A Legacy Handbook for Innovation

A report prepared by *emda*

September 2011

This document forms part of the *emda* Knowledge Bank.

A Legacy Handbook for Innovation

July 2011

Contents

Foreword

The East Midlands Innovation Council has been providing *emda* with leadership and guidance in relation to innovation strategy and investment since 2005, with membership drawn from large and small businesses and from the region's universities. The Council was responsible for the development of the first Regional Innovation Strategy (RIS), launched in 2007, and the revised edition, in 2010. The regional programmes that were developed to address the Innovation priorities highlighted in the RIS, and the impact they have had, are described in this handbook.

The Technology Strategy Board (TSB), Local Enterprise Partnerships (LEPs) and others will pick up some of the responsibilities formerly held by the Regional Development Agencies (RDAs) for supporting economic growth. It is recognised that, given the current budget deficit, this must be done within severe resource constraints. It is essential, however, that future programmes build on existing investments in science, technology and innovation. We know that UK businesses are often competing in global markets and that Governments in other countries are increasing investment significantly in research and development to improve the competitiveness of their economies. We cannot afford to neglect this very real challenge to our current industrial strengths, or the potential loss of opportunities in the emerging markets, such as low carbon technologies and regenerative medicine. It is essential that, during this period of public spending reductions, a high priority for innovation investments is maintained and, where possible, budget reductions are minimised.

The process of innovation, especially when applied to technology, is rarely a short term activity. More typically, investments must be made over a period of time where continuity, rather than frequent change, is required to manage the inevitable risks of doing something new. We believe that the proven and successful programmes that have supported innovation in the East Midlands must be built on if their potential is to be realised. This handbook shows that several of our programmes have been seen as best practice and replicated elsewhere. iNets (Innovation Networks), for example, are already operating in other parts of the country and could be rolled out further as core components of the growth agenda.

It is vital that the Coalition Government, LEPs and others recognise that many good things have been done by *emda* to improve the innovation performance of the East Midlands. This handbook distils the learning and experience gained from working in innovation policy development and practical support delivery. We hope that successor organisations find this information useful and continue to build on these hard-won achievements.

Professor Ric Parker
Chairman, East Midlands Innovation Council

Professor Philip Tasker
emda Board innovation lead

We would like to express our sincere thanks and gratitude to the members, past and present, of the East Midlands Innovation Council who have provided expert and independent advice to *emda* in the development, implementation and success of the Regional Innovation Strategy.

Present East Midlands Innovation Council Membership	
Prof. Ric Parker	Council Chairman and Director of Research & Technology, Rolls-Royce Group
Prof. Barry Stickings CBE	Former Chairman of BASF and Former Council Chair
Prof. Philip Tasker	Former Vice Chancellor, De Montfort University
Prof. Phil Ruffles CBE FRS	Former Director, Engineering & Tech, Rolls-Royce Plc
Mr. Robin Southgate	Chair of Food and Drink Forum
Mr. Paul Atkinson	Managing Director, Atkinson Design Associates Ltd
Dr. Gordon France	Vice President, Quality, Strategy & Performance, AstraZeneca R&D
Prof. Chris Rudd	Pro Vice Chancellor, University of Nottingham
Dr. Frank Burdett	Pro Vice Chancellor, University of Northampton
Mr. Graham Mulholland	Managing Director, EPM Technology Ltd
Dr. Carl Edwards	Former Director, NHS Innovation Hub East Midlands
Dr. Dave Clarke	Head of R&D Process Management, E.ON New Build and Technology
Prof. Yvonne Barnett	Pro Vice Chancellor, Nottingham Trent University
Past East Midlands Innovation Council Members	
Prof. Don Grierson OBE FRS	Former Pro-Vice Chancellor – The University of Nottingham
Mr Rob Carroll	Managing Director – Catapult Venture Managers Ltd
Prof. Ron McCaffer	Former Director, Business Partnerships – Loughborough University
Dr. Ian Wilding	Former Scientific Advisor, Pharmaceutical Profiles
Prof. Lindsey Davies	Former Regional Director of Public Health Government Office East Midlands

Executive Summary

Innovation – the successful exploitation of new ideas – has been recognised by successive Governments as a key driver of economic competitiveness.

Strategy

Innovation has been a strategic priority in each of the Regional Economic Strategies published since 1999. The region's priorities and plans for Innovation have, since 2006, been promulgated through the Regional Innovation Strategy (RIS), produced by the East Midlands Innovation council, acting in an advisory capacity to *emda's* Board. The RIS was last refreshed early in 2010.

Rationale

emda has identified innovation as a priority primarily because it is a key driver of economic competitiveness, as reflected in the RES and the RIS. Improving innovation performance is a particular challenge for the UK, as the country has not had a strong culture of technology exploitation, relative to the US for example. Within the UK, the region has also had an 'innovation deficit' in relation to other regions. This, coupled with market failure in the adoption of innovation by SMEs, provides the backdrop for the RIS and Innovation support programmes provided to business. *emda's* funding for Innovation has been geared towards encouraging businesses, particularly SMEs, to increase activity and investment in Innovation.

Objectives

emda takes its objectives for Innovation from the RIS, which has the following aspirations:

- **Increasing the number of businesses investing in innovation**
- **Raising the overall level of business investment in innovation**
- **Improving the effectiveness of ideas' commercialisation**
- **Recognising and building on our regional strengths to ensure sustainable competitive advantage**
- **Increasing the frequency and value of business:university interactions**
- **Supporting the development of appropriately skilled individuals**
- **Raising the profile of innovators, celebrating success and learning from experience.**

The four iNets (Innovation Networks) have been the main mechanism for achieving the aspirations in the RIS and represent a key legacy to the region.

Audience for Handbook

The handbook is aimed primarily at: the Department for Business, Innovation and Skills (BIS); Technology Strategy Board (TSB); and Local Enterprise Partnerships (LEPs), Local Authorities and Universities within the region.

Impact

An independent evaluation was carried out during 2009, as part of the review of the first RIS, to investigate the progress and impact achieved by the strategy and the associated support programmes. It concluded that:

- The themes, priorities and key delivery mechanisms had widespread support from stakeholders and should continue, to allow time for the changes to become embedded in the region's innovation system.
- The greatest value of the RIS had been the way in which it created and supported effective partnerships and networks. The iNets were seen as the principal way in which this was achieved, with various stakeholders in the region – including the universities – working together more closely than had previously been the case.
- The RIS had not only created a forum for key stakeholders to work together to develop a more coordinated strategy for innovation but this framework had also led to the establishment of effective partnerships and networks on the ground.
- The iNet model was widely acknowledged to be a strong intervention to support innovation and was being replicated in other English regions.
- Some modifications in emphasis and approach were recommended, which were subsequently reflected in a refreshed RIS in 2010.

The evaluation pointed to a number of achievements, including:

- Improved connections between key public bodies, ensuring more coherent and concerted action on Innovation, for example, the Healthcare & Bioscience iNet's work to open up opportunities in the NHS for the region's SMEs.
- Improved links between businesses, entrepreneurs and other innovation enablers, such as universities and angel investors. Since 2003, *emda* has invested more than £150m in the region's universities.
- The filling of 'gaps' in the region's innovation system, including finance for innovation and peer-group learning
- Good examples of regional partners committing to major Innovation projects, with the productive use of resources. For example, the engagement of the University of Nottingham and Loughborough University in the Manufacturing Technology Centre (MTC) as founding research partners.
- Successfully championing the needs and interests of the region's would-be innovators, nationally and internationally. For example through the FP7 Support Service.

In January 2011 *emda* commissioned an evaluation of the economic impacts of the iNets, the key findings were:

	• 29% of businesses have already introduced new to the industry products as a result of the iNet support they had received. Further, 30% were planning to introduce new to the industry products in the future, this figure rose to 50% for businesses in the healthcare and bioscience sector.
	• The cost per business assisted by the iNets (£5,633) and the cost per job created by the iNets (£21,312) is significantly lower than that found in comparable support packages offered by other RDAs (£24,600 and £38,000 respectively) and the national Grant for Research and Development programme (£56,000 and £32,000 respectively).
	• iNet beneficiaries generate more income from innovation than non-beneficiaries, 21% of beneficiaries generate over 51% of income from new or improved products or services, compared to 18% of non-beneficiaries. Further, 14% of beneficiaries report that they generate no income from innovation, compared to 54% of non beneficiaries.

The key successes at project level are as follows:

Innovation Networks (iNets)

By the end of 2010/11, the iNets will have supported more than 2,600 businesses, and established around 50 university R&D collaborations, introducing new university relationships for nearly 450 businesses.

Regional Technology Framework (RTF)

The RIS also laid the foundations for the RTF, which highlighted the region's priorities for cross-cutting and enabling technologies. Over the period 2008-11, 6 universities and 63 businesses received funding of about £4m from *emda* and ERDF under the RTF. The funding levered an additional £3.6m into the region.

Framework Programme (FP7) Support

This service - which helped business and universities to access R&D projects via European and international collaborations - was regarded as an exemplar by the European Commission and BIS. Over the period 2007-2010, more than 680 companies were assisted, leading to 10 approved FP7 projects to date (with a combined value of €40m).

iFestival

The iFestival, an annual celebration of innovation in the region, ran for four years from 2007, helping to raise awareness across the community about the importance of Innovation. More than 76,000 people attended 655 events throughout the region, with 124 partner organisations involved.

Lessons Learnt

The main learning points from *emda's* experience, for the next generation of Innovation policy-makers and practitioners, are as follows:

Innovation System / Strategic Framework

- Government can have an important role to play in facilitating effective innovation systems below the national level
- Innovation support to business is most effective when it is tailored to the needs of specific sectors and pulls together the input of the various players in the innovation system, crucially including the universities.
- It is important to articulate clearly how the innovation system works, where the failures are and how to address them; so that stakeholders buy in to proposed solutions.
- In the current economic conditions, a strategy for innovation is at least as important as it was at a time of growth. This is in line with the Coalition Government's emphasis on the importance of investing in high-growth industries.
- When the Coalition Government produces its Innovation Strategy later in the year it needs to consider the extent to which there is a need for strategic frameworks for Innovation below the national level, and how the LEPs will connect to the national strategy.
- The LEPs can build on the progress that has been made by developing strong relationships with their respective universities.
- While universities are effective at managing relationships with major companies, it is necessary to have interventions that enable smaller and nascent businesses to engage with universities, with benefits on both sides and a significant economic benefit.

Leadership

- One of the major successes in the East Midlands has been the role of the East Midlands Innovation council, whose membership of high-calibre, committed individuals with extensive regional, national and international connections provides an expert, independent advisory group. The TSB need to consider whether the existing structure of Science & Industry Councils should have an ongoing role within the new landscape.

The iNet Model

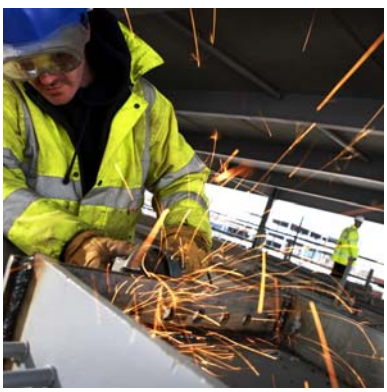
- The iNets have been particularly successful at engaging with productive businesses because of their expertise and ability to tailor services to their sector, sub-sectors and individual companies. They have built relationships of trust based on proximity and face-to-face contact.
- Businesses need more than information to make important decisions. Innovation is inherently risky, innovators need the opportunity to think about what to do and consider the consequences of their options. The iNet advisers have played a critical role in counselling businesses along the innovation journey, so that businesses are more likely to move forward and the risk of poor decisions being made is reduced.
- The iNets have built a large and dynamic informal network of businesses, universities and partner organisations in which the tacit knowledge of the iNet team is continually used to stimulate innovation through a range of mutually reinforcing activities. This has led to increased involvement from network participants in iNet activities that encourage strategic thinking, business knowledge acquisition, better business decision making, facilitation of collaborative working and innovative behaviour.

Reaching the Business Community

- Businesses have unparalleled access to information but less time than ever to find and digest what they need. Communications must be clear and relevant to their needs.
- Much more needs to be done to promote and showcase innovation. The iFestival and innovation portal have been successful mechanisms for supporting this process. Clear and strong marketing messages are important to communicate the benefits of innovation and encourage take-up.
- Case studies are effective mechanisms for bringing to life how support programmes have impacted on companies and how innovation can improve the performance of all organisations. Equally, stakeholders or potential funders are better incentivised to be involved if the impacts of innovation activities are reported in terms of business improvement.

Metrics

- A major issue for all policy makers is to identify appropriate and objective methods for measuring innovation performance. Problems arise as methods often lack local detail, use economic indicators that can be difficult to relate to specific input activities, or depend on data that is typically quite old when reported.



Introduction and National Context

This handbook has been developed to inform the next generation of organisations that will have responsibility for promoting and supporting innovation. The investments made by *emda* have been specifically directed at stimulating activity and increased investment in innovation, particularly among SMEs. The handbook provides a reflection on the innovation programmes that have been developed since 2004. It describes the rationale for establishing these programmes, the mechanisms that have supported their delivery, the impact on the East Midlands and the partner organisations that have been involved. The aim is to pass on the hard-won experience and knowledge so that others can build on the successes and learn from the experience to ensure that the localities within the East Midlands thrive as competitive economies built on innovation. Key documents related to this handbook, can be found at: http://www.tinyurl.com/emdakb

This handbook is especially relevant for organisations such as Local Enterprise Partnerships (LEPs), Local Authorities (LAs) more widely, universities and innovation centres, who will need to respond to the changes introduced by the Coalition Government. Responsibility for innovation, previously a key activity for Regional Development Agencies (RDAs), is now managed at a national level. From April 2011, the Technology Strategy Board (TSB) assumed responsibility for the development and delivery of all innovation-related business assistance programmes. In January 2011 the Government announced that more than £200m would be invested in an elite network of Technology and Innovation Centres, established and overseen by TSB. LEPs need to consider how best to connect to these national developments, drawing on *emda's* legacy, to ensure that their innovation stakeholders are not disadvantaged.

Government policies on innovation, and the role it plays in the wider growth agenda, are still developing. An innovation strategy is expected to be published by the Department of Business Innovation and Skills (BIS) during 2011. In the meantime, in addition to the change to the national management of innovation programmes, there has been a rationalisation of the innovation support products available under the Government's Solutions for Business portfolio[1]. The effect is to reduce the activities that will be eligible to receive Government funding. Of particular relevance is the decision to stop the Innovation Advice & Guidance (IAG) product, as this is the basis for supporting the operation of the iNets (Innovation Networks).

The Coalition Government set out, in their publication *Bigger, Better Business*[2], plans for improving small business performance and growth through, for example, more focussed help for start-ups, use of experienced business people as volunteer mentors, and the streamlined delivery of general business support through the use of a national Business Link website - www.businesslink.gov.uk - and call centre. A Business Coaching for Growth service is planned to provide access to specialist strategic advice, coaching and mentoring to firms with high-growth potential.

The Government will provide national leadership on policies to support sectors of national importance and has prioritised Advanced Manufacturing in its Growth review. The Government has already confirmed the continuation of the Manufacturing Advisory Service (MAS) to provide specialist support and advice to help manufacturers identify and implement best practice, with core Government funding of £50m. The service will have a clear national structure but will be delivered to companies locally.

[1] Solutions for Business Government Funded Business Support: A Guide for Business, BIS, 2011

[2] Bigger, better business: helping small firms start, grow and prosper, BIS, 2011

Chapter 1
The Economic Context

The East Midlands has strong industrial and academic foundations, on which its localities' innovation performance can be developed. Many technological advances have originated in the region; from the development of the jet engine to the invention of the MRI scanner and DNA fingerprinting, as well as the discovery of ibuprofen in the former research laboratories of Boots Pharmaceutical.

Innovation is defined as "the successful exploitation of new ideas". In recent years the importance of innovation has come to the fore as the primary driver of economic competitiveness. In a world dominated by continued advancement in technology, innovation is now beginning to determine the success of nations. Developed countries will need to worry about a new deficit; an innovation deficit.

Innovation can be a complex process that relies on many factors, including finance, skilled people, technology and infrastructure. Often these factors interact in a systematic way to support innovation in firms. Innovation systems have the following features:

- Innovation relies on effective interaction between the science base and the business sector;
- More competitive markets and the accelerating pace of scientific and technological change, force firms to innovate more rapidly, with implications for long-term applied research;
- Networking and collaboration among firms is more vital now than in the past, with increasing involvement of knowledge-intensive services;
- Small and medium-sized enterprises (SMEs), especially new technology-based firms, have an important role in the development and diffusion of new technologies, in part by helping to instil a culture of innovation; and
- The globalisation of economies makes national and regional innovation systems more interdependent; in this environment, the competitiveness of firms depends more and more on their ability to link to international innovation networks.

The policy focus has been on innovation as a driver of economic development for over 20 years, emphasised by the adoption of the Lisbon Strategy in 2000[3], which aimed to make the European Union the most competitive and dynamic knowledge-based economy in the world by 2010. The Labour Government commissioned the Lambert Review of

[3] Conclusions of the Presidency of the Lisbon European Council 23 and 24 March 2000

Business/University Collaborations in 2003[4], which led to a range of recommendations on improving the connections between researchers and industry. The lack of this engagement was seen as a major weakness in the UK's ability to exploit investments made in the science and research base; in particular the review pointed to the need to boost demand for research from industry. This was reflected in the Government's 10-year investment framework announced in 2004[5], with specific responsibilities for RDAs to help SMEs access the knowledge base and to establish Science and Industry Councils across the English regions.

Another key policy development was the creation of the Technology Strategy Board (TSB) in 2004, firstly as an advisory body to the DTI and then, in 2007, established as a non-departmental public body, operating at arms length from Government. The TSB's remit was to increase, in particular, the investment in technology through large-scale collaborative R&D programmes. Their role was further strengthened by the Coalition Government in 2010 with the announcement that, as from April 2011, the TSB would be responsible for the management and delivery of all innovation programmes.

[4] Lambert Review of Business-University Collaboration: Final Report 4th December 2003

[5] Science and Innovation Investment Framework 2004-2014, UK Government, 2004

Why intervention was necessary

Innovation happens in a complex system that can comprise businesses, their representative organisations, support providers, technology organisations, universities, investors and all the interactions that occur between them, to facilitate the process of taking a new idea from concept to profitability in the market place. SMEs in particular find it difficult to access and operate in this system because they often lack the knowledge, skills, resource or finance required.

The basic market failure that supports the need for intervention is based upon the fact that businesses in particular do not capture the full benefits from their investment in R&D. These benefits are believed to 'spill over' to other businesses and this inability to capture all of the benefits creates a disincentive for private investors. The consequence of this is under-investment in R&D, which then justifies public sector funding.

Innovation policies, publications and programmes of the Government from 2004 made clear the need to make UK industry competitive in a global economy and how vital a role innovation plays in that process. Whilst the national objectives were clear, the mechanisms that Government used to promote innovation, such as grants, advice and support services were not well coordinated, inadequately communicated and often poorly taken up by businesses, especially SMEs.

Data published as part of the Community Innovation Survey (CIS)[6], and covering a number of indicators relevant to innovation, showed that over the period 2002-08 business investment in R&D, a measure used to highlight the level of business innovation, was consistently higher in the East Midlands than the national average. However, strong anecdotal evidence suggested that this R&D expenditure was primarily concentrated in a small number of the region's larger companies.

[6] http://www.bis.gov.uk/policies/science/science-innovation-analysis/cis

Although changes in the way the CIS operated over the period makes it difficult to compare the actual percentage values in some cases, it is clear that the position of the East Midlands relative to the rest of the UK is largely unchanged across all indicators. This data indicates that interventions aimed at changing innovation performance are likely to have an impact over the longer term.

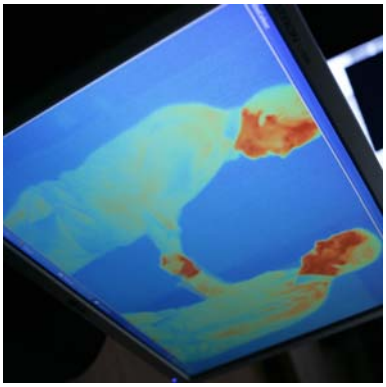
The data is summarised in Table 1.

TABLE 1: Comparison of East Midlands Innovation Indicators versus UK Average

Innovation indicators	2002		2003		2004		2005		2006		2007		2008	
	UK	EM	UK	EM	UK	EM	UK	EM	UK	EM	UK	EM	UK	EM
Business enterprise R&D investment as a % of GVA (BERD)	1.2	**1.6**	1.2	**1.3**	1.1	**1.4**	1.2	**1.4**	1.1	**1.3**	1.2	**1.4**	1.2	**1.4**
Gross domestic expenditure on R&D as a % of GVA (GERD)	2	**2.1**	1.9	**1.8**	1.9	**1.9**	1.9	**2**	1.9	**1.8**	2	**1.9**	N/A	**N/A**
% of firms with cooperation arrangements on innovation	13	**13**	13	**13**	13	**13**	10	**10**	10	**10**	24	**22**	24	**22**
% business turnover accounted for by new, improved or novel products *	N/A	**N/A**	N/A	**N/A**	17	**15**	N/A	**N/A**	6	**8**	N/A	**N/A**	11	**7**

* Due to a change in CIS questionnaire routeing, estimates for 2008 are not consistent with 2004 and 2006.

Source - BIS Economic Performance Indicators, last updated on 21 October, 2010



In 2005, following on from the Lambert Review recommendations, *emda* formed the East Midlands Innovation Council, an industry-led advisory body, with responsibility for providing strategic leadership on innovation and related investments. This membership was drawn from senior representatives of large and small businesses, universities and the public sector. The first task for the Innovation Council was to oversee the development of the Regional Innovation Strategy (RIS)[7] and an action plan for delivering associated investments. A key *emda* objective for the RIS was to connect up complementary policy areas - including skills, business support and access to finance - and through this contribute to a coherent, simplified support mechanism for businesses and other innovation stakeholders.

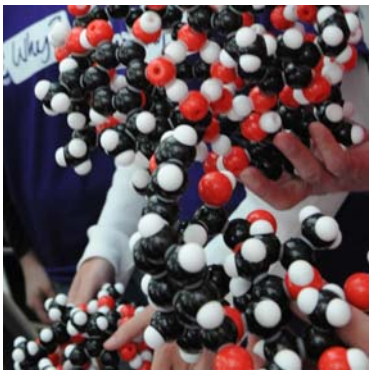
A number of studies covering policy drivers[8], business demand[9], infrastructure[10] and design[11] were carried out at the start of the RIS development process; their purpose was to clarify the innovation elements of the economic development challenges affecting the region. The findings were used to help define the support programmes implemented through the RIS; the key issues identified were:

Mixed evidence on R&D expenditure

Business R&D expenditure was above the national average; however, strong anecdotal evidence suggested that expenditure was primarily concentrated in a small number of our larger companies. Other indicators of R&D activity included lower than the national average expenditure on both Government and Higher Education R&D.

Under performance in new products and processes development

The proportion of turnover accounted for by new or improved products in the East Midlands was amongst the lowest in the UK, indicating that companies might have been relying on older products and processes for their success.



[7] Innovation Strategy for the East Midlands 2007 – 2010, *emda*, 2006
[8] Review of EU, national and regional innovation drivers, B&W Consulting, 2006
[9] Review of Innovation Support Services for Businesses in the East Midlands, WME Consultants, 2006
[10] Review of infrastructure facilities to support innovation across the East Midlands, CM International, 2006
[11] Design as a Driver of Innovation In the East Midlands, TBR Economics, 2006

Accessing the regional university knowledge base

Companies, particularly SMEs, reported that they found it difficult to access support from higher education institutions, in particular because of the lack of time, resources, and knowledge of access points to HEIs. These key knowledge resources in the region were not being exploited to their full potential.

Improving innovation physical infrastructure

The rapid development of physical infrastructure had put pressure on grow-on space for innovative companies across the region. Companies were frequently unable to find accommodation in proximity to their knowledge-base partners.

Simplifying innovation support services

Businesses reported that they were confused by the broad range of innovation support providers, identifying a need to reduce this complexity, ensure high-quality provision and communicate clearly to businesses. This required better strategic coordination with business support delivered through the Business Link network.

Creating a stronger culture of innovation

Economies with good innovation performance have within them communities of people who thrive on innovation. Action needed to be taken to create a better environment for innovation, in which innovators and more innovative behaviours are encouraged and supported.

At national level, innovation and technology support programmes were mainly delivered by the Department for Trade & Industry, with the TSB gradually taking on this responsibility over time. Significant funding was available through a grant for Collaborative R&D, with applicants responding to national calls for projects. The challenge to establish collaboration partnerships of businesses and researchers from across the country made it difficult for SMEs to get involved.

Other national support available included the Knowledge Transfer Networks (KTN's) and the Knowledge Transfer Partnerships (KTPs)[12]. A KTN brings together people from businesses, universities, research, finance and technology organisations to stimulate innovation through knowledge transfer. Each KTN focuses on a specific technology or business area, under the management of the TSB. Funding comes from Government, industry and academia.

[12] http://www.innovateuk.org/

KTPs enable individual companies to work with the UK's knowledge base (universities, colleges or research organisations) by employing a dedicated associate, typically a recent graduate. Government contributes towards the knowledge-base partners' cost of participation, and the company makes up the balance of the project cost. At sub-national level, RDAs were given responsibility by Government to operate a range of national grants aimed at stimulating business growth. These included the Grant for Business Investment (GBI)[13], with a focus on deprived areas; and Grant for Research and Development (GRD)[14], which supported SME investment in R&D.

Universities were encouraged by Government to develop their knowledge transfer capabilities through the introduction, in 2001, of the Higher Education Innovation Fund (HEIF)[15]. The format for allocating funding moved from a competitive-bidding process in HEIF1 to a funding-formula basis in HEIF4. Table 2 shows the total HEIF funding allocated by Government and the amount awarded to East Midlands' universities.

TABLE 2: Summary of HEIF Allocations

HEIF Call	Academic Years	Total Budget £ million	East Midlands Allocation £ million	% Total Budget
HEIF 1	2001/2 – 2004/5	78	5.8	7.44%
HEIF 2	2004/5 – 2005/6	187	12.8	6.84%
HEIF 3	2006/7 – 2007/8	234	12.1	5.17%
HEIF 4	2008/9 – 2010/11	396	31	7.83%
HEIF 5	2011/12 – 2014/15	600	42.6	7.1%
Total funding to date		**1495**	**104.3**	**6.98%**

Data from http://www.hefce.ac.uk/econsoc/buscom/heif/

Under HEIF3, £53m of the total budget was offered through a competitive bidding round; hefce only report details for the sum given to lead universities so it is not possible to report the amount awarded to East Midlands universities as part of cross-regional collaborations. The East Midlands allocation in the table refers to the formula component only.

Many local authorities, sometimes in partnership with universities and *emda*, have promoted the development of infrastructure to support business start-up or growth; this includes incubation facilities and innovation centres. Investment over the past decade has led to the development of around 50 facilities across the region. Some, like BioCity[16] in Nottingham, are a vital component within the innovation system, providing a nurturing environment that encourages business innovation.

[13] http://www.bis.gov.uk/policies/economic-development/regional-investment
[14] http://www.innovateuk.org/
[15] http://www.hefce.ac.uk/econsoc/buscom/heif/
[16] http://www.biocity.co.uk/

Strategy for intervention

Prior to the establishment of the East Midlands Innovation Council in 2005, there was no dedicated regional innovation strategy in place, or recognition of a structured approach to stimulating business innovation. This reflected the national situation, where there was a lack of leadership and a poorly coordinated approach to innovation support. The Council kick-started a series of consultation exercises during 2006, involving a wide range of business, academic and public sector stakeholders. Workshops were held to bring together the key organisations operating in the four priority sectors that had been identified in the Regional Economic Strategy (RES)[17]. These sectors had been prioritised on the basis of their comparative strength in the UK and internationally, and their potential for growth. The Council's proposition was that the RIS should be based around these regional strengths and that support programmes should, where possible, build on the expertise held by stakeholders in the sectors.

The first RIS was published in November 2006, covering the period April 2007 to March 2010. The objectives were to:

- Increase the number of businesses investing in innovation
- Raise the overall level of business investment in innovation
- Improve the effectiveness of ideas' commercialisation
- Recognise and build on our regional strengths to ensure sustainable competitive advantage
- Increase the frequency and value of business: university interactions
- Support the development of appropriately skilled individuals
- Raise the profile of innovators, celebrating success and learning from experience.

[17] 'A Flourishing Region', Regional Economic Strategy for the East Midlands 2006 – 2020, *emda*, 2006

Chapter 2
emda's Approach to Innovation Support

The range of Government programmes to support business has reduced over recent years and has become more clearly specified as a portfolio of Solutions for Business (SfB) products. At the time of developing the RIS, 7 of the 29 SfB products were dedicated to innovation and care was taken to ensure that related RIS programmes were aligned with these products.

RIS structure

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

Theme 1 - Innovation support for business

Many businesses are unable to explore new ideas or markets because of the risks involved in diverting resources and attention away from core activities. Delivering high-quality support is a way of alleviating risk. Although grant support is important for cash flow, providing guidance for what can be a long innovation process is equally valuable. Clear marketing and ease of access are essential factors to stimulate businesses to access support and to increase their appetite for innovation.

Theme 2 - Support for technology

To sustain economic growth and build on knowledge as an asset, fostering enabling and emerging technologies was a priority. Close links to business sectors and customer bases help to provide up-to-date information on trends and opportunities. The public sector can react to and support new technology opportunities by prioritising medium and long-term investments, recognising knowledge creation in academia as well as in industry.

Theme 3 - Knowledge exchange

Providing support for knowledge exchange helps to facilitate interactions between universities and firms, and from knowledge holders to knowledge exploiters. Such support can be through physical or virtual support centres, or teams of people who span business, development and training activities, including apprenticeship and placement schemes. Providing clear, readily-available information on this is essential.

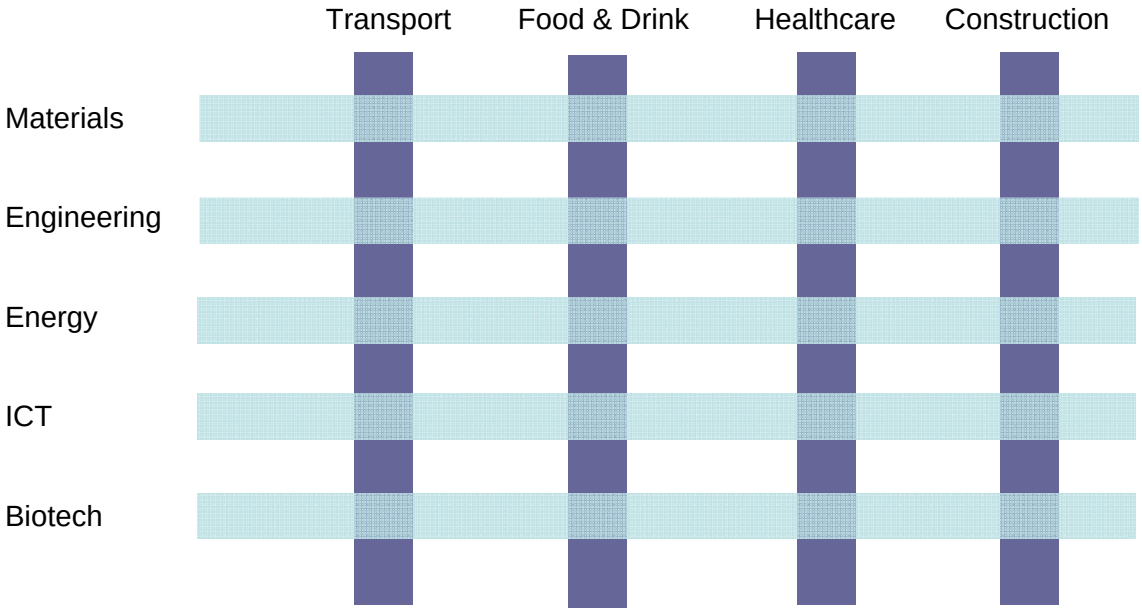
Theme 4 - Environment for innovation

Enhancing the environment in which businesses operate encourages innovators and entrepreneurial spirit. Recognising failures at an early stage is just as important as celebrating successes; innovation can be a long, difficult process, but a healthy innovation system embraces companies and individuals who have experience of this through trial and error. All stakeholders in the innovation system have an important role to play in offering support and guidance throughout the process.

East Midlands Sector and Technology Matrix

An evidence-based approach was used to identify the sector and technology strengths of the East Midlands, which were then used to set priorities for RIS investments. The East Midlands has a strong manufacturing base and excellence in high-value manufacturing, which involves advanced levels of design and scientific skills, adding value to technologically-complex products and processes. Four priority sectors were identified where the region had a competitive advantage; and five cross-cutting technology areas as shown in Figure 1.

Figure 1: Sector and Technology Matrix



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

An integrated innovation support programme

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

Innovation Networks (iNets)

The cornerstone in the delivery of the RIS has been the implementation of four iNets, which provide targeted and proactive innovation support to businesses and other stakeholders in each of the priority sectors.

iNets are governed by a consortium made up of organisations that represent a cross section of businesses, universities and other strategic partners operating in the sector. They are located in a designated facility within an innovation or research centre that involves both academic and business partners.

The aim of iNets is to raise significantly the number and quality of interactions between innovation stakeholders and so increase levels of innovation; with consequent improvement in the productivity, long-term sustainability and growth of businesses in the East Midlands.

Each iNet is staffed by a team with a high level of knowledge and experience of their relevant industry sector and who take responsibility for delivering a programme of activity. iNet advisors work closely with businesses, helping them to identify and resolve their innovation needs. The support available includes access to expert independent advice; connecting to sources of help such as university groups or members of supply chains; and grant payment to address specific innovation issues. Advisors have been part of the Business Link service and have worked in partnership with and made referrals to Business Link advisors, so that iNet clients who had not used BL services previously gain access to the wider SfB portfolio of support.

iNet service delivery:

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

A calendar of events is used to drive interactions between stakeholders and to raise the level of knowledge exchange and networking.

In addition, the iNets manage special funds designed to help businesses secure the most appropriate expertise to facilitate any aspect of innovation (IAG grant), and to work in collaboration with other stakeholders on larger innovation projects, (CRD grant).

Regional Technology Framework

The Regional Technology Framework (RTF)[18] provided an evidence-based approach to prioritising investment in new and enabling technologies. The sector and technology matrix, shown on page 21 identified the five main areas of technology against which to make targeted investments. It also promoted a clear picture of East Midlands' technology strengths to investors, potential collaborators, and EU and national policy makers.

The RTF established the basis for targeting technology investments in the region through two forms of intervention. Pathfinder Grants provided due diligence support, aimed at reducing the commercial risk of taking technology to market. Demonstration Grants were for larger projects that enabled technologies to be demonstrated in a manner suitable for a market application.

FP7 Service

The seventh Framework Programme (FP7)[19] is the EU's investment activity for Research and Development (R&D), a 50 billion Euro fund operating from 2007 to 2013. The FP7 Service was established by *emda* in 2008 to increase regional participation in the programme and to help leverage European funding into the East Midlands.

The FP7 Service provided a tailored package of support to meet the needs of individual businesses, helping to make the FP7 language easier to understand, to take the mystery out of the application process and to improve the probability of securing funding.

iFestival

The iFestival was established in 2007 as an annual celebration of innovation, with partners from all over the East Midlands working with *emda* to put on a large range of events and activities. Participants included young entrepreneurs and scientists in schools, graduate students and university departments, start-ups, established businesses and multinational enterprises.

The iFestival promoted the work of successful East Midlands Innovators and aimed to encourage a new attitude toward innovation.

The East Midlands Innovation Portal

www.eminnovation.org.uk

The regional Innovation Portal has been a key component in promoting Knowledge Exchange, providing stakeholders with virtual access to information and support services around innovation, technology and sectors. The Portal has become the place to go for innovation support and signposting. It has also provided a marketing focus, showcasing numerous business case studies of innovation in action, offering a forum for ideas exchange and highlighting partners' innovation and technology facilities.

Support for skills in a knowledge-based innovative economy

emda's role in relation to skills has been to help stimulate business demand for skills in order to improve the capacity and capability to adopt and absorb technological improvements and advances. This means developing the region's knowledge economy and increasing the number of people working in sectors classed as 'knowledge intensive' (i.e. employing more than 40% graduates). Coupled with increasing business demand for graduates, it is important to ensure that graduates themselves are equipped with the skills and knowledge that employers require.

Businesses therefore need to be supported to develop higher-level skills in their current workforce, as well as employing graduates. In recognition of this, the RIS has been able to encourage FE providers and HE institutions to work effectively with businesses, delivering flexible and relevant higher-level skills training. This has included *emda* support for employer-led Foundation Degrees and the development of innovative work-based learning.

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

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

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

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[18] A Technology Framework for the East Midlands 2008 – 2011, *emda,* 2008

[19] http://cordis.europa.eu/fp7/home_en.html

Innovation in the Low Carbon economy

Throughout the development and implementation of the RIS, moving towards a low carbon economy has been both a key driver and a major opportunity for the region. Technologies, like low carbon, cut across all sector areas and have been at the very core of the RIS, serving to widen its reach and enabling all businesses, whatever sector they are in, to benefit from innovation. The RIS acknowledged the regional strengths in energy conversion, transport and construction, ensuring that the East Midlands was well placed to address the challenge of moving towards a low carbon economy. Significant innovation investment in low carbon activities already exists, for example, through the work of the Sustainable Construction iNet and in projects funded under the Technology Framework.

Innovation and its importance to manufacturing

The latest statistics from 2010, taken from the *emda*/Experian Scenario Impact Model[20], estimate that manufacturing accounts for 19.4% of total economic output in the region, compared with 12.7% for the UK. Manufacturing also accounts for 14.8% of total full-time equivalent employment in the region, compared to 10.5% for the UK.

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

The Regional Technology Framework highlighted that the key enabling technologies for regional economic growth had a close fit with the region's priority sectors, all of which had a strong manufacturing component. The RTF helped *emda* build upon and exploit capability of technological excellence by investing further in technology and validation facilities, and promoting more innovation across the manufacturing sectors within the region.

[20] http://www.tinyurl.com/emdakb

Key learning points from *emda*'s Approach to Innovation Support:

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

Chapter 3
Impact of RIS and Support Programmes

Impact of the RIS

The importance of Innovation has been reflected in the level of investment that *emda* has put into programmes and projects in this area over the years. To date, £86m has been allocated to Innovation in the period 2005-11, as shown in Table 3, just over 15% of the Regional Single Programme budget (excluding funding allocated to sub-regional partnerships). Output figures for the same period are shown in Table 4.

TABLE 3: Total Innovation Spend from 2005 to 2011 in £m

Fiscal Year	Single Programme	ERDF	Total
2005/6	12.64	0	12.64
2006/7	14	0	14
2007/8	18	0	18
2008/9	9.8	0	9.8
2009/10	13.45	1.65	15.1
2010/11	9.74	6.6	16.34
TOTAL	**77.63**	**8.25**	**85.88**

TABLE 4: Outputs for Innovation from 2007 to 2011

Output		Total
E1	Jobs created/safeguarded	547
E2	People assisted to get a job	679
E3	New businesses created/attracted	38
E4	Businesses assisted	4,236
E4a	Business collaborations with knowledge base	876
E6a	Adults undertaking skills development	40
E6b	People undertaking learning	1,679
E7	**Investment leveraged (£)**	**3,130,000**

The RIS and its support programmes, together with the leadership provided by *emda* and the East Midlands Innovation Council, have played a key role in facilitating the development of a regional innovation system. A number of successes can be identified which have been central to the effective operation of this system:

- Improved the connections between key public bodies, ensuring more coherent and concerted action on innovation
- Improved links between businesses, entrepreneurs and other innovation enablers, from regional universities to angel investors
- Championed the filling of gaps in the innovation system, from finance and mentorship to peer-group learning opportunities
- Led regional partners in defining and committing to major innovation projects, where shared resources have been focused most productively
- Championed the needs and interests of the region's would-be innovators with national and international agencies, and brokered cross-border partnerships where there has been clear strategic potential
- Championed the region's innovators as customers, partners and solutions' providers to strategic businesses and to prospective market makers around the world.

Partnership development has been a success given the multitude of organisations within the region that all have a vested interest and role in improving the innovation performance. These relationships have been supported at the highest level in organisations and have covered all corners of the region and beyond, involving:

- Local authorities at city, county and district council levels
- Universities, colleges and schools
- Regional and Sub-Regional Partners (including NHS and Primary Care Trusts)
- National and international partners
- Businesses and their networks.

These are the region's innovation partners, all working towards better wealth creation for the benefit of communities, whether that is the general population, students, researchers or businesses.

The greatest value of the RIS has been the way in which it creates and supports effective partnerships and networks. The iNets are seen as the principal way in which this is achieved, with various stakeholders in the region – including universities and intermediary groups – now working together much more closely than had previously been the case.

A range of case studies, involving many of these innovation partners have been captured in two case study brochures[21]

[21] Case Study Reviews - 2007/08 and 2008/09, *emda*

Findings from RIS evaluation work

Shortly after the launch of the RIS, *emda* commissioned a thematic evaluation of Innovation activities pursued between 1999 and 2006[22]. This assessed the economy, effectiveness and efficiency of *emda*'s activities in relation to Innovation and its strategic added value in this area. This assessment indicated that:

	▪ After a slow start, support for innovation had strengthened significantly in *emda* since 2002/03, with an effective response to a strong policy emphasis on innovation emanating from both the UK and the European Union
	▪ *emda*'s activities in this area enabled additional activities to occur, which would not otherwise have been undertaken; delivered strategic added value, particularly in the area of regional leadership and engagement; and contributed to stimulating a stronger culture of innovation in the region
	▪ *emda* needed to clearly define its approach to Innovation, in particular translating vision into strategy and then into actions. It concluded that the RIS offered the opportunity for a more consistent approach to be adopted
	▪ Individual project activities were generally considered to be of good quality, both efficient and effective. This provided a good basis on which to build the RIS.

During 2009 an independent evaluation[23] of the RIS was carried out to gather evidence of impact in preparation for the development of the second innovation strategy (RIS2)[24], The work was overseen by the Innovation Council and included extensive consultation with stakeholders in the region. It concluded that:

	▪ The themes and key delivery mechanisms, e.g. iNets, from the first RIS (RIS1) should continue as the core components of RIS2, to allow time for the changes to become embedded in the region's innovation system
	▪ RIS1 not only created a forum for key stakeholders to work together to develop a more coordinated strategy for innovation, but also led to the establishment of effective partnerships and networks on the ground.

[22] Evaluating the Impact of East Midlands Development Agency, Ecotec, 2009
[23] Innovation Strategy Evaluation Programme, GHK 2010
[24] Innovation Strategy for the East Midlands 2010 – 2013, *emda*, 2010

However, the evaluation raised the need for some changes of emphasis and approach:

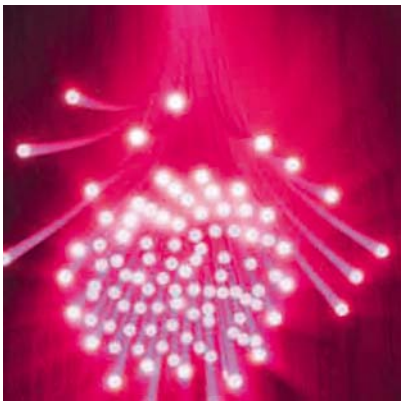
	▪ Positioning RIS2 more clearly as the region's strategy, recognising that responsibility for implementation fell to a wide range of stakeholders working to agreed guiding principles.
	▪ Aligning the region's strategic positioning in relation to central Government policy, highlighting the main sector and technology strengths of the region.
	▪ Identifying low carbon challenges as key drivers and opportunities for the region.
	▪ iNets playing a greater role in developing the region's priorities for cross-cutting and enabling technologies.
	▪ More attention given to helping businesses outside the priority sectors (e.g. in the creative industries) to access innovation support; and making better use of the innovation facilities across the region, often managed by universities and local authority partners.
	▪ Making more of the connections between the many elements of the region's innovation system, including skills and training, access to finance, the wider business support framework and the role of public procurement.

In June 2009, the East Midlands Regional Assembly Regional Scrutiny Board published the findings of their review of *emda's* innovation programmes.[25] The Scrutiny Review was carried out in parallel with the formal RIS evaluation and covered similar ground, consulting with many of the same stakeholders. The review set out seven recommendations covering the need to strengthen the rationale for strategic prioritisation, improving operational effectiveness and better communication of programmes and their impact. These recommendations were largely consistent with the findings of the formal evaluation and were considered as part of the evidence used to develop RIS2.

[25] EMRA Scrutiny Review into the Effectiveness of *emda*'s Regional Innovation Support, EMRA, 2009

In addition, the 2009 RIS evaluation reported the following key observations:

- The greatest value of the RIS is the way in which it creates and supports effective partnerships and networks. The iNets are seen as the principle way in which this is achieved, with various stakeholders in the region – universities and intermediary groups – now working together more closely than had previously been the case.
- The RIS raises the profile of innovation amongst policy-makers in the region (particularly within local authorities), and continues to generate momentum creating confidence helping to improve the innovation performance of the East Midlands.
- The RIS clearly articulates *emda*'s strategic priorities in respect of innovation and enables partners to plan activities and investments in order to maximise co-funding from *emda*. Almost all of the universities, for example, use the RIS in the development of HEIF knowledge transfer strategies, enabling them to maximise alignment and opportunities for jointly-funded projects.
- The RIS has continued to exert influence on investment in innovation generating leverage and in turn effects partner's strategic expenditure decisions. Examples of leverage include iNet collaboration grants (up to six times leverage in one instance), and through the grants delivered within the RTF (pathfinder and demonstration).
- The creation of a platform for the exchange of good practice and intelligence between stakeholders is a key strategic role of the RIS and the iNets are seen as the principle platform for such exchanges.
- The evidence gathered from stakeholders and university and business beneficiaries shows that much of the activity facilitated by the RIS would not have otherwise happened.
- Evaluation and feedback from partners has shown that iNets are widely accepted as an appropriate delivery mechanism for innovation support, balancing the top-down and bottom-up needs of all stakeholders.
- The iNets have become a trusted source of relevant information provided in a digestible form when it is needed, are judged to be working well and as a result have secured widespread interest from within their target communities.



Impact of iNets

Four iNets were established during 2007 and 2008[26], each run by a lead contactor on behalf of a consortium made up of businesses, universities and knowledge-exchange organisations in the region, as shown in Table 5.

Table 5: iNet Contractors and Start Dates

iNet	Contractor	Centre	Contracted
Healthcare & Bioscience	Medilink East Midlands	BioCity, Nottingham	Sep 2007
Food & Drink	Food and Drink Forum	Southglade Food Park, Nottingham	Feb 2008
Sustainable Construction	University of Northampton	iCon, Daventry	Jul 2008
Transport Equipment	Loughborough University	SEIC, Loughborough	Aug 2008

Budgets allocated for the set-up and operation of the four iNets are shown in Table 6. The majority of the £7.3m of capital investment in phase 1 was used to build the iCon centre for Sustainable Construction in Daventry.

Table 6: iNet Budget Covering April 2007 to March 2011

iNet Activity	Phase 1 % £000's	Phase 1 % Totals	Phase 2 Totals £000s	Phase 2 % Totals
Capital for iNet facilities	7,343	46.97%	0	0
iNet advisors and operations	4154	26.57%	2190	33.17%
Events programme	832	5.32%	538	8.15%
Innovation Grants to SME's	1,216	7.77%	1497	22.69%
Collaboration Grants	2,090	13.37%	1360	20.61%
iNet specific intensive support	0	0.00%	1015	15.37%
Total projected spend	**15,635**	**100.0%**	**6,600**	**100.0%**

[26] Regional innovation Networks (iNets) for the East Midlands: Prospectus for Applicants, *emda*, 2007

In phase 1 (2007 – 2010) much effort was required to draw the innovation stakeholders together and develop the innovation networks. It can be seen that in phase 2 (2010 – 2013) a much higher percentage of funding has been directed at businesses, and the grants to universities have had much stronger requirements for collaboration with industry.

A key requirement for iNets is that they use their funding to lever additional investment into their networks. During phase 1, the iNets received £10.1m of *emda* Single Programme and £5.5m of ERDF funding, which together leveraged at least a further £15m from beneficiaries, partner contributions and other grant bodies such as research councils. The nominal iNet budgets in phase 2 consisted of £12m of Single Programme and £10.1m of ERDF. However, these figures have changed as a consequence of the closure of *emda* and the withdrawal of Single Programme funding from April 2011. ERDF funding remains in place but its use is subject to replacement of the RDA budget.

A summary of iNet outputs is shown in Table 7 covering the phase 1 period and phase 2 up until March 2011.

Table 7: iNet Output – covering April 2007 to March 2011

ERDF	Total	SP	Total
No of Businesses assisted to improve performance	**427**	Jobs created/safeguarded	**217**
Business collaborations with knowledge base	**172**	People assisted to get a job	**22**
Investment leveraged (£M)	**60,577**	Businesses assisted	**2,627**
Jobs created	**76**	Business collaborations with knowledge base	**436**
GVA from businesses improving performance (£)	**1,873,000**	People undertaking learning	**1,679**
		Investment leveraged (£)	**779,874**

Outputs are indicated for both sources of funding, Single Programme and ERDF covering RIS1 period and first phase of RIS2.

Impact of the Healthcare and Bioscience iNet

iNet Profile

The Healthcare and Bioscience iNet is located in BioCity Nottingham (www.biocity.co.uk), which is one of Europe's largest biosciences incubators, is home to 60 companies employing 470 people in the growing and economically significant healthcare and bioscience industry in the East Midlands. Further information on BioCity is provided in the case study section on page 37.

The iNet is staffed by a director, three innovation advisers and an administrator, and supported by part-time staff managing strategy, events, finance and contracts.

Healthcare and bioscience (life science sector) are very important for the UK economy. The turnover of medical technology, diagnostics and biotechnology combined is £19bn; the research-intensive pharmaceutical industry turns over £15bn. Major sector issues include an:

- Ageing population with increasing demands on healthcare services
- Increasing cost of treatment
- Acceleration of technological advances, particularly in biomedicine
- Increasing difficulty of developing successful drugs
- Increasing international competition, especially from emerging nations

There are over 600 East Midlands companies serving the sector: around 400 are classified as medical technology companies, the second highest concentration in the country. Eight of the region's universities carry out research and run courses for the sector. The region has world-class research and industrial strengths in pharmaceutical R&D, cardiovascular R&D, eHealth and wound healing. Nottingham is one of four UK bioscience hotspots and also has a larger number of drug delivery companies than anywhere else in the UK.

Innovation in action

CASE STUDY

BioCity was gifted to Nottingham Trent University (NTU) from BASF in 2002 and shortly afterwards the operating company, BioCity Nottingham Limited was formed between NTU, the University of Nottingham and *emda.* Approximately £13m has been invested by *emda* (£8.5m) and ERDF (£4.5m) to redevelop the site, bringing back into use 200,000 ft^2 of redundant laboratory and office space. The facility provides a managed and structured environment in which bioscience, healthcare and pharmaceutical firms can grow to their potential.

The co-location of sector support organisations, MediLink and the Healthcare and Biosciences iNet, together with service providers such as patent lawyers, financial advisors and laboratory facilities provides a fertile environment for the development and commercialisation of innovative products and services. As a result, the majority of BioCity tenants are engaged in high levels of R&D activity, with more than half of their total costs expended on R&D.

An independent evaluation of BioCity carried out in 2009 found that:

- **For every £1 of public funding, tenant companies have leveraged in approximately £2.35 of private funding**
- **Tenant companies will achieve net sales of £13m and net profits of £1.5m over 5 years**
- **Over £27m has been invested into companies at BioCity**
- **The facility has a £68m asset value**

CASE STUDY

Loughborough-based **Equip-able Ltd** is an enterprising start-up company run by Clare and Duncan Edwards who approached the Healthcare iNet for design, IP and marketing advice to take their product, Trabasack, to market. With help from the Design Unit at De Montfort University, the laptray travel bag was developed to help people, especially those with disabilities, to eat, work and play anywhere. Trabasack was launched in 2009 and has already won awards for Equip-able. The company attracted considerable media coverage as a direct result of encouragement and PR advice made available through the iNet. The first year's turnover of £40,000 is expected to triple in 2011 with the introduction of new products into new markets.

"The iNet's PR connections and assistance meant that we achieved a full page profile in a national newspaper. That exposure has been extremely helpful to our business credibility and brand profile and in itself helped us gain more newspaper and radio coverage, and most importantly, increased sales and interest from customers.

Duncan Edwards, Director of Equip-able.

CASE STUDY

Corby-based **Pluswipes** is a privately-owned chemicals manufacturer specialising in the development and supply of infection control products, including wipes and spray cleaners. With a customer base that includes many well-known brands and retailers, the company decided to target the healthcare market but needed advice from the iNet on regulatory and quality matters. This was supported by a grant to implement new quality control systems.

As a result of this innovative move to supply UK NHS and other healthcare institutions, Pluswipes has developed a full range of infection control products for all healthcare requirements, including surface and hand sanitising. Encouraged by their iNet advisor to enter several awards and to establish links with the universities of Leicester and De Montfort, the company has created an extra 21 jobs and safeguarded a further 45.

"Our iNet advisor Max Pulford used his considerable knowledge of regulatory and quality standards in manufacturing to help us gain the industry compliance we needed. The result has been really significant, both in terms of winning bigger contracts and establishing Pluswipes as a significant supplier to major customers."

Tanya Teasdale Brown, Company Secretary, Pluswipes Ltd.

In their words...

"Developing a new concept is always commercially risky but we have received tremendous support from iNet advisor George Canty, who handled the application for subsidised support, which will help us get through the development process. Funding comes with an end-date and some commercial strings, which will allow us to stay focused."

Jim Campbell, MD, SureScreen Diagnostics Ltd

"I really appreciate the help from Ros Graves, my iNet advisor. The grant is not a big funding, but the timing is perfect. Just like lending you an umbrella during a rainy day."

Wei-Jen Lo, Chief Scientific Officer, Orthogem Ltd

"The awarding of an innovation support grant was just what we needed to move forward. It enabled us to launch the new online portal and to fully engage in e-commerce. Our iNet advisor Ros Graves has been a great source of advice and information. She has introduced me to various women's business networks and has encouraged me to enter regional business awards. All good for business – especially when I win!"

Sam O'Regan, Managing Director, P&S Healthcare Ltd

"Once again, it has been a great pleasure to be involved in this [iNet] competition. I think a great many people get into science because they see it as both creative and practical; although there may not be an obvious connection, many scientists have a great affinity for the creative arts. To me, this competition is a fantastic embodiment of both art and science."

Sandy Munro, Director of Respiratory Development, Vectura Group plc, sponsors of the Healthcare and Bioscience iNet Art Awards.

"We didn't have the in-house technology to conduct the necessary tests ourselves and approached the iNet for help. Through iNet advisor George Canty, we were made aware of the services of the Health Protection Agency at Porton Down, which we decided to use, and obtained very positive test results. George's experience in the laboratory equipment manufacturing field meant he immediately understood our needs and responded very professionally. "

Mark Darton, Business Development Manager for LEEC Ltd

Into the future

Since its launch in April 2008, the Healthcare and Bioscience iNet has exceeded all targets, with over 500 businesses receiving direct support for their innovation projects and more than 4,000 attendees at events. A recent independent survey* indicates that over 40% of companies supported have already introduced new products and 50% are planning further product introductions.

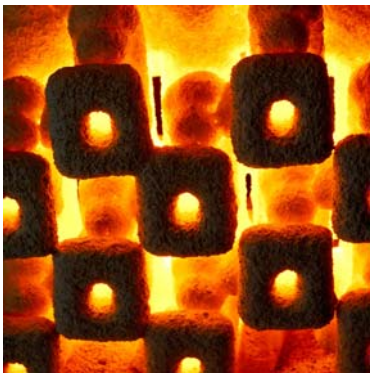
Demand is set to continue. Everybody benefits from healthcare products on a daily basis, often without realising the difference they make; from tooth fillings, contact lenses, walking sticks, pacemakers, and MRI scanners, through to cough medicines and painkillers.

The Healthcare and Bioscience sector is widely recognised as vital for the future economic prosperity and growth of the UK, and offers huge potential for helping meet some of the big societal challenges of our time. The ageing population needs solutions to keep them healthy, independent, active members of the community. The development of advanced diagnostics and medicines will ensure diseases are detected sooner and treatment tailored more to the individual. The trend toward more user-friendly home healthcare products will spur the demand for innovative medical devices. Additionally, the convergence of scientific, electronic and digital technologies will play a critical role in solving healthcare problems.

Looking further ahead, regenerative medicine promises to bring a revolution in healthcare and the UK has the opportunity to lead the world. Away from healthcare, new frontiers of bioscience, such as biofuels, will be opened up by the need to improve our sustainability and provide the resources for the growing global population.

All this will bring fresh challenges, which the iNet can help overcome, as well as the need for new skills, which the iNet can help develop. Small companies have an essential role to play in this future, as the engine room for innovation. However, these same companies are resource limited and that is why it is important that the iNet continues to nurture and support them to attain their full potential.

* Evaluation of the Economic Impact of the iNets, GHK, 2011



Impact of the Food and Drink iNet

iNet profile

The Food and Drink iNet is based in the business centre at the pioneering Southglade Food Park, Nottingham, the UK's first business park dedicated to food and drink companies at different stages of development. The iNet is part of the Food & Drink Forum, an established trade association and network across the region. The Forum has a number of industrialists, as part of its governance, with significant knowledge and experience within the sector in the region.

The importance of the food and drink sector in the East Midlands is highly significant, not just for the region but for the UK as a whole. The East Midlands has an 8.5% share of the UK's total food and drink turnover, which was £9.3 billion in 2009. And the East Midlands holds a 9.3% share of the UK's total food and drink GVA (Gross Value Added). Food and drink manufacturing and processing alone contribute £1.7 billion to the regional economy. In 2009 there were some 11,700 food and drink businesses in the East Midlands, with an estimated 78,536 people working in the sector in the region.

Although the sector in the East Midlands is one of the most productive for food and drink in the UK, it experiences a number of challenges. For SMEs to keep up with large companies, it is vital to innovate both with products and processes. Development of new technology, automation and manufacturing practices in the food and drink sector is also a priority, to ensure that the industry remains competitive, flourishing and vibrant.

The East Midlands has an 8.5% share of the UK's total food and drink turnover, which was £9.3bn in 2009. And the East Midlands holds a 9.3% share of the UK's total food and drink GVA.

The Food and Drink iNet is leading this drive in innovation through a range of initiatives: including building links between engineering firms and food and drink businesses: initiating collaborative research at universities: advising and guiding smaller companies: holding relevant and informative events: and generally encouraging technological and process innovation through collaboration.

From its launch in 2008 to the end of March 2011, more than 600 food and drink businesses in the region have been supported with specialist advice and guidance. Innovation Support Grants and Innovation Advice and Guidance have been given to 63 small and medium sized firms, and funding has been provided for 14 university collaboration projects that brought academia together with industry. The iNet has also run a successful series of events that has attracted around 1,500 attendees, including 750 delegates from 150 businesses to look at some of the key industry issues, in addition to staging 5 best practice factory visits.

These events would not have been held, and the individuals taking part were unlikely to have met, without the vision and organisation of the Food and Drink iNet, which has been instrumental in providing a significant platform for innovation to thrive in the food and drink

sector, as well as opportunities to network. As a result, key information has been shared across a range of different organisations, businesses and individuals.

In phase 1, iNet funding of £410k to the region's universities (under the Higher Education Collaboration Fund) achieved leverage across the nine projects of more than £1m. In phase 2, iNet funding of £238k for Collaborative Research and Development is predicted to achieve leverage of £1,050,000. In total this will be £2.1m from the university funding alone, achieving well over three times leveraged.

Innovation in action

CASE STUDY

Food innovator **eminate Ltd** was able to prove that a revolutionary new salt product it had developed could be used successfully in the baking industry, potentially paving the way to improving the nation's health….thanks to support from the Food and Drink iNet.

Experts at the Nottingham company discovered a way of modifying salt to provide more taste from smaller quantities. This would allow food manufacturers to reduce the amount of salt in their products, without affecting taste. iNet support helped fund expertise at Nottingham Trent University which provided technical proof that the product worked and could be used successfully in the baking industry. Now Soda-Lo 20 could be used to help the food industry meet Government guidelines for reducing salt levels in manufactured foods, which are aimed at cutting cardiovascular disease rates in the country.

"As a small food innovator seeking to achieve national impact, engagement with the iNet has been very important for eminate. Their funding has been essential in taking forward new product developments which has allowed us to consider opportunities that would not otherwise have been addressed. One of the highlights of 2010 for eminate was receiving the CenFRA most innovative R&D project award for our salt reduction product Soda Lo, the benefits of which we are already seeing in public exposure."

Roger Carline, Chief Executive Officer at eminate.

CASE STUDY

An exciting, world-beating new food packaging material that kills bugs and reduces waste by extending the shelf life of products was developed by researchers at Nottingham Trent University in collaboration with the University of Lincoln, through funding from the Food and Drink iNet.

The team successfully transferred nanotechnology previously used in the aerospace industry to the food and drink sector, and created the technology to develop non-leaching packaging with antimicrobial properties. Negotiations are currently on-going with a major multi-national company for commercial application. The research went on to win its leader, Dr Fengge Gao, the title 'Innovation Champion 2009' in the Food and Drink iNet Innovation Awards. This led to valuable publicity that caught the eye of some of the largest food and drink conglomerates in the world, who are now interested in using the technology in the packaging of their food and drink products.

"The Food and Drink iNet has supported a research collaboration between universities which has an impact not just for the food and drink sector around the world, but on the increasingly important issue of reducing food waste. A relatively small amount of funding has created something that's truly great in a short space of time."

Dr Gao, Reader in Nanotechnology at Nottingham Trent University.

Pictured: Martec Conservation - unique product recovery system for food processors.

In their words…

Jacksons the Bakers, Derbyshire, received one of the first Innovation Support Grants awarded by the Food and Drink iNet and which was able to install a sophisticated computer software system to match its new purpose-built factory as a result. "The iNet has certainly come up with ideas that are beneficial to us and point things out to us that we would not have been aware of. We are getting necessary support from the iNet at what is a really crucial time."

Trevor Jackson, Jacksons the Bakers, Derbyshire.

Shelton Imports, Leicestershire, used financial support from the Food and Drink iNet to create a new coffee menu that helped the firm to gain a contract with Harrods and start supplying to the food service sector. "The iNet's support has been fantastic because it's helping to open up possibilities in completely different markets for us."

Ximena Shelton, Shelton Imports, Leicestershire.

Marbran, Derbyshire, received Innovation Advice and Guidance support from the Food and Drink iNet. "Without iNet support, we wouldn't have been able to carry out the technical and complex research and communication exercise ahead of the launch of our new range of snacks, Crips 99Cals. Thanks to the help, we've now got Crips 99Cals onto the shelves of major UK supermarkets like Tesco, Waitrose and the Co-op, and we're also exporting the new range to Norway, Denmark and Germany."

Gareth Smith, Marbran, Derbyshire.

McArtney's Catering, Nottingham, received an Innovation Support Grant to help the firm install a database that enabled them to order stock more consistently and cut wastage; to save time in the kitchen; and to provide more accurate quotations to customers. "Having the database to help store recipes, monitor margins and produce orders, which we installed with support from the iNet, has enabled us to strengthen our system and allow us to grow. It's a catalyst in helping us get to the next level."

Rosie McArtney, McArtney's Catering, Nottingham.

Rico Mexican Kitchen, Nottingham, received a range of advice from food and drink experts via the Food and Drink iNet, as well as financial support which helped with brand communication and strategy. The company are operating out of their first manufacturing unit, with contracts to supply major stores. "For any new company, getting the right advice is crucial and the iNet has provided us with extremely high quality, industry-specific advice and support that has been invaluable to getting Rico Mexican Kitchen off to a good start."

Marcela Flores Newburn, Rico Mexican Kitchen, Nottingham.

Into the future

There is strong appetite for development and technological and process innovation in the East Midlands food and drink sector, both from existing businesses and from entrepreneurs keen to move into the industry. For example, between 2006 and 2009 more than 770 new food and drink businesses were launched in the region, which contributed £127.4 million to the regional economy in terms of GVA, and created 3,370 jobs.

The iNet is the key to encouraging, supporting and nurturing innovation in the sector. From launch until March 2011, the Food and Drink iNet had advised more than 600 SMEs in the region, through visits and events, with more than 60 of those receiving key financial support to deliver innovative projects. This has led to export orders, job creation, increased turnover, the launch of new products, a reduction in waste and the development of new processes. In addition, more than 200 engagements and 50 collaborative engineering projects, and around 14 major university and industry joint project collaborations, have been launched by the iNet.

In the nine months to the end of March 2011 the number of businesses receiving support from the iNet stood at 143, almost double the 74 target.

This is all helping to spark an innovation explosion in the sector.

Impact of the Transport iNet

iNet Profile

Based at Loughborough University since 2009, the Transport iNet provides innovation, advice, guidance and networking opportunities to transport businesses in the East Midlands. Working across automotive, motorsport, aerospace, rail and marine sectors, it has helped over 500 companies and seven universities in the East Midlands realise potential for growth and further profitability through knowledge-sharing and financial assistance.

Employing approximately 40,000 people in the region, transport equipment is identified as one of the larger manufacturing sub-sectors (3.5% of output of the economy and 1.9% of employment, in 2004). Employment locally in Aerospace and Rail is around eight times the national average. Over the 10 year period to 2014, output growth in the transport equipment sector was forecast to be 29% in the East Midlands, against a national average of 8%.

The five-strong team of specialist innovation advisors are supported through a series of events, networking activity and brokerage schemes co-ordinated by a team administrator, contract manager and headed up by a Project Director. They provide free, face-to-face consultancy support and advice to small and medium sized businesses wanting to embark on an innovation project. Addressing common technology challenges across sectors, as well as sector specific issues, projects range from, improving performance of materials, components or systems by developing lightweight alloys and carbon fibre composites in transport manufacture; to exploiting data from space to connect consumers and all transport modes for personal journey planning and traffic management.

Employment locally in Aerospace and Rail is around eight times the national average. Over the 10 year period to 2014, output growth in the transport equipment sector was forecast to be 29% in the East Midlands, against a national average of 8%.

Other projects have supported advanced manufacturing processes through increasing productivity or undertaking research and development into the environmental impact of transportation, including focusing on low carbon technologies. Another major role played by the iNet is assisting businesses in demonstrating proof of concept and finding the most effective route to market for the commercialisation of a novel idea that can be implemented across several of the transport sectors and help to cultivate a vibrant transport sector supply base.

As the following case studies demonstrate, the knowledge and industry contacts of the Transport iNet are key to the wider impact felt by each organisation, whether the result is a more efficient working process or the commercialisation of a new product. In numerous cases this has ultimately lead to the creation of new jobs, a product that is competitive on a global scale or increased productivity.

Innovation in Action

Transport iNet has:

- **Enabled almost 60%** of recipients to access additional transport or other industry sectors
- Found that **over 60% of businesses felt that the intervention had a high impact** on their innovation
- **Helped almost half to increase jobs** as a result of the Innovation Advice and Guidance support given
- **Encouraged 98%** of businesses to consider **undertaking further innovation.**

CASE STUDY

The Hardstaff Group

Delivering sustainable environmental impact within road transport is pioneering business the Hardstaff Group. Following collaboration with Loughborough University, the Nottinghamshire based haulage company approached the Transport iNet for subsidised funding of £13,500 to enable it to undertake electrical and mechanical development and commercialisation of its Dual Fuel system for the Mercedes Benz Axor and Actros long-haul truck applications.

This innovative system, which combines diesel and compressed natural gas (CNC), includes benefits such as a reduction of CO_2 emissions by 20% and lower operation fuel costs. There are also further environmental benefits if bio-methane, gas derived from waste re-cycling, is used in truck operation instead of CNC.

As a result of the innovation support, the Hardstaff dual fuel conversion system is now being offered as an approved aftermarket conversion via the Mercedes distributor network. The company has subsequently won a major national award for technology innovation from the Low Carbon Vehicle Partnership, as well as the prestigious Lord Stafford Award for innovation. Hardstaffs have also taken on seven new employees and opened a subsidiary business in Sweden; and turnover is expected to double within the next three years based on market potential for the new system.

CASE STUDY

iRail 2010

Dedicated to promoting the railway industry as a viable, exciting and sustainable career option for young people, the first ever innovation Rail event (iRail 2010) brought together rail professionals, academia and industry bodies to support more than 70 students from Derbyshire schools in a 'Dragon's Den' style rail engineering challenge. Held at Derby's Roundhouse in March 2010, organised by the Transport iNet through the Derby and Derbyshire Rail Forum (DDRF) and supported by the Derbyshire Economic Partnership, over 50 local businesses also had the chance to network and hear a distinguished lecture on future design considerations for high-speed trains

iRail 2010 was a huge success in terms of the students that were made aware of careers in the rail sector, industry representatives who engaged in issues around the skills gap and wider awareness raising. So popular was iRail with all involved that the event has gained support from the National Skills Academy for Rail Engineering (NSARE) who wishes to use it as a model to deploy elsewhere in UK. A higher number of schools have requested to be involved in 2011, with the engineering challenge now being tackled by hundreds of students who want to get through to the final and become iRail 2011 STEM Challenge Champions.

"iRail is all about the local rail industry showing young people that rail offers an exciting and well rewarded career path. The event sparked new relationships between employers, academics and trade bodies and gave young engineers an insight into the wide variety of careers within rail. iRail 2011 was held in March and was also a huge success, with more schools taking part than ever before."

Colin Walton, Chair of DDRF and Chairman of Bombardier Transportation UK

In their words…

"The support from the Transport iNet has helped us create solutions to a wide range of problems, answering questions we didn't even know we would find. Without having the expertise and support from the Transport iNet, we would have never been able to develop the E-4 Coupe to the standard that it is now.

Nick Carpenter, Co-Founder and Technical Director of Delta Motorsport

"The support from the Transport iNet has made a genuine difference and along with GRD's should absolutely be preserved. They have the highest impact and lowest bureaucracy. We have won orders from GKN and Boeing and shortly expect one from VW as a result!"

B. Anderson of SIM Cast

"Reducing our wastage costs was crucial to the success of our business. We could not afford to invest the full amount ourselves immediately and it would have taken two or three years to do it without the grant, but with the help of our Transport iNet Advisor we were able to access help and financial support, enabling us to move forward in these difficult times."

Chris Batty, Managing Director of Lestercast

"The Innovation Support Grant from the Transport iNet helped us to increase our potential markets and the speed in which we have been able to get there. Business has nearly doubled in the last three months as a result of being able to bid for different contracts we would not have been able to do before. It has also meant that we are able to give wider opportunities to our team, increasing their skills in CAD and exposing them to other transport sectors. We are now benefitting from being able to offer this highly flexible, cutting-edge capability."

Stephen Ollier, Managing Director of Pentaxia

"The support we received from the Transport iNet was fundamental to developing the LED headlamp system and without it we may never have got it off the ground. Their research provided us with vital information we needed to get started. The financial support and introductions to a collaborative partner enabled us to start designing and building the system, which we are now testing. The Transport iNet has facilitated this project from the start and we look forward to continuing to work with them as the LED headlamp system develops."

John Truman of Racetech Harnessing

Into the future

Aiming to deliver business growth, create jobs, develop low carbon technologies that support sustainable transport of the future, the iNet has exceeded its initial objectives and proved itself as a vital component of innovation business support for the transport equipment sector. Fundamental to securing a sustainable supply chain and ensuring a pipeline of new product development the Transport iNet has supported 500 transport businesses to date, 12% with high growth potential, double the national average.

A recent impact survey of SME's showed an impressive 98% of businesses working with the iNet have been encouraged to consider further investment in innovation. 77% of businesses that received support expect to increase turnover in the coming year, whilst almost half the businesses surveyed expected to take on more staff as a result. Almost 60% of businesses said grant support would enable them to innovate into other transport sectors and 44% of innovation support grants were used to demonstrate new products or provide prototypes to take to potential markets.

A recent impact survey of SME's showed an impressive 98% of businesses working with the iNet have been encouraged to consider further investment in innovation. Seventy seven per cent of businesses that received support expect to increase turnover in the coming year, whilst almost half the businesses surveyed expected to take on more staff as a result.

When asked what they would do if they had not approached the iNet, the response was either "it would take much longer to achieve" or "we would not have pursued it", meaning skills are not being honed, new technology goes unexploited and economic development slows.

The Transport iNet will continue to provide SME's with transport technologies, face-to-face, practical advice and support to help overcome barriers to accelerate delivery of the innovation to achieve economic growth. By providing sector innovation experts to work closely with companies, facilitate access to the knowledge base, supply chains, funding and carrying out bespoke research, the iNet aims to become the preferred service delivery model for 'grass roots' innovation support, working with partners nationally to unlock UK Transport sector opportunities.

Impact of the Sustainable Construction iNet

iNet Profile

The Sustainable Construction iNet operates throughout the whole of the East Midlands region from its base at the University of Northampton. The iNet team consists of six innovation staff operating under the leadership of a Director. Innovation Advisors travel the length and breadth of the region providing sector-specific support and advice to businesses that have identified an innovative or sustainable product or service which, when brought to the commercial market, could assist the £65bn UK construction sector achieve its low-carbon targets, increase profits and create jobs in the East Midlands.

Based on current data from the iNet, indications show that success has been seen in the form of jobs created and secured and business visions progressed through to fruition. Data on increase profits and Gross Value Added (GVA) for each business assisted will not be available for at least 12-18 months due to the nature of the sector. However at the recent Ecobuild exhibition in March 2011, East Midlands businesses, part funded by the iNet, reported orders from the show to be in excess of £22,000.

With the move to ensure all new homes are zero carbon by 2016 and the commitment to reduce the UK's carbon emissions by 80% by 2050, low-carbon construction is high on the Government's agenda. The green economy is also a crucial component of economic growth and the iNet has provided support to over 70 businesses enabling them to implement their new services, products and processes within the sustainable construction sector.

Prior to the iNet's inception, business funding was available from various sources, including private bank loans, Government grants, lottery funding etc, but over the past 24 months, funding, in particular via traditional bank routes, has been harder to secure. The iNet's service is unique with one-to-one, tailored advice and hands-on guidance offered to SMEs, together with its extensive network of contacts, including Higher Education Institutions, business specialists and leaders in the construction sector. This comprehensive and complementary network is made available to all SMEs supported by the iNet.

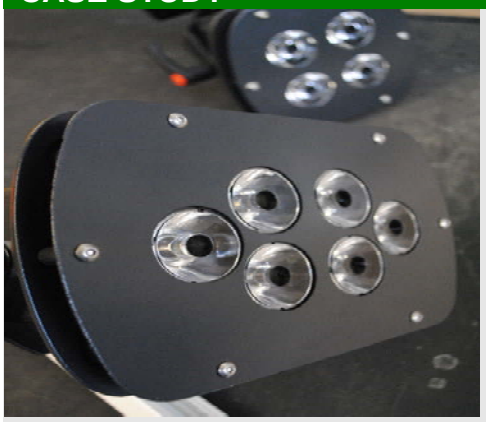
Innovation in Action

CASE STUDY

In order for the iNet to be recognised as focused and credible in assisting businesses progress their products and services, the concept of the iCon building was born and will be the new operational hub (iHub) for the iNet when completed in May 2011.

Located in Daventry, the iCon building fully complements the iNet and in many respects has the same purpose. The iCon is an award winning, state-of-the-art, energy efficient building that will be an incubator for start-up businesses operating in the sustainable construction sector as well as a prime location for environmentally focused events. The iNet drew together a strong group of project partners to realise the iCon vision, including University of Northampton, West Northamptonshire Development Corporation (WNDC), Daventry District Council, East Midlands Centre for Constructing the Built Environment (EMCBE) and Northamptonshire Enterprise. This flagship development is both an iconic landmark for Daventry and a real time example of the innovative construction sector in operation. It opened opened for business in April 2011. Without the iNet, the concept of this integrated development would not have come to fruition and this tangible example of the iNet's continuing work would not exist. With it, the sector receives continuing support into the future.

CASE STUDY



iNet Illuminates Retro-Fit Lighting Project

Abstract AVR Ltd, based in Leicestershire, was awarded Innovation, Advice and Guidance worth £7,000 to complete the product development stages of its new, energy-efficient and potentially market leading LED lighting system. Abstract matched the funding, tested and certified the product and secured a contract to supply the new LED system for an Asda store in Derbyshire.

With the iNet's assistance, Abstract produced an LED lighting system that replaces the industry standard CMDT 70 discharge lamp with a 24 watt LED system, producing a 66% reduction in energy consumption. This culminated in an East Midlands-based innovative organisation securing the contract for a national retailer that is aiming to reduce its energy consumption by 20% by 2012.*

*Asda energy website

In Their Words

"We are delighted with the LED lighting we have recently had installed in the George Clothing department in Asda Langley Mill. Not only is the colour definition of the Winter clothing collection outstanding, the spotlights highlight the garments details even from a 4 metre high lighting raft. Abstract AVR has worked hard to ensure the lights punch through in our large supermarket environment. Not only is the department bright, the LED lights have a long lifespan and are up to 80% cheaper to run than our standard spotlights."

Carl Smallshaw, store design manager for George Clothing at Asda

"The process that the iNet has in place to assist companies like ours is excellent and the enthusiasm of the innovation advisors has inspired us to extend the original brief for further development and testing."

Steve Boyer, Marsh Industries' Managing Director

"The iNet is a crucial and much valued partner in the iCon innovation centre. It is central to the future success of the project, which will be home to some of the region's most innovative companies."

Iain Andrews, Acting Head of Communications, WNDC

"SMEs are the backbone of the construction industry and a vital tool in the economy for creating jobs in our town. Organisations such as the iNet are integral to the ongoing innovation in the East Midlands and a shining example of innovation in this region."

Michael Ellis MP, Northampton North

"All Foundations has secured work to bring their order book value to over £2.5m, partially assisted by the iNet. We have also advanced our R&D by a couple of years with iNet's support. The business support programme in place assists SMEs in gaining forward orders and developing their business."

Shahrooz Zojaji, managing director, All Foundations

Into the Future

There is high demand for the iNet's service, not just in the funding support available but also the direct advice and signposting offered by the advisors and its networking and knowledge exchange events, which attract up to 90 individual SMEs per event. Over 2,500 businesses have been exposed to the iNet over the past 24 months, with upwards of 1,200 SMEs in the East Midlands attending events. 220 SMEs have received direct support from the iNet, 150 were given direct advice or signposted new contacts, 55 were assisted to win direct funding and the remainder have utilised university collaborations.

The demand for the iNet's services and input will continue to grow as the Government's Low Carbon Construction Innovation and Growth Team (IGT) state that by 2020, construction will be a low carbon industry. The IGT state that "in order to survive, companies need to become carbon clever or risk losing out."

In the long-term, the UK construction industry will continue to grow but with new challenges, creating the opportunity for innovation to be an organic process of construction. Brian Berry, director of external affairs for the Federation of Master Builders commented, "The Government's stated aim to retrofit the UK's entire housing stock of 26 million homes by 2030 represents a huge market opportunity for small building companies willing to diversify into innovation." ** The iNet is continuing to work with the iCon to deliver this vision.

** Construction Skills website

Findings from Economic Evaluation of iNets

In January 2011 *emda* commissioned an evaluation of the economic impacts of the iNets, specifically the evaluators were asked to:

- Evaluate the effectiveness of the delivery of the four iNets;
- Measure the economic impacts of the iNets and their grant programmes; and,
- Develop a baseline of the regional innovation performance of the four sectors within which the iNets operate.

The main research was based on a survey of iNet beneficiary businesses, and a further survey of businesses located within the four sectors but that had not received any support from the iNet. This was supported by data from the iNets and *emda* relating to finance and performance metrics. The key findings from the report[27] are summarised below.

Effectiveness of the iNets

All companies that had received support through the iNets were invited to complete a beneficiary e-survey. 176 responses were received, 36 were from the Food and Drink sector, 44 from the Healthcare and Bioscience sector, 52 from the Sustainable Construction sector, and 42 from the Transport Sector. Highlights of the survey include:

- A high level of satisfaction with the services received through the iNet on the whole – particularly the IAG and CRD grants where 80% were "very satisfied" with the support. This is in line with the 80% satisfaction rates demonstrated in a recent evaluation of the Manufacturing Advisory Service[28].
- The vast majority of businesses surveyed would recommend the iNet to another company. Those in the healthcare and bioscience or transport sectors were most likely to recommend the iNet (95%), whilst companies in the food and drink sector were slightly less likely to do so (87%).
- 29% of businesses have already introduced new-to-the-industry products as a result of the iNet support they had received. Further, 30% were planning to introduce new to the industry products in the future; this figure rose to 50% for businesses in the healthcare and bioscience sector.
- 25% of businesses had already realised an economic impact as a result of the iNet support and 48% of businesses stated that, whilst there had not yet been a measurable economic impact, it was expected to occur over the next year.

[27] Evaluation of the Economic Impact of the iNets, GHK, 2011
[28] Review of the Manufacturing Advisory Service and Research to Support the Business Case for Continuing and Developing the Manufacturing Advisory Service, DTZ, 2010

The Economic Impact of iNet Support

Table 8 presents gross benefits identified through the beneficiary survey, applied to the population of beneficiaries for each iNet. Gross benefits are the impacts reported by beneficiaries based on a comparison of their position before and after receipt of the iNet support and the extent to which the results can be attributed to the iNets.

Table 8: Gross Benefits of the iNets

	Food and Drink	Healthcare & Bioscience	Sustainable Construction	Transport	Total
Total employment impact (FTE)	231	237	111	182	761
Total GVA increase (£k)	1,540	4,153	1,963	3,634	11,290

In order to provide some indication of the persistence of the impacts, businesses were asked how long they expected their reported impacts to last.

The iNets began awarding IAG grants in late 2008. Consequently, many of the businesses surveyed had only recently received their grant, meaning that there has been limited time for impacts to be realised. However, current indications are that the £3.3m delivery cost of IAG grants is expected to provide future GVA impact of £18.8m, representing a 6:1 return on investment.

Table 9: Future Impacts

	Food & Drink	Healthcare & Bioscience	Sustainable Construction	Transport	Total
Total Undiscounted 5 Year Impact (£m)	2.3	13.8	2.6	4.4	23.1
IAG only Undiscounted 5 Year Impact (£m)	2.3	11.3	0.8	4.4	18.8

Benchmarking iNet Support

Table 10 outlines the cost per business assisted and job created for all businesses supported through the iNet and for the IAG grant. For the purpose of comparison, costs are also included from the national meta-evaluation[29] which considered the costs and benefits of a range of RDA interventions relating to science and innovation; and to business competitiveness. In these cases the stated delivery cost is an average of all evaluations

[29] BIS *Impact of RDA Spending: National Report, Vol. 1.* P.34, PWC, 2009

considered under these intervention types. The comparison also refers to the results of the national[30] and regional[31] evaluations of the GRD grant scheme for SMEs.

Table 10: Cost per Business Assisted by iNets & other programmes comparison

Intervention Type	Delivery Cost (£m)	Cost per Business Assisted (£)	Cost per Job Created (£)
iNet - All Businesses Supported	**15**	**5,633**	**21,312**
Science, R&D and Innovation Support	10.7	24,600	38,000
iNet - IAG Grant Scheme	**3.3**	**9,151**	**10,797**
GRD (East Midlands)	27	39,300	26,000
GRD (All England)	239	56,000	32,000
Business Development and Competitiveness	10.5	9,700	14,000

Note: The Business Assisted definition for this study is taken to be the total number of businesses supported by the iNet. This analysis does not distinguish between Single Programme and ERDF business assists.

This analysis suggests that, considered as a whole, the package of support provided by the iNets provides a significantly lower cost per business assisted than comparable Science, R&D and Innovation support packages offered by other RDAs and the cost per job created is lower than other initiatives of this type. When considered in isolation the IAG grant scheme operated by the iNets is significantly more cost effective in supporting businesses and creating jobs than both the regional and national GRD programme. It is also noteworthy that these metrics highlight the higher cost per outcome from providing innovation support relative to more general business development and competitiveness support. This reflects the fact that more time and greater expertise is required to provide innovation support; and that impacts take longer to realise.

East Midlands Innovation Baseline

The purpose of establishing an innovation baseline was to measure the innovation performance of East Midlands businesses that received support through one of the four iNets, and to compare this with those that have not received support. The basis for this baseline assessment has been the Innovation Index developed by Nesta, in order to

[30] Evaluation of Grant for Research and Development and SMART, National Programme, PACEC, 2009

[31] Evaluation of GRD/SMART in the East Midlands, PACEC, 2010

address long-standing problems with the measurement of innovation performance[32]. The basis of the index is a theoretical model of how businesses innovate, based on an '*innovation value chain*'. This value chain consists of three key components:

- Businesses' ability to access innovation (by developing ideas internally or by obtaining them from elsewhere – for instance from higher education institutions);
- Businesses ability to build innovation (through turning ideas into new or improved products, services, processes etc.); and,
- Businesses ability to commercialise innovation (i.e. utilising innovative goods, services or processes to generate profit).

The full index consists of a suite of 16 indicators, collected through primary research with businesses. An abridged version of the Innovation Index has been used, focussing on a selection of the key indicators.

The survey of iNet beneficiary and non-beneficiary innovation performance highlighted a number of issues of significance. The main findings were:

	▪ iNet beneficiaries spend more on R&D than non-beneficiaries. Some 21% of respondents from the healthcare and bioscience sectors reported that they spent between 76% and 100% of their turnover on R&D, highlighting the importance of R&D investment in the sector.
	▪ iNet beneficiaries are more likely to access a wide range of external sources of information, highlighting the fact that they are relatively more open to external sources of information as part of the innovation process than non-beneficiaries.
	▪ iNet beneficiaries are far more likely to spend higher proportions of turnover on process development than non-beneficiaries. For example, 12% of iNet beneficiaries indicated that they spent more than a quarter of expenditure on process development compared to just 2% of non-beneficiaries.
	▪ Spending on R&D is also translated into sales for iNet beneficiaries: iNet beneficiaries generate more income from innovation than non-beneficiaries, 21% of beneficiaries generate over 51% of income from new or improved products or services, compared to 18% of non-beneficiaries. Further, 14% of beneficiaries report that they generate no income from innovation, compared to 54% of non beneficiaries.
	▪ iNet beneficiaries are more likely to make use of intellectual property protection than non-beneficiaries. Overall, 32% of iNet beneficiaries had made use of a patent, significantly higher than the 20% figure for non-beneficiaries.

[32] The Innovation Index: Measuring the UK's investment in innovation and its effects, NESTA, 2009

Impact of other key programmes

Although the iNets have been at the heart of the investment and implementation of the RIS, there have been other notable complementary investments that have led to significant outcomes and impact. Collectively, these RIS programmes have been instrumental in stimulating higher levels of innovation across the region involving businesses, partner organisations and individuals.

Regional Technology Framework

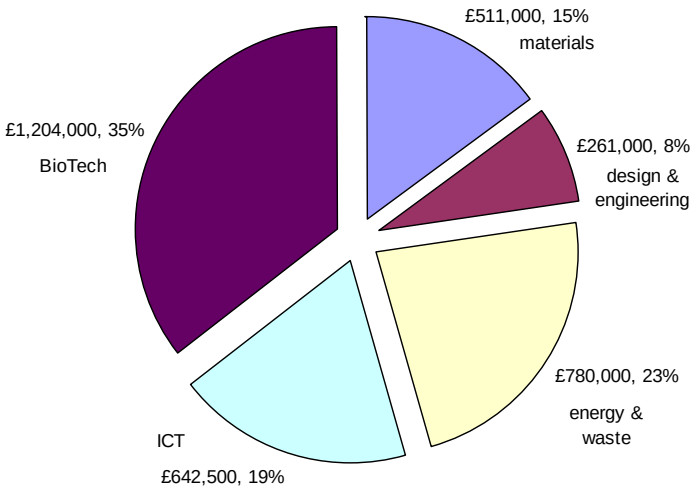
The RTF was produced to articulate the technology strengths of the East Midlands and the research and exploitation organisations that underpin them. It also established an investment fund to improve the commercial take up of these technology priorities.
Over the period 2008-11, 6 universities and 63 companies received some £4m of investment from *emda* and ERDF under the RTF. The funded projects brought an additional £3.6m of finance.

Two forms of grant type were utilised, aimed at overcoming different barriers to technology exploitation; these were Demonstration and Pathfinder grants.

15 Demonstration grants were awarded to projects led by a university and which included at least one SME partner. The objective of these grants was to take well developed technologies from the research laboratory and demonstrate their effectiveness in an application that addressed a real market need.

Figure 2 below illustrates the spread of these 15 projects across the technology priorities identified by the RTF, with almost equal coverage across the five main technology areas.

FIGURE 2: Investment in RTF Areas, by value of projects



Given the nature of these investments, the majority of the projects will take time to realise their full market potential; however, the following case studies give an illustration of progress made to date.

CASE STUDY

Alert Me – Project lead, British Geological Survey

The 'Automatic, time lapse, electrical resistivity tomography for monitoring embankments' or ALERT-ME project is developing an early warning system for monitoring the physical integrity of vulnerable earth structures (e.g. embankments and cuttings) within the transport network. A technology demonstrator has been established within a section of embankment on the former Great Central Railway at East Leake. Thus far, there has been much knowledge transfer/dissemination from ALERT-ME including:

- New technologies for embankment warning systems. Rail Technology Magazine, Oct/Nov 2010.
- Dynamic Volumetric Monitoring of Water Movement. Remote sensing for transport infrastructure assets. A joint Geotechnical Asset Owners Forum / MBE KTN Workshop, London, 16th Dec 2010.
- Future Proofing Transport Infrastructure, 25 January 2011.

Work will begin in 2011 on the development of a commercialisation framework.

Pictured: System enclosure. Bottom: wooden unit-batteries with current / voltmeters; Middle: electrode array cables fed into field ALERT system; Top: wireless 3G modem (aerial external to enclosure).

CASE STUDY

Vermiculite – Project Lead, University of Nottingham

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

At the start of the project, researchers at the University had successfully developed a scalable 250kg/hr continuous microwave exfoliation process. The grant received facilitated a significant acceleration in the further development of the project. The capital investment enabled the University to procure critical equipment, whilst also engaging with supply chain business to build the first full commercial scale unit, run at the University site. The enhanced economics, environmental and sustainability metrics that are associated with the microwave process in comparison to traditional oil and gas fired systems will ensure the vermiculite industry can move forwards on a sound basis in the future. The University of Nottingham has very recently licensed the microwave exfoliation technology to a global supplier of microwave generator hardware, who is now establishing a major new UK based business unit to manufacture, sell and support the exfoliation. The project team also won the 2009 PraxisUnico award for Environmental Impact.

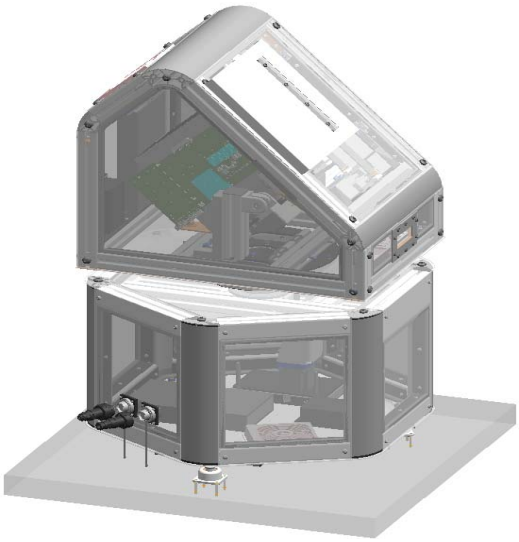
CASE STUDY

City Scan – Project Lead, University of Leicester

Using scattered sunlight, academics at the University of Leicester have developed a state-of-the-art air quality monitoring system, CityScan, which can determine the concentration and position of major pollutants such as Nitrogen oxides and heavy fuel particulate matter. This technology is based upon expertise held within the University's Space Research Centre, and its key industrial project partner, Surrey Satellite Technologies Ltd. CityScan technology provides comprehensive emissions scans of a designated area every six minutes to Local Councils and other authorities to help them better manage carbon emissions and human exposure in their urban environments. Improvements in traffic congestion and targeted usage of cleaner greener fuels can then be optimised through increased pollution understanding, resulting in better health for the population and cleaner cities.

Thanks to critical funding received from *emda* in 2010, the University of Leicester has built and enhanced key relationships with regional suppliers to design and test the CityScan concept. Through collaboration on electronics manufacture (with DataLink Electronics based in Loughborough, and E2V based in Lincoln), and engineering design (with Magna Parva Ltd in Bardon Hill, Leicester), a technical prototype of the instrument has been built and will be demonstrated as part of an ESA-funded project with Leicester City Council in 2011.

The *emda* funding has enabled the University of Leicester to promote the technology to numerous potential partners/customers and has enabled the University to lever additional funds from ESA and Research Councils to further demonstrate the technology by monitoring the 2012 Olympics and Heathrow Airport avionics traffic. The University is very optimistic about the future of CityScan and is looking at licensing deals on the patent filed as a route to market for commercialisation of the technology.



The CityScan instrument, which will be deployed on tall buildings in Leicester in summer 2011 to assist with air quality and traffic management.

CASE STUDY

Biomarker – Project Lead Nottingham Trent University

The demonstrator project has helped to establish a centre of excellence in the East Midlands for the discovery, validation and exploitation of Biomarkers, a crucial technology in the area of bio-medicine, particularly that of personalised medicine.

The technology demonstrator has been used by UK companies to evaluate data from clinical trials with beneficial outcomes in terms of cost savings. In addition to business contracts, new research collaborations have been created amongst the region's Universities and businesses.

A number of new jobs have been created, particularly at CompanDX, a spinout company from the University. where three new roles have been created. The demonstrator facility played an important part in helping CompanDX secure its first order with one of the world's largest Pharmaceutical companies. Access to NTU's research and demonstrator facility has helped CompanDX raise further finance and to move into a revenue generating position, often unusual for an early stage Biotech Company.

A number of patent disclosures have been registered or are in development, and two patents have been filed for bioinformatics inventions by researchers involved in the project.

CASE STUDY

FORCE – Project lead Loughborough University

The Hardstaff Group, in collaboration with Loughborough University is leading the development of a usable 'dual fuel' technology, applicable to heavy haulage vehicles. The purpose of which is to reduce CO2 emissions by about 20% and other exhaust emissions significantly without increasing fuel consumption. The dual fuel technology uses a mixture of natural gas (methane) and diesel to run a standard vehicle engine, and has the potential to reduce the UK dependency on crude oil for road haulage vehicles by up to 80%. This collaboration project, funded through the RTF demonstration programme, has enabled Hardstaff and Loughborough University to establish a state of-the-art engine test facility for new low carbon and emission reduction technology. This is known as Dual Fuel, for heavy/light goods vehicles, buses and light passenger transport. This unique UK facility, based at Hardstaff's headquarters in Leicestershire, centres on multiple fuel engines and alternative engine fuels for the future. This projects builds upon the early stage support from the Transport iNet as illustrated on page 43.

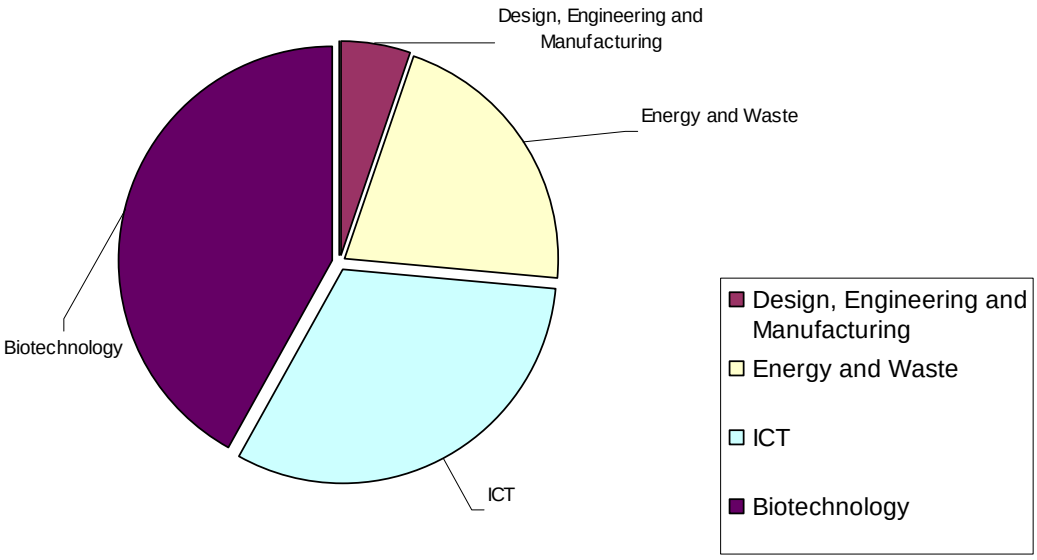
The test facility enables validation, conformity and certification of the engines using the proposed technology to current and future emissions standards. The demonstrator unit will be road tested to prove that the technology can secure the highest CO2 savings currently available and offer a wide range of tall pipe emission reductions and other harmful gaseous emissions under real life conditions. The benefits expected from this collaboration are:

- **The reduction in CO2 and other harmful emissions from heavy vehicles, benefiting the region and the UK**
- **Unique state-of-the art testing facilities for dual fuel applications, placing the East Midlands in the forefront of this innovative technology.**

The **Pathfinder grants** have also proved to be a successful support service. In total, 37 Pathfinder grants were awarded to SMEs or individuals who had a technology based idea that had undergone some degree of technical demonstration. The purpose of this support was to help the business and/or individuals to carry out due diligence on the commercial opportunities of their technology. The objective was to help reduce the risks and justify the costs associated with the technology development process.

Figure 3 below illustrates the spread of these 37 projects across the technology priorities identified with the RTF.

FIGURE 3: Pathfinder Project Technology Areas



The Pathfinder service, part-financed by the European Union, is a small financial grant (maximum £20k grant at 70% intervention) used on due diligence activities on potential products, market size, competitors, intellectual property considerations, route to market and other elements of compiling a sound business case.

Through a series of 4 competitive calls, 36 businesses secured grant funding ranging from £7,000 to £20,000. The iNets were a great asset in helping to market the scheme and engage with relevant and eligible businesses. Many of the grant recipients were introduced to other regional innovation projects such as the iNets and the Grants for Research and Development.

Survey results from the Pathfinder Evaluation identified that many recipients felt that the introduction to this network and the business questions posed by the grant paperwork, added value above the financial contribution to their pathfinder projects. New collaborations between businesses and universities have been established in more than half of the

pathfinder projects. This small grant has generated and enabled new interactions and partnerships for the recipients above the market research data produced in many of the projects. The programme has enabled more businesses to invest in innovation projects and further new products and processes. Nearly 50% of beneficiary respondents have already seen business performance improved and the remainder expect to see business improvements in the next 2-5 years.

The Pathfinder grant service has been very successful in providing businesses with the resources to advance their early stage research. During its successful implementation, the nationally run Grant for Research and Development (GRD) used information from the Pathfinder service to review their grant portfolio. The small financial Pathfinder grant was viewed very positively and consequently used as the model for a new Grant for Research and Development, i.e. the Market Research Grant. This is now available nationally and has been embedded in the GRD portfolio delivered by the Technology Strategy Board.

CASE STUDY

EPL case study

The Pathfinder award has helped EPL Composite Solutions Ltd to develop their idea for what they believe is a world beating but very disruptive technology in the field of wind energy generation. They believe their innovation will dramatically reduce the costs of power generated by wind. The Pathfinder has enabled the development of data sets and scenarios to underpin a business plan to secure sufficient funding to construct a full scale demonstrator and prove the economic benefits. EPL are now in discussions with an American investment group on the strength of the business plan.

FP7 Service

The FP7 service was established in order to increase regional participation in the FP7 programme and lever European R&D investment into the East Midlands. It has been unique to the East Midlands and received strong European Commission support, being upheld as an exemplar of best practice.

Over almost three years, 683 regional companies have engaged with the FP7 Service, and over 50 of these were from consortia bidding for funding. 17 projects in total were submitted for funding with 15 being led by East Midlands SMEs and 2 by regional universities. To date 10 projects have been successful with a combined value of €40 million; a further 4 projects are still awaiting decisions and 3 have been rejected. This equates to a success rate of at least 60%, with the possibility of this rising as decisions are made on the 4 outstanding projects. Anecdotal information suggests an application success rate of between 10 and 20% is typical across the various programmes, indicating the added value of the FP7 service.

The FP7 service has also resulted in a number of intangible benefits, including improvements in client companies' understanding of R&D grant funding and the operation of European funding programmes.

The profile of the East Midlands within the European Commission has been raised and the region has been identified as demonstrating good practice in facilitating SME involvement in FP7, a key goal of the European Commission.

iFestival

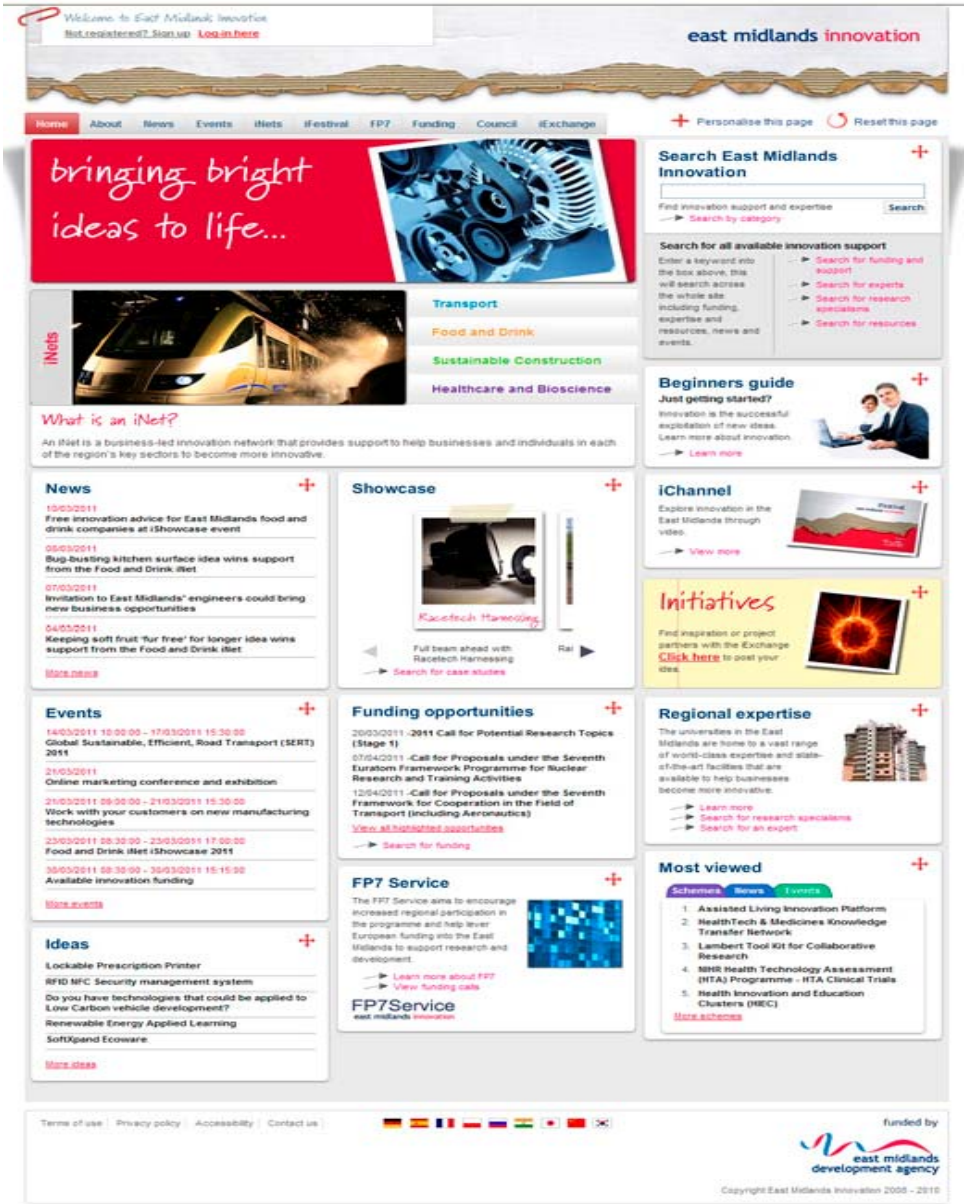
The iFestival has been one of the major successes of the RIS. It has been held each year since 2007 from early March to mid April, with its start coinciding with National Science and Engineering Week. The iFestival has helped to raise awareness of the innovation agenda with events aimed at individuals in businesses, universities and colleges, schools, the public sector and at members of the general public.

During the four-year period, over 76,000 people attended 655 events distributed across all counties in the East Midlands, with 124 partner organisations involved.

The East Midlands Innovation Portal

The www.eminnovation.org.uk site has evolved into much more than a shop window for the iNets and incorporates 8 mini-sites. The site has been the home of the FP7 Service and the iFestival, including an event calendar. It has become a point of reference for the wider innovation community in the East Midlands and beyond, with site visits from 41 countries.

In total the site has around 3,300 registered users, who receive regular newsletters containing news, events and alerts; at least a third of these are businesses. During 2009/10 the site was receiving around 10,000 page views each month. As a comparison, the more established national Grant for R&D programme site was receiving around 800 page views per month during the same period.



The success of the portal has been such that stakeholders were keen to see its continued use and as a result the Agency has successfully secured its mid-term future by assigning the rights of the IP, relating to the site and data, to Idox Information Solutions. This arrangement provides stakeholders with a real opportunity to work with Idox to access the site, tools and resources post *emda*, in a manner that is most suited to their individual need, whilst benefitting from Idox committing to maintain the core platform and content.

National programmes

The innovation support programmes developed under the RIS have operated alongside national activities, in particular, Grant for Research and Development (GRD), Grant for Business Investment (GBI), Knowledge Transfer Partnership (KTP), Knowledge Transfer Network (KTN), Manufacturing Advisory Service (MAS) and the Higher Education Innovation Fund (HEIF). A key role for *emda* has been to coordinate and where possible integrate these activities with local programmes and priorities; a number of examples are given below.

The GRD and GBI programmes will be covered in more detail in the Business Support legacy handbook and MAS will be covered under the Manufacturing legacy handbook.

Grant for Research and Development (GRD)

A recent evaluation report into the regional GRD scheme[33] indicated that it was one of the most effective in the UK, with a return on investment of almost £10 for every £1 spent. The report also found that 680 awards totalling over £26.7m were made to companies in the East Midlands, between 1999 and 2008. As a result of these investments, it was estimated that the grants gave rise to a cumulative net Gross Value Added (GVA) impact of £308m (based on 2008 prices).The grants were made to companies in a range of sectors, including those in the regional priority sectors bioscience, construction, transport equipment and food & drink. They created more than 1,200 jobs across the region and the average size of award was £39,000.

CASE STUDY

Integration of low carbon with support from Transport iNet:

Using support from the Transport iNet, Northampton based **Delta Motorsport** is building five battery powered E4 Coupés which reduce harmful emissions by 67% without compromising performance or driver enjoyment.

In 2009 Delta Motorsport was awarded a Grant for Research and Development (GRD) worth £222,000 by *emda* and the ERDF programme. The grant was used to research, design and build the initial prototype low energy car. Following the research and development work, the company was then introduced to a Transport iNet innovation advisor, who worked with the business on producing the demonstrator product, the E-4 Coupé.

"The investment and support in Delta Motorsport from *emda* and the Transport iNet has provided us with a significant understanding of how we can build the E-4 Coupé to a world class standard. Green vehicle technology is still very much a developing area and the help we have received has enabled us to create solutions to a wide range of problems, answering questions we didn't even know we would find. The financial support we have received has also been vitally important to us, allowing us to give our vehicle an even more competitive edge."

Nick Carpenter, Co-Founder and Technical Director of Delta Motorsport.

[33] Evaluation of GRD/Smart in the East Midlands, PACEC, 2010

Grant for Business Investment (GBI)

The GBI scheme was designed for businesses looking to make a capital investment. It helped support and fund new investment projects that led to long-term improvements in competitiveness, employment, productivity and skills.

CASE STUDY

Pepceuticals Limited, a specialist life-science business manufacturing custom peptides and antibodies, was awarded GBI grant of £99,000. The grant helped Pepceuticals to purchase and refurbish premises and invest in advanced technology, enabling the company to offer a complete contract research and bespoke manufacturing service. This helped to create four new jobs, all at graduate level. The company also received vital support and advice from the Healthcare and Bioscience iNet.

Knowledge Transfer Partnership (KTP)

The KTP Annual Report for 2006/07[34] indicated that companies reported an annual increase in profit before tax, after project completion of £229,000. *emda* invested £800,000 in 2007/8 to establish a dedicated regional KTP programme, which resulted in 12 associates being placed with 12 companies across the region. The net additional economic impacts generated by the *emda*-funded KTPs (2007/08 to 2009/10) are given in Table 8.

TABLE 11: Impact Data for *emda* funded KTPs

Economic impact indicator	Total	Total per KTP#
Net additional jobs created	**26**	**2.2**
Net additional jobs safeguarded	**16**	**1.3**
Net additional annual turnover created	**£3,146,200**	**£262,200**
Net additional annual GVA created	**£1,051,300**	**£87,600**
NPV of GVA created (Regeneris method)	**£5,243,200**	**£436,900**
NPV of GVA created (toolkit method)	**£2,521,600**	**£210,100**

Note: # Total per KTP has been calculated on the basis of 12 KTPs, GHK evaluation commissioned June 2010

[34] Knowledge Transfer Partnerships: Annual Report 2006/07, Technology Strategy Board, 2007

Manufacturing Advisory Service (MAS)

The iNets have worked in collaboration with MAS helping businesses in the priority sectors to improve process and product innovation, thereby contributing to the promotion of innovation across the manufacturing sectors within the region.

CASE STUDY

The "Charbecue" is the invention of two entrepreneurs aiming to exploit the market potential for the novel concept of outdoor cooking device. Following the development of several prototypes, the need for a commercial version for mass production was stepped up following assistance from both the Manufacturing Advisory Service and the Food & Drink iNet. The MAS provided advice on material selection, cost effective manufacturing process and this was supplemented by a £6,000 grant from iNet. This gave vital financial assistance that took Charbecue from an idea to an item that could be launched commercially. "The support has been invaluable and has got us to the stage where we can now launch the Charbecue onto the market."

The combined nature of the MAS and iNet support was vital and without this collaborative support the product would not have been able to get to market.

Support to Universities

emda has invested strongly in universities, with funding from a number of policy areas, including innovation, of more than £150m since 2003. This compares with around £60m that the universities received from Government via their HEIF funds. Almost £70m of *emda's* total investment has been made since the introduction of the RIS in 2007. Much of this investment has gone into joint programmes that have levered further funding into the region from other sources, including research councils and the private sector. These investments cover a range of areas, including new facilities for research, technology exploitation and testing; programmes to stimulate enterprise, innovation and skills; and finance vehicles to support Intellectual property commercialisation.

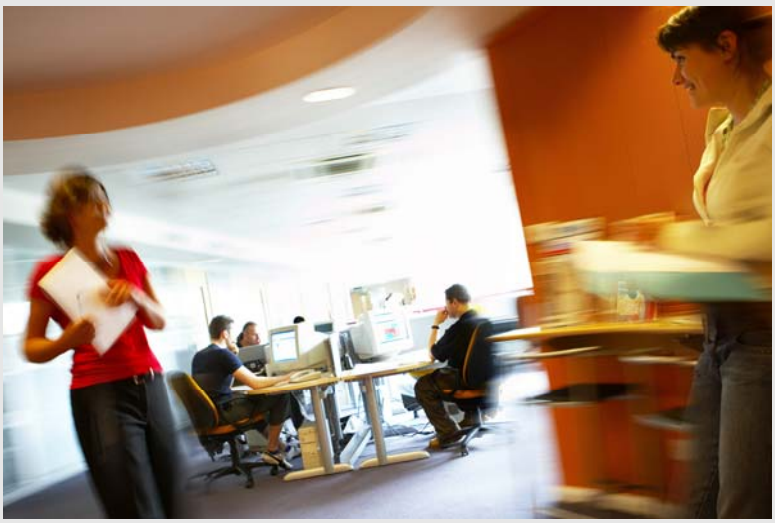
The scale and variety of the university sector in the region has provided the opportunity to nurture, support and grow economic activity at many levels – from local through to international markets. In addition, the desire and willingness to share the responsibility to enhance the region's economic performance has also been a critical factor in the success to date of the relationship between the RDA and the universities. The iNets are an excellent example of this close working relationship in action.

"*emda* funding has enabled the University of Leicester to develop and enhance our SME engagement routes, commercialise and apply some of our research, engage in many more knowledge exchange opportunities, leverage additional funds and generally raise the University's profile."

Anjuu Trevedi, Head of Regional Business Engagement, University of Leicester.

The RIS was the catalyst for much of the collaborative working, providing a framework through which to strengthen the role universities play in wider economic development activity.

CASE STUDY



The Enterprise Inc programme was the first collaborative programme of its kind to involve all the region's universities. Enterprise Inc is an enterprise development placement programme that enables students to develop their own business ideas by focusing on the development of enterprise skills. Impacts include 400 businesses assisted in improving their performance, 400 businesses engaged in university collaborations and around £1.8m additional leverage.

CASE STUDY

The University of Nottingham has developed a significant portfolio of projects and activity supported through the implementation of the RIS, using a combination of both Single Programme funding and ERDF. The *emda* funding has enabled university research teams to engage directly with regional businesses and take forward research into development/translational stages that are often difficult to secure through other sponsors. This has enabled research groups to develop strong portfolios of activity building relationships with regional businesses for mutual benefit, for example:

The GNSS Research and Applications Centre of Excellence (GRACE) development, an internationally recognised centre of excellence in surveying, positioning and navigation technologies, located in the Nottingham Geospatial Building, which was created as part of this £9m development.

The collaborative Innovation Fellowships programme which, since 2000, has been supporting and encouraging academics to take forward their research into development/exploitation stages leading to further opportunities and benefits, including spin-out companies and new business partnerships. Over 10 years *emda* worked with the University co-funding this scheme from RDA, ERDF and HEIF. Individual projects have gone on to leverage around £17m in other funding: grants, investment (~£10m) and business. Another positive aspect of this project is the development of wider networks where, without the fellowship, academics would not have started collaborating. Cultural changes have also been instigated, although a long term issue, some recipients have reported that 'this has fundamentally changed the way we now look at the research undertaken in our labs'.

Partnership working with BIS and the TSB

Throughout the development and implementation of the RIS, *emda* and East Midlands Innovation nurtured a healthy relationship with BIS and the TSB. The formal connection was through the establishment of a Strategic Advisory Group (SAG) in February 2008. Made up of the Council Chairs from each region and senior representatives from the TSB and BIS, the SAG has acted to align national and regional innovation and technology plans. This strategic relationship was supported through the close working of officers from the RDAs, TSB, BIS and research councils. This group has acted as an innovation policy review forum for BIS and the TSB and has helped to shape and coordinate the development and implementation of national support programmes alongside local activities.

The group has also operated as an intelligence network for BIS and the TSB, providing information on the strengths of each region and where key investment and innovation assets were located. This dialogue has enabled a number of high-value, high-profile co-investments to be made into large national programmes, typically in the areas of manufacturing and the aerospace sector; a number of case studies are shown below.

CASE STUDY

Manufacturing Technology Centre (MTC)

The MTC is a £40m investment by *emda* and Advantage West Midlands to create a world-class manufacturing research centre. It is one of the largest public sector investments in manufacturing for many years. Located at Ansty Park near Coventry it is due to be opened in the summer of 2011. Once complete, the MTC will be a world-class centre of excellence, operated by some of the UK's leading manufacturing companies and universities, helping to ensure that the UK and the Midlands stay at the forefront of technology and innovation, and providing our manufacturing businesses with a vital, competitive edge. Access to facilities within the MTC is vital to support industry in developing their manufacturing processes and creating world class capability.

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

The MTC will be a critical component within the High Value Manufacturing Technology & Innovation Centre.

CASE STUDY

Next Generation Composite Wing (NGCW)

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

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

CASE STUDY

Environmentally Friendly Engine

The Environmentally Friendly Engine (EFE) is aimed at developing UK aerospace capabilities in a number of fundamental technologies of importance to the aviation sector, such as high temperature materials, high efficiency turbine components, low emissions combustion, advanced manufacturing technologies and engine controls and actuation technologies.

The Technology Strategy Board has invested £30m, along with a number of RDAs, of which *emda* is the largest contributor with £6m funding. The EFE programme involves 11 partners including several UK universities and industrial partners such as Bombardier, Unison, HS-Marstons, Aero Engine Controls and Rolls-Royce.

Key learning points from Impact of the RIS and Support Programmes:

- The iNets have been particularly successful at engaging with productive businesses because of their expertise and ability to tailor services to their sector, sub-sectors and individual companies, and to build relationships of trust based on proximity and face-to-face contact.
- Evaluation of the iNet service has demonstrated very good value for money in comparison with equivalent programmes
- Innovation is inherently risky and innovators need the opportunity to think about what to do and consider the consequences of options. The iNet advisers play a critical role in counselling businesses along the innovation journey so that they are more likely to move forward, and that the risk of poor decisions being made is reduced.
- The iNets have built a large and dynamic informal network of businesses, universities and partner organisations in which the knowledge of the iNet team is continually used to stimulate innovation through a range of mutually reinforcing activities. This has led to increased involvement from network participants in iNet activities that encourage strategic thinking, business knowledge acquisition, better business decision making, facilitation of collaborative working and innovative behaviour.
- Businesses have unparalleled access to information but less time than ever to find and digest what they need. Attempts to reach businesses to raise awareness of things they need to do, or of opportunities, will often fail; therefore communications must be clear and relevant to their needs.
- Increased dialogue and collaborative working between partners has increased the leveraging power of the region, attracting significant external funds in support of the RIS objectives.
- Going forward there will be a need to continue partnership working as platforms for developing policy, exchanging good practice, and generating further momentum.
- The new LEP structures are possible mechanisms that can pick up the good work in this area by developing strong relationships with their respective universities.
- Much more needs to be done to promote and showcase innovation, the iFestival and innovation portal have been successful mechanisms for supporting this process. Clear and strong marketing messages are important to communicate benefits of innovation and encourage take up.
- Case studies are effective mechanisms for bringing to life how support programmes have impacted on companies and how innovation can improve the performance of all organisations. Equally stakeholders or potential funders are better incentivised to be involved if the impacts of innovation activities are reported in terms of business improvement.
- Policy makers must identify appropriate and objective methods for measuring innovation performance. Problems arise as methods often lack local detail, use economic indicators that can be difficult to relate to specific input activities, or depend on data that is typically quite old when reported.

Chapter 4
Conclusions

This handbook has been written as a legacy document highlighting the activities that have taken place to improve innovation performance in the region. It notes the **key achievements** of *emda* and its partners in developing an innovation system, in particular focussed on the four priority sectors of Healthcare, Food & Drink, Transport and Sustainable Construction.

The contents of the handbook are intended to provide some background and context for innovation investment activity. In particular, a number of key learnings have been highlighted throughout, based both on *emda*'s experience and on a number of external evaluations of *emda*'s innovation investment activities.

The main learning points for the next generation of Innovation policy-makers and practitioners are repeated here for ease of reference, as follows:

Innovation System / Strategic Framework

- Government can have an important role to play in **facilitating effective innovation systems** below the national level.
- Innovation support to business is most effective when it is **tailored to the needs of specific sectors** and pulls together the input of the various players in the innovation system, crucially including the universities.
- It is important to **articulate clearly how the innovation system works**, where the failures are and how to address them, so that stakeholders buy in to proposed solutions.
- In the current economic conditions a **strategy for innovation is at least as important as it was at a time of growth**; this is in line with the Coalition Government's emphasis on the importance of investing in high-growth industries.
- When the Government produces its Innovation Strategy later in the year it needs to consider the extent to which there is a need for **strategic frameworks for Innovation below the national level**, and how the LEPs will connect to the national strategy.
- The LEPs can build on the progress that has been made by developing **strong relationships** with their respective universities.
- While universities are effective at managing relationships with major companies, it is **necessary to have interventions that enable smaller and nascent businesses to engage with universities**, with benefits on both sides and a significant economic benefit.

Leadership

- One of the major successes in the East Midlands has been the role of the East Midlands Innovation council, whose membership of high-calibre, committed individuals with extensive regional, national and international connections provides an **expert, independent advisory group**. The TSB need to consider whether the existing structure of Science & Industry Councils should have an ongoing role within the new landscape.

The iNet Model

- The iNets have been particularly successful at engaging with productive businesses because of their expertise and ability to **tailor services to their sector**, sub-sectors and individual companies, and to **build relationships of trust based** on proximity and face-to-face contact.
- Businesses need more than information to make important decisions. Innovation is inherently risky and innovators need the opportunity to think about what to do and consider the consequences of options. The iNet advisers have played a critical role in **counselling businesses along the innovation journey** so that businesses are more likely to move forward and the risk of poor decisions being made is reduced.
- The iNets have built a **large, dynamic and informal network of businesses, universities and partner organisations** in which the tacit knowledge of the iNet team is continually used to stimulate innovation through a range of mutually reinforcing activities. This has led to increased involvement from network participants in iNet activities that encourage strategic thinking, business knowledge acquisition, better business decision making, facilitation of collaborative working and innovative behaviour.

Reaching the Business Community

- Businesses have unparalleled access to information but less time than ever to find and digest what they need. **Communications must be clear and relevant** to their needs.
- Much more needs to be done to **promote and showcase innovation**; the iFestival and innovation portal have been successful mechanisms for supporting this process. Clear and strong marketing messages are important to communicate the benefits of innovation and encourage take up.
- **Case studies** are effective mechanisms for bringing to life how support programmes have impacted on companies and how innovation can improve the performance of all organisations. Equally, stakeholders or potential funders are better incentivised to be involved if the impacts of innovation activities are reported in terms of business improvement.

Metrics

- A major issue for all policy makers is to identify appropriate and objective methods for **measuring innovation performance**. Problems arise as methods often lack local detail, use economic indicators that can be difficult to relate to specific input activities, or depend on data that is typically quite old when reported.

Hopefully these learnings will prove useful to legacy organisations involved in delivering innovation support activities in the future.