will see a new 1.75 million square foot development of bespoke research and development centres ranging from start-up facilities right up to major research and development operations. The LLEP has allocated £250k to support market research and business development activities at the MIRA Technology Park Enterprise Zone. The money will specifically help to shape marketing through focussed sector research and business development programmes to target new businesses to relocate to the EZ. MIRA is already one of the few research and development facilities worldwide that can provide the specialist facilities and engineering resources essential to develop automotive and wider transport-related products and services.

**Sheffield City Region LEP** overlaps significantly with the northern areas of D2N2 and plans to take advantage of its position as a key business to business supply chain, designer and manufacturer –it has sector specialisms especially in digital technologies, advanced manufacturing, engineering and materials. Their plan is based on building on strengths in ‘foundation industries’, and restructuring the economy towards high value, knowledge and data led, business activities. Markham Vale EZ is identified as being a key part of their developing advanced manufacturing hub.

**Northamptonshire LEP** and the overlapping **South East Midlands LEP (SEMLEP)** have also identified high performance engineering as a key sector, much but not all based on motorsport around Silverstone. Northamptonshire is focussed on being a UK and international centre for engineering and new technology development in automotive, aerospace, defence and energy sectors. Large companies such as Mercedes, Mahle Powertrain, Cosworth, Scott Bader, Cummins Engines and a strong concentration of new technology SMEs, a number of whom are spinouts from the larger companies, form the High Performance Technologies Network which generates £2 billion of GVA per year in the County from 1,000 companies employing over 20,000 people.

In **SEMLEP**, the Nissan Technical Centre at Cranfield Technology Park and Millbrook Proving Ground in Central Bedfordshire are highly significant assets, along with prestigious specialist university at Cranfield, with specialisms in post graduate education in engineering and business studies. It is also home to many leading global businesses (eg Lockheed Martin) working in diverse fields with considerable latent potential for growth within key showcase sectors including, High Performance Technology and Precision Engineering.

In the West Midlands, the **Greater Birmingham and Solihull LEP** includes East Staffordshire, the location of many of JCB business operations. The Advanced Manufacturing Supply Chain Initiative was originally a £25m RGF bid developed by GBSLEP with the Black Country, Liverpool and Coventry & Warwickshire LEPs (of which £22m has been committed for spend in the West Midlands). Following consideration by Government, the initiative was extended across England and all manufacturing sectors. Future ideas are development of a cross-LEP Growth Hub with Black Country and Coventry and Warwickshire LEPs; an ambitious proposal to host the HS2 College, building on industry, HE and FE strengths and the proximity to two HS2 stations. This proposal will be supported by two FE Capital bids for investment in skills development for HS2 in relation to Rail Engineering and Construction. A priority project for LGF is funding to support bringing forward the **Advanced Manufacturing Hub** which aims to deliver a 20ha site next to J6 of the M6 with the ability to create 100,000m<sup>2</sup> of new floor space, generate and safeguard up to 3,000 direct jobs. This will also be delivered jointly **with Black Country and Coventry and Warwickshire LEPs**. D2N2 is at an early stage to discuss cross Midlands LEP opportunities.

The **Coventry and Warwickshire City Deal** aims to create 15,000 jobs over the next 10 years and is centred around the advanced manufacturing and engineering sector – “Re-engineering Engineering” – with a major emphasis on encouraging growth by making it easier for companies to realise expansion plans through simplifying routes to advice, finance and skills. A new Clearing House will provide access to advisors on key matters relating to business support, access to finance, planning related matters and contacts related to employment requirements and skills as well as providing strong links to government. The CWLEP plan notes that the area has a strong representation of employment in Advanced Manufacturing and Engineering, specifically motor vehicles, architectural and engineering activities, fabricated metal products, machinery and equipment, electrical equipment and other transport and propulsion systems.

Six LEPs with a strong interest in motorsports partnered for an event in the run up to the F1 Grand Prix. **‘Driving Technological Change within British Manufacturing’** and was supported by Silverstone, the MIA, the Automotive Council and the SMMT. The event is being joint funded by six Local Enterprise Partnerships (Leicestershire, South East Midlands, Coventry & Warwickshire, Oxfordshire, Northamptonshire, Bucks Thames Valley), together with UK Trade and Investment.

Silverstone forms part of the largest concentration of automotive and high performance engineering businesses in the UK. The event will attract a local, national and international audience in excess of 300 attendees and will focus on themed technology areas that encourage new business opportunities and also provide an ideal platform for encouraging inward investment opportunities into the UK, as part of wider joint programmes supporting **High Performance Technology (HPT)** companies across the combined LEP areas. HPT businesses are defined by their high knowledge and innovation content, meaning that in order to remain competitive they need to attract and retain enough employees with the right type of skills. As such, there is a strong relevance to D2N2 TEM sector SMEs through their expertise in composites, alloys, precision machining, additive manufacture etc. In addition, Formula E, the FIA's new global electric racing series, has announced that its new headquarters and team facilities will be based within the grounds of the Donington Park Racing Circuit, which borders D2N2. This highlights the local investment being made in electric vehicle technology and will create a high tech hub of advanced manufacturing skills. It also forms part of a wider programme to extend the boundary of the Motor Sport Valley initiative northwards. It will create opportunities for D2N2 specialist businesses to access opportunities to participate.

BIS has reported that **Enterprise Zones in Leicestershire, Liverpool, the Black Country, Sunderland and Northampton** are using business incentives to global car manufacturers to make themselves magnets for the motor industry boosting supply chains. Over 35 top automotive companies are already represented in the Zones including Toyota, Cosworth and Pirelli. On top of that over 15 automotive businesses have moved to or plan to move to the Zones since 2012, including Jaguar Land Rover, Bosch Engineering, Triumph, Norgren, Ashok Leyland, Lockheed Martin and Bloodhound. In the North East Enterprise Zone, Gateshead College will create a ground-breaking International Centre for Low Carbon Vehicle Development adjacent to Nissan, providing vocational skills training to benefit local businesses. This context is useful for D2N2 partners to be aware of the scale of the competition for new TEM investment into the UK.

## Appendix C

### Consultations Summary

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#### **Interviewees and Consultees Responding**

Bombardier – Matthew Colclough  
JCB Power Systems Ltd – Malcolm Sandford, Alan Tolley, Alasdair Duncan  
Rolls Royce plc – Paul Snelling, Maria Cianci  
Toyota Motor Manufacturing (UK) Ltd – Tony Walker

45 SMEs within D2N2 area and active in the sector – see Appendix D

Automotive Investment Organisation – Alex Higgs  
SMMT – Luke Hampton  
Technology Strategy Board – Howard Partridge, Paul John

CleanTech Ltd – Neil Horsley  
Collis Engineering (and Derby and Derbyshire Rail Forum) – Peter Roberts  
ENSCITE – Colin McKinnon  
Derby University – Prof Richard Hall  
Nottingham Trent University – Jeremy Hague  
University of Nottingham - Rachel Brereton; Mark Smith; Chris Guest; Gemma Morgan-Jones

#### **Attendees at Sector Workshop held on 25<sup>th</sup> June, 2014**

Trevor Fletcher - Hardstaff  
Martin Rigley – Lindhurst Innovation – (meeting Chair)  
David Walker – Autochair  
Kevin Lindsay – FAR UK  
Edward Neville – Neville Precision Engineering  
Stuart Handley – Swiftool Precision  
Tim Walker – Seat Design Company  
Peter Knight – Midlands Aerospace Alliance  
Neil Cooney – Stored Energy Technology  
David Drury – Employer First

#### **Local Authorities Responding**

Derby City Council – Richard Williams, Alan Smith and Chris Pook  
Nottingham City Council – Andy Curtis, Catherine Appleby and Lewis Stringer  
Nottinghamshire County Council – Celia Morris and Geoff George  
Derbyshire County Council – Frank Horsley  
South Derbyshire District – Mike Roylance  
Mansfield and Ashfield Regeneration Service – Paul Thomas  
Chesterfield BC – Laurie Thomas  
Rushcliffe BC – Catherine Evans  
Bassetlaw – Robert Wilkinson  
Newark and Sherwood – Julie Reader-Sullivan  
Amber Valley – Stephen Jackson  
High Peak – Perry Wardle/ Helen Pakpahan  
North East Derbyshire/Bolsover shared service – Allison Westray-Chapman

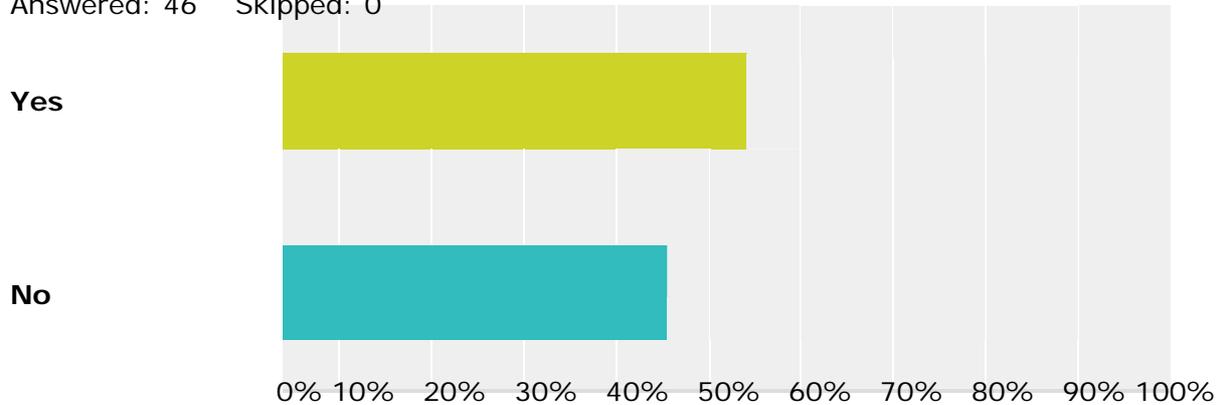
This document has been researched and compiled by Brian Holdsworth, David Pickering and Transport iNet in association with Cenex. Further information available from John Frodsham – j.s.frodsham@lboro.ac.uk.

## Appendix D

**SME Electronic Survey** - Summary of responses from 45 SMEs from 260 (17% response rate) in D2N2 area and active in the sector

### Q1 Have you been able to find the business support you need?

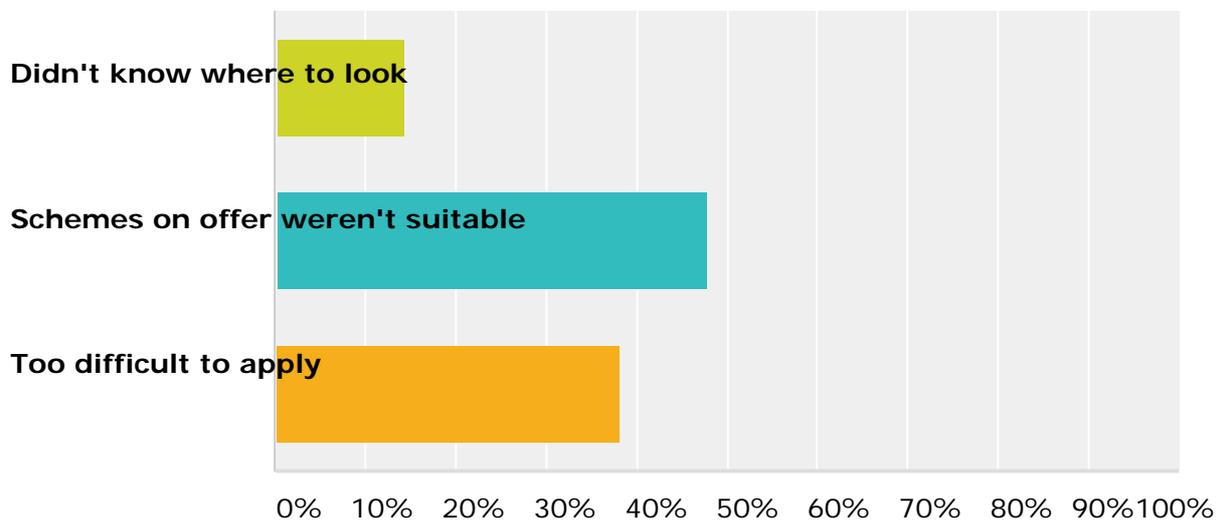
Answered: 46 Skipped: 0



Answer Choices	Responses
Yes	54.35%
No	45.65%
<b>Total</b>	<b>46</b>

### Q2 If No, why not?

Answered: 21 Skipped: 25



Answer Choices	Responses
Didn't know where to look	14.29%
Schemes on offer weren't suitable	47.62%
Too difficult to apply	38.10%
<b>Total</b>	<b>21</b>

**Q3 If yes what kind of support and from whom?** (Further details available on request)

Answered: 21 Skipped: 25

**Q4 What did you use the support for? (tick all that apply)**

Answered: 29 Skipped: 17

Answer Choices	Responses
General Consultancy	20.69% 6
Technical assistance	20.69% 6
Market Research	10.34% 3
Prototyping / Demonstration	44.83% 13
Testing	20.69% 6
Intellectual Property advice / protection	0.00% 0
Software	10.34% 3
Training	17.24% 5
Other	44.83% 13
<b>Total Respondents: 29</b>	

**Q5 Are there any gaps in business support provision?**

Answered: 33 Skipped: 13

Answer Choices	Responses
Yes	54.55%
No	45.45%
<b>Total : 33</b>	

**Q6 Do you think the sector should be described as**

Answered: 36 Skipped: 10

Answer Choices	Responses
Transport Equipment Manufacturing	33.33% 12
Advanced Engineering and Manufacturing	52.78% 19
Other	19.44% 7
<b>Total Respondents: 36</b>	

**Q7 Should provision be provided**

Answered: 38 Skipped: 8

Answer Choices	Responses
Locally in the D2N2 Area - Derbyshire, Nottinghamshire	52.63% 20
Across the whole of the East and West Midlands	28.95% 11
Nationally	34.21% 13
Other	7.89% 3
<b>Total Respondents: 38</b>	Includes multiple selections

**Q8 Have you raised finance in the last 3 years?**

Answered: 38 Skipped: 8

Answer Choices	Responses
Yes	44.74%
No	55.26%
<b>Total</b>	<b>38</b>

**Q9 Would you welcome a common local funding platform which is easy to access?**

Answered: 37 Skipped: 9

Answer Choices	Responses
Yes	97.30%
No	2.70%
<b>Total</b>	<b>37</b>

**Q10 Do you have access to and use University expertise?**

Answered: 38 Skipped: 8

Answer Choices	Responses
Yes	57.89%
No	42.11%
<b>Total</b>	<b>38</b>

**Q11 Would you welcome improved access to University expertise?**

Answered: 38 Skipped: 8

Answer Choices	Responses
Yes	71.05%
No	28.95%
<b>Total</b>	<b>38</b>

**Q12 Can you suggest any measures to increase innovation in your company?**

Answered: 22 Skipped: 24

(Further details available on request)

**Q13 How important would you rate the level of skills as a priority for your business?**

Answered: 38 Skipped: 8

Answer Choices	Responses
High	86.84%
Medium	10.53%
Low	2.63%
<b>Total</b>	<b>38</b>

**Q14 Finally, -are there any issues not already covered you would like to raise for consideration and any ideas for action**

Answered: 12 Skipped: 34

(Further details available on request)