East Midlands Development Agency
Innovation iNets

Transport iNet
east midlands innovation

"Mapping of the elements of the rail sector supply chain in the East Midlands and identifying the main innovation drivers"

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Derby & Derbyshire
Rail Forum

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1.0 Executive Summary

The objective of this project is to provide information to the Transport iNet for it to better understand the various elements of the rail sector supply chain within the East Midlands, to provide an overview of the main industry drivers, and an indication of the present level of innovation within the sector, in order to support the work of the iNet in targeting its available funding.

This report documents the approach taken to mapping the rail industry supply chain in order to gain the required understanding, together with the key findings from a study to determine international and national research priorities and industry drivers.

The rail industry is a complex mix of customers and suppliers, some regulated (such as Network Rail) and others unregulated. The industry in the East Midlands is diverse with all classifications of industry supplier being present, covering rolling stock owners, users, suppliers and maintainers through to major infrastructure and construction suppliers. The region has a wide range of sizes of company serving the industry, with multi-national, multi-discipline companies, including the UK's only current train builder being present, together with many smaller companies, some of which are systems or component suppliers and others provide essential services to the industry such as legal and training.

Almost 600 companies were identified in the mapping exercise. These have been verified against Companies House records resulting in a significant number being discarded (dissolved, dormant, acquired by others etc) and the current total is around 450. Company registered number and address together with given Standard Industrial Classifications of Economic Activities have been added to the database. Web addresses have been searched and added, as have any additional contact addresses and phone/fax numbers that could be found. In many cases, web sites have been visited both to confirm correctness and as a source of information on the companies.

Relevant methods of classifying companies have been considered and companies on the database have been given an initial classification based on information available publically. Following this, the level of innovation associated with each company has been assessed, generally according to their place in the supply chain, their products / services, range of market, mostly determined by internet based information or presence, supplemented by general industry knowledge.

Based on this review of the supply chain, in addition to providing supportive funding for innovation, it is recommended that:

1. *emda's* Inward Investment capability, supported by iNet's advisers with knowledge of the region's rail capability, should lobby Hitachi to locate in the East Midlands for the assembly of their intercity express train which is widely expected to contain considerable innovation in order to meet the demanding specification. This would help to consolidate and extend the contact made by Hitachi, via DDRF, with companies in the region that should form part of Hitachi's supply base.

2. iNet should seek to develop a brokering capability for innovation in the rail sector to ensure that the smaller but nevertheless inventive companies can bring their skills to meet wider industry and regional goals in a timely manner. This will include:-
   - Use of iNet advisers, with their regional overview, to work with key rail buyers to gain knowledge of the wider opportunities
   - iNet should forge a strong understanding of the region's capability through continued working with industry groupings, such as DDRF

- Focussed workshops, possibly with facilitated company ‘speed dating’ and certainly with good follow up, will expand the innovation activities in the region
- Additionally, the supplier accreditation bodies hold a lot of detail about company capability and approvals, which is made available to buying organisations (usually for a fee). iNet should fund access to this information to provide further input for the innovation advisers
- Legal support should also be facilitated, preferably by a firm that understands the industry well, not just IP law.

3. iNet should develop a communications strategy for the rail sector in the East Midlands, with the objective to inform, stimulate and guide the innovative effort in the region. It needs to define:-
   - What messages need to be delivered and to whom in order to encourage innovation.
   - The **scope** of the strategy in terms of
     - target companies and groups
     - the sources of information (e.g. a summary of industry research news such as that provided by RSSB)
     - the role of the iNet in relation to other bodies (DDRF, emda)
     - cross sector activity
     - key company changes and legislative requirements. (There are several legal companies in the region with registered rail interests who could help here)
     - forthcoming procurement opportunities and market developments
   - The **targets** for communication
     - the smaller and more specialist companies
     - key functions in the larger companies
     - key personnel
   - The **methods** of communication to deliver maximum added value
     - a brief ‘push’ email with links to potential areas of interest held on a central server would avoid ‘attention span’ issues
     - mechanisms with potentially longer lasting impact for information dissemination that should be considered are:
       - extending inter-regional working along the lines of iFestival; including more rail in iFestival activities
       - Inter-company “speed dating” (Innovation Fair)
       - structured workshops and trade press announcements / advertising features.

2.0 Background to project

East Midlands Development Agency (*emda*) has established several "iNets" to help fulfil its regional strategic goals. One of these iNets, the Transport iNet, is managed by Loughborough University and a significant element of its programme of work is to raise the standards and practice of innovation among the region's SMEs. Five sectors of transport are covered: Aerospace, Automotive, Marine, Motorsport and Rail. This project covers the Rail sector.

Within the East Midlands, Derby and its environs is an acknowledged centre of excellence for rail. In many minds it is *the* centre of UK rail excellence. There is much publicity to that extent within the industry press, particularly with Derby being home to the UK's only current train builder, Bombardier.

While there are several learned societies or more localised associations supporting networking within the industry, there are few industry bodies actively engaged in cross-industry business growth and representation. Derby and Derbyshire Rail Forum (DDRF) is one such body and nationally the Rail Industry Association (RIA) is the trade association for UK based suppliers of equipment and services to the world-wide industry. Additionally, The Railway Forum, with most of its members being large industry players or train operating companies, acts as the lobby group and think tank for the industry as a whole.

Despite Derby's position in the rail industry, it is notable that only 27 of RIA's 146 members give an East Midlands address as their point of contact in the RIA directory. Nevertheless, the range of rail and rail associated companies within the East Midlands is diverse with several small and niche companies coexisting with the multi-nationals. The region is also blessed with a major test line at Old Dalby and several of the heritage railways in the region offer their facilities for test purposes. It is, therefore, important to understand the full range and scope of businesses in rail in the East Midlands in order to address how best to support innovation and growth within the rail sector.

2.1 Why support innovation?

In *emda*'s Regional Economic Strategy 2006 – 2020, the three main themes of the strategy for "A Flourishing Region" are:

Raising productivity: enabling our people and businesses to become more competitive and innovative;

Ensuring sustainability: investing in and protecting our natural resources, environment and other assets such as infrastructure;

Achieving equality: helping all people to realise their full potential and work effectively together to enrich our lives and our communities.

The strategy document says about innovation:

> "Innovation is the successful exploitation of new ideas and is key to developing new and better products and services. There is a mixed picture when it comes to assessing innovation performance in the East Midlands. Levels of investment in innovation are relatively high, but unevenly distributed by source. Business Enterprise Research and Development (BERD) is relatively high in the East Midlands and accounts for 1.8% of GVA, compared to a national average of 1.4%. Expenditure on

> R&D from Government and higher education in the region is below average. Government R&D accounts for only 0.1% of GVA and is half the national average."

More specifically, in the transport context, the 2001 census shows that only eight per cent of people in the region travel to work on public transport - the lowest regional proportion after the South West. Whilst rail does not represent all public transport by any means, it is generally acknowledged to be environmentally friendly and hence innovation-driven improvements to, and increased use of, rail will help to address the second of the regional themes as well as directly addressing the first.

The Regional Economic Strategy also states:

> "Despite the relatively high levels of expenditure on R&D in the East Midlands, the data also clearly shows that this is not always translated into successful market outcomes. Only 4% of turnover can be attributed to new or improved products by East Midlands' businesses, compared to the UK average of 8%. This highlights a clear need to improve the effective commercialisation of R&D in the region alongside increasing the number of businesses who engage in this activity, especially small businesses."

2.2 Objective, scope of work and key outputs

The objective of this project is to provide information to the Transport iNet for it to better understand the various elements of the rail sector supply chain within the East Midlands, to provide an overview of the main industry drivers, and an indication of the present level of innovation within the sector, in order to support the work of the iNet in targeting its available funding.

The detailed tasks are:

1. Completion of a mapping exercise of the rail sector within the East Midlands, estimating the number of companies comprising each element, the estimated total turnover and number of employees of each element, how each element is organised (trade body or otherwise) and how the future innovation demands of the industry are presently communicated to the sector.

2. Completion of a desk top research exercise to identify any global, UK or regional research which highlights the main innovation drivers for the rail sector and which parts of the sector and main supply chains would benefit from this knowledge and take advantage of equipping themselves for the future with innovation support.

3. Draw conclusions from both the desk top and company research of the main opportunities and potential new markets for East Midlands companies

4. Provide a database (spreadsheet) of the rail sector companies within the East Midlands, providing a ranked view of relevant SMEs in the region within each element of the supply chain who would be viable targets for innovation assistance from the iNet thus enabling the iNet to deliver focused and effective innovation support to these SMEs.

3.0 Method adopted for the mapping exercise

The following sections provide detail behind the creation of the database and the classification of companies within it.

3.1 Identification of East Midlands companies in the rail sector

At project inception it was understood that a number of current industry databases existed, which could be consolidated and reviewed in order to provide a sound foundation from which to develop the database required by the iNet. It quickly became apparent that, apart from a list of members of the Derby and Derbyshire Rail Forum, together with some members' company information of varying age, only limited company information was available.

While the DDRF list of members was thought to give a good range of companies (there are some 85 members), it was felt that since this is a fee-based membership, there may be some companies in the Derby area and potentially many within the East Midlands not included. Early inspection of some industry web-sites confirmed this view. The project has, therefore, had to create a completely new database. Work is still underway to verify all company details, but a significant proportion has been completed, to enable broad classifications and outline mappings to be achieved.

The process adopted for the creation of the database was therefore:

1. Consolidate DDRF contact info, DDRF member info, DDRF members research list, addressing discrepancies between the lists.

2. Identify and merge additional companies using a DDRF eshot list. A small number of companies that emerged during web-based searches were also added. At the end of this process, 88 companies in total were identified.

3. Identify additional companies from a UKTI list. The only available list dated back to 2005. There were 92 companies on this list, all from the East Midlands. When consolidated with the list at step 2, the total was now 163.

4. The RailNews 2009 Directory was then consulted. Although the directory is quite small, the entries appear to be of a high quality. This added 6 East Midlands companies.

5. The Railway Industry Association members list was investigated. This revealed that 27 of the 146 members gave a contact address located in the East Midlands. When consolidated into the list from step 4, the total was now 185 companies.

6. Finally, in order to get an even wider coverage, the on-line RailDirectory at railwaypeople.com was used as a source of companies in the relevant counties. These totalled 573 companies, which when consolidated with those already obtained gave 592 as a starting master list for classification.

7. Initial web-based searches for some of the companies named revealed a fair number that had either gone out of business, or were very small outposts of companies based outside the East Midlands. This was particularly true of the companies identified in step 6, where it appears that the entries into the directory are generally self-entered by staff within the companies and not necessarily managed in any formal sense. Even in some of the more formally kept lists, it was apparent that company information was not always up to date.

Given the traditionally very poor response rate to be expected from direct mailing, it was therefore decided to search for each identified company on the Companies House WebCheck service. This is an extremely laborious task, and given overall project deadlines, has not yet been completed. Nevertheless, well over half of the identified companies have been verified and in addition, their registered number and address (where different from contact information already held) has been recorded to facilitate future maintenance of the database.

The exercise has added value to the database, having helped to identify a number of companies where there have been mergers or name changes. Others have been dissolved, are in liquidation or receivership, are dormant or non-trading and some are under a proposal to strike off. The vast majority of such companies have been deleted from the list, with only those known to DDRF being kept as contact details have been previously verified. Others for which there is no Companies House entry and for which the trading name has no meaningful web search response, or on investigation appear not to have an office within the East Midlands, have also been deleted. Finally, a few companies which appear to have no fundamental rail business and had clearly made rail directory entries for themselves on a "prospecting" basis have also been deleted. At present, the list of companies is reduced to 456.

3.2 Classifying the supply chain for the East Midlands rail sector

During the collection of information regarding the companies, there was a strong indication that many companies claim to cover a very wide range of capability within the industry. From experience, it is often the case that companies have a good awareness, but it is much less commonplace for them to be able to cover in depth the wide range of activities required across the industry. Company classification is, therefore, not trivial if meaningful information is to be obtained to help understand the requirements of the industry and the opportunities within it.

In an engineering sense, certainly in the UK, but in many other countries too, rail is typically divided into two elements, namely "traction and rolling stock" (T&RS) and "infrastructure". Although the underlying engineering disciplines may be the same, the engineering staff even within companies that do cover both T&RS and infrastructure tend to fall into one or other of these camps; it is relatively unusual for an individual to cover both.

In the European Union context, Rail at the top level is split into "train operations" and "infrastructure". Indeed, European law demands independence between the two elements of the various national railway undertakings. Usually, train operations would include the traction and rolling stock elements.

In the UK, this division does impact on the market place and supply chain. For infrastructure (for the moment concentrating on national heavy rail), Network Rail is the key customer. Its top level suppliers tend to concentrate on infrastructure (or where they don't, their infrastructure divisions are very distinct from their T&RS divisions) and there are distinct standards, accreditations and working practices applicable to infrastructure work. Additionally, Network Rail is extremely keen to play a strong guiding role in determining the products that are developed on its behalf.

On the T&RS side, immediately post privatisation in the UK the three rolling stock companies were the top level customers. These companies were heavily influenced in their procurement by their immediate customers, the Train Operating Companies (TOCs). More and more, these TOCs have played a significant role in train procurement especially when

they have started their respective franchises. At present, the Department for Transport (DfT) is taking a prime role in train procurement. In the T&RS sector there are again distinct standards, accreditations and working practices to which suppliers must conform.

Hence, from a supply chain perspective, companies in reality generally align with one or other of these two top level classifications, or if they do work in both they tend to have a specialist offering. In order to subdivide these classifications to a meaningful and workable level, a number of industry sources for classifications have been reviewed, including accreditation bodies and the Railway Industry Association. As a result, and generally following the RIA classifications, the following has been selected:

- Rolling Stock – for heavy rail, mass transit, light rail and freight
  - design
  - manufacturing
  - leasing
  - component supply
  - maintenance
  - refurbishment
  - workshop equipment

- Infrastructure – for all aspects of track, signalling, telecommunications, electrification, terminal equipment and civil engineering
  - design
  - manufacturing
  - installation
  - maintenance
  - component supply

- Specialists – covering all aspects of railways
  - Consultancy
  - testing
  - training
  - project management
  - safety
  - heritage railways (and test lines)
  - turnkey systems
  - finance / legal / HR
  - recruitment

4.0 Major industry drivers

The construction of a safe, modern integrated railway network is one of the EU's major priorities. Economic integration and rapid growth in trade have transformed the European Union's transport needs. In order to service this integrated market, railways must become more competitive and offer high-quality, end-to-end services without being restricted by national borders.[1]

The European Railway Agency was set up to help create this integrated railway area by reinforcing safety and interoperability. Its main task is to develop economically viable common technical standards and approaches to safety, working closely with railway sector stakeholders, national authorities and other concerned parties, as well as with the European institutions.

The Agency also acts as the system authority for the European Rail Traffic Management System project, which has been set up to create unique signalling standards throughout Europe.

A key output from the work of ERA is a set of TSIs – Technical Specifications for Interoperability. These initially covered Europe's high speed lines, the so-called Trans European Networks (TENs), but the TSIs are now being extended to conventional lines. One of the aims of the TSIs is to help enlarge the market for rail products: having a European wide market rather than disparate national markets is felt to bring significant cost savings. There remain mixed views on the effectiveness of this, as currently significant cost is being expended on meeting the TSIs, but there is no doubt that meeting the TSIs is a key driver for innovation in the industry, as well as having long tem cost benefits.

Currently the TSIs for conventional lines are being extended to cover:

- Infrastructure
- Traction units and locomotives
- Energy
- Passenger carriages
- Telematics applications for passenger services

In the UK, industry based (as opposed to university based) national rail research and development is managed by the Rail Standards and Safety Board (RSSB) on behalf of government and the railway industry, in support of short, medium and long term objectives.

Two programmes are covered:

- The RSSB-managed rail industry research programme
- The Rail Industry Strategic Research Programme

In the former, the R&D covered is focused on industry-wide and strategic research that no individual company or sector of the industry can address on its own. It therefore includes research covering 'systems' issues across the whole railway, and the engineering interfaces within the railway, as well as the interfaces with other parts of the community.

In the latter, the programme aims to support industry and its stakeholders in the delivery of "step changes" in industry strategy in 10, 20 and 30 years time. These step changes are outlined in the Rail Technical Strategy.[2]

[1] The ERA web-site is acknowledged for this text. See: http://www.era.europa.eu

[2] See: http://www.dft.gov.uk/about/strategy/whitepapers/whitepapercm7176/railwhitepapertechnicalstrategy/

The Rail Technical Strategy sets out a vision for the railway of the future. This vision can be summarised as a set of characteristics[3]:

1. **Optimised track-train interface** - light but strong rolling stock running on precisely-engineered, accurately maintained track, reducing energy demand, track maintenance cost and noise;

2. **High reliability, high capacity** - world class reliability of both infrastructure and rolling stock. Infrastructure designed on lean principles with minimal trackside equipment. Intelligent infrastructure and intelligent rolling stock, each able to monitor the other and predict incipient failure;

3. **Simple, flexible, precise control system** - communication-based cab signalling to reduce infrastructure complexity and cost, as well as improve flexibility, combined with an intelligent management layer to offer precise control of train movement through the network, allowing energy efficiency to be improved and full potential capacity to be realised;

4. **Optimised traction power and energy** - regenerative braking on all trains, whether on the electric network or through onboard energy storage. Better use of existing electrification and selective extension where justified by business need. Bi-mode trains capable of running on or off wire, based on energy storage and with on-board power only where needed;

5. **An integrated view of safety, security and health** - improved detection of obstruction, intrusion and abnormal behaviour at all boundaries of the system, combined with better management of response to both safety and security threats and, in the long term, recognition of the need to reflect public health concerns in the rolling-stock surface materials and air conditioning;

6. **Improved passenger focus** - exploitation of ticketing, passenger flow, train movement and train load data to give high-quality information to passengers throughout their journey. Use of the same data to optimise controller response to abnormal traffic or passenger-flow conditions;

7. **Rationalisation and standardisation of assets** - a rationalised approach to asset specification, with greater use of modular and 'commercial off-the-shelf' equipment, covering industry-specific assets such as rolling stock based on a whole-life, whole-system cost approach across all industry partners; and

8. **Differentiated technical principles and standards** - application of differentiated technical principles and standards to railway routes based on predicted traffic type and usage, allowing cost efficiency to be optimised whilst maintaining interoperability for passenger trains and access for commercial freight to all areas of the network where there is a reasonable expectation of need.

With regard to university based research, Rail Research UK (RRUK) is centred outside of the region at the University of Birmingham. However, two of the nine partner universities are within the region: Loughborough and Nottingham.

[3] Crown Copyright, see: http://www.dft.gov.uk/pgr/rail/researchtech/research/railstrategyresearch?page=6#a1025

RRUK is known as the “Universities’ centre for railway systems research”. Its mission is: “To support the UK railway industry by providing a focal point for university based world-class research”. It is funded by the Engineering and Physical sciences Research Council (EPSRC) and seeks close cooperation with industry. Its research themes align with the characteristics outlined above.

4.1 Local industry and business drivers

A very significant current local opportunity, with long term potential benefits for the region is to persuade Hitachi to base in East Midlands for the assembly of its new intercity express. While this will provide competition to existing companies in the region, given the overall buying patterns in the industry and capability within the region, Hitachi’s location here would help to consolidate and grow the supply base. In this connection, *emda* inward investment supported by iNet’s advisers with knowledge of the region’s rail capability, should lobby Hitachi to locate in the East Midlands for the assembly of their intercity express train which is widely expected to contain considerable innovation in order to meet the demanding specification. This would help to consolidate and extend the contact made by Hitachi, via DDRF, with companies in the region that should form part of Hitachi’s supply base.

At a more individual level, companies seek to innovate to help them:

- Maintain a competitive position in the market by reducing the cost or improving the value of existing products and processes
- Respond to external market changes by developing a new product or process
- Understand, mitigate and manage business and operational risks
- Expand their businesses, by changing existing products and processes or developing innovative new products in order to provide better value for new and existing customers
- Meet long term liabilities related to asset management, especially where this is backed by legal or social obligations

These normal business drivers should not be ignored, especially in the current economic climate and it will be particularly important to demonstrate to company senior management the benefits of expenditure on innovation, when the inclination within the companies may be to stop such expenditure.

4.2 Summary of drivers

The drivers for innovation within rail can be summarised as:

Attractiveness of rail to the passenger, eg in:
- through journey experience (eg information about changes)
- ticketing, inter operator, smart carding
- capacity on the train – avoiding overcrowding
- journey time
- frequency of availability of trains

- facilities on trains (eg service, power and even toilets that work!)

Costs, across the spectrum, but particularly in
- electrification
- ‘green’ electricity

Sustainability, eg in
- engine technologies
- lightweight trains
- hybrid
- control
- eco-driving

Railway system capacity, particularly
- signalling
- advanced control / traffic management
- availability – 7 day railway
- reliability

5.0 Supply chain characteristics

As indicated above in connection with classifying the supply chain there are three top level segments of the industry:

- Traction & rolling stock
- Infrastructure
- Specialists

The supply chain operates differently within each segment although there are some common features. For example, for many purchases in the rail industry, European Procurement Legislation applies. Additionally, much of the purchasing has safety connotations. Hence an extensive range of formal qualifications are required by companies offering products and services to the industry. There has been much debate over the years since privatisation about the costs involved in obtaining certification, with many top level companies requiring supplier processes to exactly match their own quality systems. This can lead to inefficiencies within the supply base, not least because of duplication within the 'lower' organisations. Much has been done to improve in this area, but there is still scope for more innovation and cross-acceptance.

5.1 Traction and Rolling Stock

Within T&RS, the region is dominated in the new-build sector by Bombardier Transportation in Derby. They cover many varieties of passenger rail vehicles, from heavy rail to light rail and people movers. While addressing the particular requirements of the UK market, they are able to bring expertise from their other plants around the world. Not unexpectedly, they are very demanding of their suppliers and through these demands encourage innovation in the supply base, particularly in cost reduction. Generally, the supply chain works in a top down fashion.

With regards to refurbishment, there are several suppliers in this very competitive sector. Here, it is not unknown for companies with workshop capability to lead projects, buying in design and other higher level specialist support in order to deliver to the TOC end client. The rolling stock leasing companies (ROSCOs) also undertake refurbishment of their fleets, usually in conjunction with the TOCs. One ROSCO – Porterbrook – has its headquarters in Derby, and another – Angel Trains – has an office there. Refurbishment is a good target for innovation, from several perspectives as TOCs seek to improve the attractiveness of their service to their passengers.

5.2 Infrastructure

For infrastructure, the market place is dominated by Network Rail as a client. Network Rail operates under a licence and a large proportion of its operation (and hence procurement) is regulated by the Office of Rail Regulation. Network Rail derives its funding in five year programmes – called 'Control Periods' – and the requirements placed on it to make real reductions in cost are high. For example, in the last Control Period, which has just finished, NR had to make a 31% reduction in real terms in its signalling costs. (Other disciplines were not exempt from cost savings!). In general this saving has been made; the result of technical, commercial and process innovation right across the industry. In this next period, there are similar demands for reductions in cost. This type of pressure means that there is

large scope for innovation, yet here lies a real challenge as NR often seeks to apply only proven solutions – any closure of a significant part of the railway does not go un-noticed! Additionally, despite Network Rail's top level desire to encourage innovation, many of its mid-level engineers – who have a strong influence on what is applied to the network – are particularly keen to be heavily involved in systems development, reducing the scope for independent innovation. While such issues are improving, these factors can lead to a conservative attitude which has the effect of stifling innovation.

Of course, Transport for London / London Underground are also important customers and they too have distinct requirements. Procurement cycles can be quite extended, which can be both expensive for suppliers and lead to a reduction in innovation. Nevertheless, there are many challenges which have to be met, with exciting opportunities for innovative companies.

Helping the supply base to draw a balance between necessary conservatism from a safety perspective and innovation to improve products and service is an area where support would be appropriate.

On the supply side, the region has several large multi-nationals who work with their supply chain in a manner very similar to that of the Traction and Rolling Stock segment.

5.3 Specialists

Specialists cover very many aspects of the rail industry. In some cases they are truly expert in a small technical niche and will have work so long as that niche remains wanted. Here the business innovation challenge is to keep the offering within their niche area just diverse enough to maintain a level of work that keeps them in business. This is by no means unique to the rail industry, but for the good of the rail industry it is important to identify and support such companies. Primarily due to the fragmentation within the industry, the rail industry is not good at paying for the full cost of providing a service that is only used occasionally. Of course, here lies another opportunity to innovate: to find ways of doing without the service!

Other specialists offer their services across a range of industries, for example many of the training companies do not restrict themselves to rail. Here they are expert at training, rather than rail, and so the innovation opportunities are in the way rail information is translated. This can be helpful within the industry too – it helps to de-mystify the jargon.

In general, innovation in this segment is driven by normal business requirements to stay in business and by customer requirements. The challenge for the latter, again not unique to rail, is to be able to foresee the likely product needs in time to have an idea on the drawing board before it is formally called for. Here, these generally smaller companies do not benefit from the industry briefings given to the larger players and support in their gaining this information in good time would be invaluable.

It is recommended that iNet develop a communications strategy for the rail business in the East Midlands, essentially to clarify what messages need to be delivered and to whom in order to encourage innovation. As a minimum, this communication should include information on forthcoming procurement opportunities and market developments; eg key company changes and legislative requirements. (There are several legal companies in the region with registered rail interests who could help here.) Additionally, the information could be extended to cover a summary of industry research news such as that provided by RSSB.

Although this RSSB news is freely available on their website[4] and by direct email, it is likely that many companies, particularly smaller ones, are not aware of its availability. Perhaps the simplest mechanism for information dissemination now is email and a brief 'push' email with links to potential areas of interest held on a central server would avoid 'attention span' issues. Mechanisms with potentially longer lasting impact for information dissemination that could be considered are: extending inter-regional working along the lines of iFestival, including more rail in iFestival activities, structured workshops and trade press announcements / advertising features.

5.4 Pan-sector innovation

A consequence of the demanding environment, coupled with relatively long time scales for development and safety case in a relatively low volume market place is that companies are reluctant to develop whole systems or to participate in collaborative arrangements for development.

For the former, there can be major up front investment requirements, with no guarantee of an order even if the development is successful. Quite apart from the obvious cash flow issues for the innovating company, the industry loses opportunities to advance.

For the latter – collaborative agreements – one of the issues behind a reluctance to participate appears to relate to a fear of loss of Intellectual Property Rights. Perhaps this is due to the relative immaturity of the private industry, or perhaps it is due to the very competitive nature in some of the skill areas. Interestingly, the converse can also apply: namely, companies are prepared to collaborate, but they are unaware of the overall requirements and hence do not spot the opportunity to bring their particular skills to the party.

As a result of these issues, the industry may well be missing opportunities. It is suggested that there would be value in providing support for collaborative innovation and in particular for brokering development arrangements to meet wider industry goals. A route to this could be for iNet advisers, with their regional overview, to work with key rail buyers to gain knowledge of the wider opportunities. iNet should forge a strong understanding of the region's capability through working with industry groupings, such as DDRF. In general, such groupings can only work according to their members' wishes and hence do not work in a fully autonomous manner. Nevertheless, they do hold member (and sometimes open) workshops on various business themes. iNet could contact the attendees of these workshops to help them pursue their aspirations. Additionally, the supplier accreditation bodies hold a lot of detail about company capability and approvals, which is made available to buying organisations (usually for a fee). iNet could fund access to this information to provide further input for the innovation advisers. Legal support should also be facilitated, preferably by a firm that understands the industry well, not just IP law.

[4] See: http://www.rssb.co.uk/research/enews.asp

6.0 Conclusion

The rail industry is a complex mix of customers and suppliers, some regulated (such as Network Rail) and others unregulated. The industry in the East Midlands is diverse with all classifications of industry supplier being present, covering rolling stock owners, users, suppliers and maintainers through to major infrastructure and construction suppliers. The region has a wide range of sizes of company serving the industry, with multi-national, multi-discipline companies, including the UK's only current train builder being present, together with many smaller companies, some of which are systems or component suppliers and others provide essential services to the industry such as legal and training.

Data gathered to date indicates that a substantial number of East Midlands rail sector companies are relatively small, and many are not easily classified since they cover a range of niche offerings. The companies' precise position in the supply chain can vary depending on the nature of work undertaken. This type of company typically does not have sufficient resource to keep itself well informed regarding wider rail strategy and therefore they tend to innovate according to customer demand and only when an order appears to be close, or even only when won. This can lead to risk being imported into projects.

It is recommended, therefore, that iNet should develop a communications strategy for the rail sector in the East Midlands, with the objective to inform, stimulate and guide the innovative effort in the region. It needs to define:-

- What messages need to be delivered and to whom in order to encourage innovation
- The **scope** of the strategy in terms of
    - target companies and groups
    - the sources of information (e.g. a summary of industry research news such as that provided by RSSB)
    - the role of the iNet in relation to other bodies (DDRF, *emda*)
    - cross sector activity
    - key company changes and legislative requirements. (There are several legal companies in the region with registered rail interests who could help here.)
    - forthcoming procurement opportunities and market developments
- The **targets** for communication
    - the smaller and more specialist companies
    - key functions in the larger companies
    - key personnel
- The **methods** of communication to deliver maximum added value
    - A brief 'push' email with links to potential areas of interest held on a central server would avoid 'attention span' issues
    - Mechanisms with potentially longer lasting impact for information dissemination that should be considered are:
        - extending inter-regional working along the lines of iFestival; including more rail in iFestival activities
        - Inter-company "speed dating" (Innovation Fair)
        - structured workshops and trade press announcements / advertising features.

Additionally, an indication should be given to companies as to where the major buyers are looking for, and are prepared to accept, innovative ideas: experience indicates that the major buyers are not always open to any new idea and hence time can be wasted pursuing areas of little or no interest. Related to this, the iNet should consider providing support for collaborative innovation and in particular for brokering development arrangements to meet wider industry goals while playing to the strengths of the individual companies. It is important for iNet to bring this overview, because the constituent parties cannot reasonably obtain it

alone. A route to this could be for iNet advisers, with their regional overview, to work with key rail buyers to gain knowledge of the wider opportunities. iNet should forge a strong understanding of the region's capability through working with industry groupings, such as DDRF. Legal support should also be facilitated, preferably by a firm that understands the industry well, not just IP law.