Rail initiatives set to accelerate innovation

As part of a 2010 consultation on industry’s Rail Technical Strategy, the need to better support innovation emerged as one of the key issues.

Few of the wide-ranging ideas being considered, as part of the rail industry’s 30-year vision, can be implemented unless industry can overcome the difficulties of innovating across the sub-systems that make up the railway.

Actions agreed as part of the consultation included looking at designing and developing more effective mechanisms to translate ideas into demonstrable, de-risked, system-level, radical innovation projects, as well as recognising that effective testing and trialling was crucial to ensure risks are appropriately managed when new technology is introduced.

Two recent RSSB-managed, cross-industry initiatives designed to address these issues follow:

• RSSB has forged a long term strategic partnership with the Technology Strategy Board, a business-led government body which works to create economic growth by ensuring that the UK is a global leader in innovation. The partnership has begun with a joint investment of up to £4m in the Accelerating Innovation in Rail competition, to accelerate business innovation in the UK’s rail industry. Supported by the Technical Strategy Leadership Group, the development has been welcomed by the Minister of State for Transport, Theresa Villiers MP. More details can be found at: http://www.innovateuk.org/content/competition/accelerating-innovation-in-rail.ashx

For details of changes to Railway Group Standards view the Latest Updates page on the RGS Online website www.rgsonline.co.uk


For details of forthcoming dates for RSSB consultations on standards and associated documents, please see: http://www.consultation.rssb.co.uk/pdf/Forthcomingconsultations.pdf

Front page photo: Courtesy of Network Rail
RSSB has launched a new web portal to provide an efficient way for historic, existing and developing knowledge to be shared throughout the rail industry.

Industry’s challenge of simultaneously growing the rail business and reducing costs is supported by access to research and innovation, with joined-up efforts and cross-industry and cross-country cooperation to get the best value. In support of this, RSSB has developed a password-protected web portal called SPARK (Sharing Portal for Access to Rail Knowledge) – http://spark.rssb.co.uk

SPARK has been developed primarily as a benefit to RSSB members and other organisations which have an agreement to exchange knowledge with RSSB. All researchers involved with Rail Research UK Association will have access. The portal is under development, and so its scale, coverage and depth will reflect the gradual increase in access to users over the coming months. Like any knowledge-sharing initiative of this scale, SPARK will rely on the quantity and quality of information individual users put into it and RSSB encourages its members to think about using SPARK to share information across its membership.

To ensure that we provide a real value adding service, SPARK is being unveiled in a carefully controlled way. This means in this initial phase, SPARK is being made available to the following:

- Employees of members of RSSB
- Registered researchers of RRUK-A
- Members of all Standards Committees, all System Interface Committees and the following key cross industry governance groups:
  - Safety Policy Group
  - Operations Focus Group
  - Community Safety Steering Group

Designed to enable information to be found easily and quickly, at the heart of SPARK is a library where all users have the opportunity to contribute their knowledge and find something new. SPARK will effectively become an on-line network of professionals working together to reduce duplication, speed up innovation and maximise value.

There has already been some considerable information shared on SPARK including much of the research generated by the former BR Research programme (up to 1996), and the cross-industry research generated by the programme managed by RSSB since 2003.

The incorporation of increasing numbers of records of knowledge into SPARK will be the key to it becoming more popular throughout the industry. Ultimately, SPARK could be the point of entry to a wealth of information about research projects, strategies and initiatives, centres of expertise, testing facilities, data sources, publications and expertise of the community of users.

RSSB is in the process of approaching key contacts within the industry to arrange access to SPARK so the momentum can develop – both in terms of the capacity to share information, and to access it.

For more information, contact enquirydesk@rssb.co.uk, or telephone 020 3142 5400.
Cross-industry standards for the GB mainline railway: Advice to Infrastructure UK

The Government’s National Infrastructure Plan 2010 sets out the challenges and a work programme of deliverables to improve the approach to infrastructure planning, prioritisation and delivery in the UK, with the aim of achieving greater value for money. Infrastructure UK, a part of HM Treasury, is leading this programme across Government and in March 2010 published the Infrastructure Cost Review Implementation Plan. One of the actions in the plan is ‘to identify and reduce duplication, redundancy and inconsistency of standards, based on a cost benefit analysis of existing standards’.

RSSB met Infrastructure UK in October, following meetings they had held with Network Rail, LUL, and others. It became clear that in those meetings they have reached a positive view of standards in the rail sector, which was confirmed through their discussions with RSSB. At the request of Infrastructure UK, RSSB produced a paper which describes how the rail industry tackles the issues that they have identified: ‘Cross-industry standards for the mainline railway in Great Britain: Advice to Infrastructure UK’.

Some of the key points of note include:

• GB mainline railway is making substantial progress in the areas identified by Infrastructure UK.

• Harmonisation with Europe is a major thrust of the GB industry’s work on standards, and GB is heavily involved in Technical Specifications for Interoperability (TSIs) and Euronorms. GB chairs the main Railway Euronorm committee CEN TC256. GB also chairs nine other groups under TC256 and has members on more than 30 further groups.

• Advice from GB is well respected in the Commission and the ERA.

• RSSB’s approach to managing multi-stakeholder cross-industry programmes was identified as good practice in a recent report for the European Commission which assessed the effectiveness of the ERA.

Strategic Direction of TSI’s

The railway interoperability Directive (2008/57/EC) sets out the essential requirements to be met for interoperability, which cover safety, reliability and availability, health, environmental protection and technical compatibility along with others specific to certain sub-systems. The Directive also requires the production of mandatory Technical Specifications for Interoperability (TSIs) which define the technical standards that have to be applied. These are prepared and updated by the European Rail Agency (ERA) before being published in the Official Journal of the European Union (OJEU) following a European Commission decision.

The published TSIs apply to lines that make up the trans-European high speed or conventional rail networks. Implementation of ERA mandate C(2010)2576 of 29th April 2010 will extend the geographical application of TSIs to the whole European railway network, with the exception of any railway operations that the member state specifically excludes (for example, heritage lines and metro systems).

The Industry Standards Co-ordination Committee (ISCC) is publishing a series of papers that will set out the strategic direction for GB involvement in the development of each TSI and what GB aims to achieve. These papers will add value by helping GB representatives in Europe take decisions from an informed position when evaluating change proposals received from elsewhere and will provide a basis for national work in the same areas.

The latest strategic direction paper to be published covers the application of ERA mandate C(2010)2576 to the control, command and signalling (CCS) TSI. The detail was prepared by RSSB on behalf of the engineering and operations standards review group (EOSRG), which performs the GB mirroring function for ERA-led work in the CCS technical area, and the strategic direction has been approved by CCS standards committee and ISCC.

They can be downloaded via the ISCC document list which is available at http://www.rssb.co.uk/RGS/Pages/INDUSTRYSTANDARDCSO-ORDINATIONCOMMITTEE.aspx

For more information on any of RSSB’s products and services please contact the RSSB Enquiry Desk on 020 3142 5400 or EnquiryDesk@rssb.co.uk

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Revised Modules TW1 and TW3 Driving freight trains in winter conditions

During the harsh winter of 2010/11, two serious incidents to freight trains occurred in Great Britain of loss of effectiveness of the train braking systems, one of which resulted in the derailment of the train when unable to stop on a falling gradient. Icing to the brake gear was a factor in both cases.

As a result, existing rules and working practices concerning the testing and operation of the train brake during severe conditions were scrutinised by a working party set up by the Rail Freight Operators’ Group (RFOG). This revealed certain anomalies between rules for passenger and freight trains and between disc-braked trains and trains with composition brake blocks.

As a result of this work RFOG published an Approved Code of Practice on operation of trains in severe conditions and RSSB will amend the rules for working trains during snow conditions from December 2011. The change will move from the former standardised and time-bound procedures for all types of trains, to placing emphasis on the driver carrying out running brake tests as frequently as is necessary to check that the brake is operating effectively and also to carry out any other arrangements required by the operating company. This allows specific instructions to be targeted at the differing risks posed by different train characteristics, particularly the scenario of climbing a long rising gradient which is followed by a steep falling gradient.

The revised Rule Book Modules are available in print from Willsons Printers (01636 702334) or online at www.rgsonline.co.uk.

Staff Suitability and Fitness

The Guidance Note GO/GN3655 ‘Guidance on Medical Fitness for Railway Safety Critical Workers’ is a new document. It is intended for all staff not directly involved in train movement and is aligned with the Railway Group Standard GO/RT3451 ‘Train Movement- Staff Suitability and Fitness Requirements’ and with Rail Industry Approved Code of Practice GO/RC3561 ‘Recommendations for Train Movement – Staff Suitability and Fitness Requirements’. The guidance includes:

- General Health including medicines and their effects on safety, conditions such as diabetes and sleep apnoea

At the same time, GO/RT3451 and GO/RC3561 have themselves been reviewed and a number of changes have been made which make it easier to cross-reference requirements and provide greater clarity in response to a number of stakeholder suggestions.

The Guidance Note GE/GN8511 ‘Guidance for Railway Undertakings on Track Safety’ has also been reviewed and found to contain references to issues that are outside the scope of Railway Group Standards: this Guidance Note will be withdrawn.

The changes have been approved by the Traffic Operations and Management Standards Committee and come into force in December 2011. For more details see www.rgsonline.co.uk

Vehicle Track System Interface Committee (V/T SIC) seminar

The annual Vehicle Track System Interface Committee (V/T SIC) seminar was held on 26 October 2011. The event was opened and chaired by the Chairman of V/T SIC, Andy Doherty. The V/T SIC uses this forum to inform industry of the developments that have been made during the year and the changes that are likely to occur in the coming year. Representatives attended from all sectors of the industry, with an interest in wheel/rail interface issues.

The key topics discussed were:

- Vehicle Track Interaction Strategic Model (VTISM). An explanation of the work undertaken to improve the tool’s effectiveness was given noting that it could now be used on other railhead conditions such as low rail damage and plastic flow. The development of VTISM stage 2 - Wheel Damage and Management Model. This is a new tool that evaluates wheelset performance, maintenance regimes and costs. It can either be used as a stand-alone tool, to assess changes on wheelset life and costs, or within VTISM, to evaluate system costs. The model will predict wheelset wear and damage that could be expected during the vehicle life, including output of profile wear, RCF prediction and wheelset costs.

- Two case studies of projects undertaken by the Permanent Project Group (PPG) were described. The first considered ride quality assessment using on board data capture to warn of problem locations. The second reviewed work done to optimise track design. This involved investigating...
the propensity to initiate RCF in curves. Outputs are being used to recommend changes to guidance for track design.

- Improvements in track maintenance
  - Introduction of road/rail mobile flash butt welders.
  - The delivery of a new ultrasonic rail testing train in the New Year and improvements in the performance.
  - Wear resistance reports from the premium rail trial at Hett.
- Update from the Adhesion Research Group whose aim is to understand the science behind the current adhesion problems and prioritise development of new ideas and sponsor research projects in this area.
- Update from the Wheelset Management Group including the development of a model to evaluate axle maintenance and inspection regimes.
- Railway Noise Management - Examples of work on noise mapping linking it to legislation. Impact of noise from the proposed HS2 and a demonstration of comparative noise levels with existing suburban trains.
- Heavy haul freight applications of Track-Ex in the USA. The test facility at Pueblo is providing validation data from the FAST test track, where a range of track components are being evaluated in accelerated loading environment including; rail material, ballast, sleepers (ties) and bridge structures.

The presentations can be found at [http://www.rssb.co.uk/SiteCollectionDocuments/pdf/vtsic_presentations/2011/Agenda-VTSIC%202011.pdf](http://www.rssb.co.uk/SiteCollectionDocuments/pdf/vtsic_presentations/2011/Agenda-VTSIC%202011.pdf)

### Measuring Safety Performance

**Have you got the measure of your organisation?**

Are the risks in your organisation fully understood, and do the control arrangements deliver efficient and effective control of risk on a sustained basis?

The Baker Report, produced in response to the Texas City explosion in the United States, criticised BP for inferring that overall safety performance was good as a result of only looking at personal safety issues, whereas safety incidents linked to a series of processes within the plant had been on the rise. Relying on a limited range of Safety Performance Indicators (SPIs) is not likely to be helpful to those who need a more complete picture to make effective decisions. Focusing attention on safety management activities and precursors to accidents as well can enable actions to be taken before accidents occur. For this reason a greater focus on more leading, proactive activity indicators is required.

![Image of Measuring Safety Performance](image)

**Indicators for Britain’s railways is a new guidance document produced by the industry through RSSB, for use by individual companies.** It is the culmination of a two year research project which has investigated and drawn together the best practice that is available from other industries, considering all aspects of SPIs. The guidance has also been tested in trials with two train operating companies.

The document comes in two parts: the first provides an overview and background to Safety Performance Indicators (SPIs) and is relevant to managers, supervisors and directors. The second part provides a step-by-step guidance on how to develop and manage SPIs.
The detailed guidance describes how to run an SPI programme and involves a seven step process. Each step of the process is described in detail along with supporting information.
By implementing an SPI programme the following benefits can be realised:
• Reduced risk
• Strengthened safety culture
• Continuous improvement
• Learning from others
• Enhanced efficiency
Copies of the guidance can be downloaded from the RSSB website.

RSSB will be facilitating regional industry briefings starting in December 2011, if you are interested in attending a briefing or want to find out more, contact Jay.Heavisides@rssb.co.uk or Kevin.Thompson@rssb.co.uk

Rail research body - RRUKA - officially launched, and welcomed by Minister
Both the railways and universities are looking to exploit the mutual benefits of even closer cooperation.

The Rail Research UK Association (RRUK-A), which was started up a year ago, was officially launched at a high-profile launch event with rail industry personnel and over 20 universities on 8 November at Westminster Central Hall, London. This included a cross-section of chief executives, operations and engineering heads from across the industry in RSSB, LUL, HS2, the Technology Strategy Board, Engineering and Physical Sciences Research Council and the Department for Transport.
The launch seals the joining of forces between UK universities and the rail industry in a virtual research body, to be a bridge between the rail industry’s research needs and potential providers of research in the university sector.
The Minister of State for Transport, Theresa Villiers MP, welcomed the development in the keynote address, alongside RRUK-A industry co-chairs, Anson Jack, of RSSB and Professor Simon Iwnicki, of Manchester Metropolitan University. Network Rail’s Andy Doherty chaired a panel session with four university researchers and two industry representatives, talking about research that has been done to date and the benefits that it has brought. The final presentation was an inspirational insight into the potential use of nanotechnology in the rail sector by Professor Martyn Pemble of the Tyndall National Institute.
The industry believes that there is a wealth of knowledge, ideas and creativity at universities, which could be used to meet the needs of the railway in the UK, and that there is the opportunity to build on existing relationships and to provide further focus to realise the full potential of all of this capability.
RRUKA opened for membership in 2010, and has over 25 members across the UK’s leading academics in railway science and engineering, with an enviable cache of research capabilities.

One of the key aims of RRUK-A is to remove the barriers between academia and the railway industry through better focusing research effort towards solutions for real-world problems and also through a better understanding within industry of what university research can offer and how it can be supported.

RRUK-A is run with oversight from an elected executive committee of industry and university representatives, and is funded by RSSB and Network Rail.

For more details about RRUK-A membership, contact the secretariat: Tony Leyland, Southampton University secretariat@rruka.org.uk and for matters of rail industry engagement: Tanya McCallum, RSSB rruka@rssb.co.uk

Paul Thomas is awarded a Fellowship
Paul Thomas RSSB’s Chairman, has been awarded Fellowship of the City and Guilds of London Institute for distinction in the field of Engineering, and in particular, Nuclear Engineering.
Rear Admiral Thomas CB has a long and distinguished career in the Royal Navy looking after nuclear propulsion systems but especially focussed on addressing the risks and improving efficiency and safety. Since leaving the Navy, he has been involved with the civil and defence nuclear industries with a particular interest in safety culture and performance improvement.

His work at the Royal Academy of Engineering, contributing to safety and to the development of others, has been a continuous personal achievement.

Since joining the RSSB Board in 2005, he has been able to combine his lifelong interest in railways and share his extensive knowledge.
Eversholt Rail has become the second of the three major rolling stock companies (ROSCOs) to achieve RISAS (Railway Industry Supplier Approval Scheme) certification.

Passengers and freight customers using the 21st century railway rely on well-maintained, reliable, safe, rolling stock. For the railway system to work safely and efficiently, companies need to be confident that their suppliers can meet their requirements. RISAS is the cross-industry scheme which provides a way of sharing assurance based on a once-and-for-all rigorous assessment of suppliers, initially for the assurance of critical products and services for rolling stock maintenance.

Eversholt’s achievement helps to cement the ongoing commitment throughout the rail industry supply chain to embed RISAS as the ‘standard’ in this area.

The RISAS certificate means that Eversholt, which owns a large portfolio of 23 separate fleets, 3,495 passenger vehicles, 31 passenger locomotives, 83 freight locomotives and 981 freight wagons, has proven its capabilities at the highest level, in buying, managing and overseeing maintenance of the most critical aspects of rolling stock crucial to safety, reliability and performance.

This means that customers like passenger and freight train operating companies can rely on a high level of assurance based on one universally accepted, rigorous assessment in RISAS, avoiding the duplication and unnecessary cost of multiple generic audits.

The assessment was undertaken by SGS CORREL Rail, as a Rail Industry Supplier Approval Body (RISAB), accredited by RSSB. Such assessments pose ambitious challenges to candidates like Eversholt, to be able to demonstrate excellence across their entire spectrum of activities from board room to shop floor.

This contributes to ‘duty holders’ safety management systems (SMS) in controlling risk, competence management and organisational learning as well as meeting the requirements of UK and EU legislation. Unlike a generic questionnaire or tick-sheet, the RISAS assessment gets under the skin of the company to obtain hard evidence that its performance meets the railway’s requirements.

RSSB provides the rail industry with the framework for RISAS to work, as both the scheme manager and the accreditation agency, on behalf of the rail industry, represented by the RISAS Board.

For more information, contact Brian Evans, head of supplier assurance, brian.evans@rssb.co.uk.