AGENDA ITEM: 03

MEETING: RSSB Board Meeting
DATE: 07 July 2011
SUBJECT: Research and Development Strategy
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1. Purpose of paper

To update directors on strategic issues facing the research programme, in the context of the Rail Value for Money (RVfM) review. To appraise the Board of a single strategically important piece of research which could have great significance for the industry going forward and illustrates a number of current challenges.

2. Key points

- **Innovation**: RSSB is working closely with and in support of the Technical Strategy Leadership Group (TSLG) to provide support and services to facilitate and speed up the introduction of innovation. There is more to do.
- **Sharing**: RSSB continues to build capability, approaches and partnerships in support of accessing and sharing knowledge. DfT is challenging elements of the current policy. Strategic partnerships will be further developed.
- **Growing capability and broadening access**: Access to research has been broadened under the new governance arrangements (May Board). RSSB is now looking to bring together and expand decision support services to industry on a full business risk agenda. This requires more ready access to industry data on costs, revenues and future plans.
- **AC Electrification**: One research project that is completing appears to show a prima facie case to consider changing the electrification on the three Southern routes, from Third Rail DC to Overhead line AC. This illustrates many of the challenges in making significant change across the railway system.

3. Context

3.1 This paper is set in the context of the RVfM review. The review highlighted a number of issues about innovation and made some recommendations which are likely to impact on some or all of the existing research programme - accordingly, some of the initiatives set out below are subject to further change. However, they have been developed to be taken forward by the industry in whatever shape and form it finds itself in.

4. Innovation

4.1 It is widely recognised that innovation in the way the railway is managed, operated and engineered are going to be key components of unlocking service enhancement and cost reduction. RSSB works within and in support of TSLG to develop approaches that will facilitate the introduction of innovation across the industry and by individual businesses.
4.2 The stated intention of RSSB is to work collaboratively with Network Rail and other key partners across the industry, its supply chain, academia and more widely, to build on current activities and put in place the necessary functions to facilitate and help speed up the introduction of innovation. This will deliver a pan-industry rail innovation and growth capability, based around the current research and innovation capabilities of Network Rail and RSSB. If the industry decides to create a Rail Systems Agency then we would see this activity forming part of the agency.

4.3 Activities already underway include:
- Support to TSLG in developing the proposition for a Transport Systems and Integration Technology and Innovation Centre - we have bid for additional funding from the DfT to support this
- Network Rail’s approach to the introduction of innovation within its engineering and operations. This is designed to make it easier to get bright ideas and innovations that will benefit the industry from the lower technology readiness levels to development and implementation phases
- An MoU with the Technology Strategy Board (TSB) that paves the way for jointly funding a significant competition - with TSB ready to contribute £2 million to this competition - which will be seeking to take innovative solutions through product development and into implementation.

4.4 RSSB is setting out to provide a capability that can seek out innovation in the rail industry, its supply chain, academia and from other sectors (worldwide) and identify potential routes to market through the wider application of its current evaluation, analysis and knowledge services. This will include clarifying the business requirements for innovation, making the business case for specific innovations, supporting innovation with specific funding and making the case for more long term funding for innovation.

4.5 To do this will mean:
- Cultivating, identifying and exploiting innovation in UK universities - building RRUK-A into a substantial bridge between academia and industry, alongside Network Rail’s existing network of university centres.
- Securing funding and investment from a variety of sources in order to support innovation in both duty holder organisations and in the supply chain.
- More directly supporting the implementation of the outputs of research
- Directing resources at the most transformative and value-adding innovation
- Creating a clear process and pathway for the introduction of innovation

4.6 It will need to be underpinned by good quality business data and information, in much the same way that RSSB’s risk capability is underpinned by good quality and comprehensive safety data and information. Additional resources and expertise will also be required to deliver this capability, which it is hoped can come from bringing together people from across the industry.

4.7 The Board is asked to ENDORSE this general direction

5. Sharing

5.1 RSSB proactively shares and provides access to a wealth of information, including on safety performance, community safety, standards and research. The activities and outputs of the research programme are communicated and available in a number of different ways, for example through the website,
the quarterly research catalogue, research briefs, the R&D e-newsletter and
guides to the different topic areas. RSSB has also developed its capability and
capacity for better understanding wider research activity, through for example
undertaking knowledge searches. It has built up a number of relationships with
different organisations and sectors - including with Network Rail, RTRI in Japan,
the FRA in the US and the Rail CRC in Australia; through its involvement as the
GB representative in the core group that delivers the World Congress of Railway
Research (WCRR); as a member of the UIC’s International Rail Research Board
(IIRR); by establishing Rail Research UK - Association (RRUK-A), and the
strategic partnership with the Transport Research Laboratory (TRL) - in support
of this. Easy access to this body of knowledge will be delivered to RSSB
members and other key stakeholders and knowledge partners through SPARK
(Sharing Portal for Access to Rail Knowledge), which will soon go live.

5.2 There is a further initiative begun by TS LG, which RSSB is supporting, to share
understanding as to what is going on in the research field. Following an initial
industry workshop, there is support and momentum behind establishing a regular
forum that can focus on key opportunities for coordination and cooperation on
research and innovation. A rail research coordination forum could be expected
to provide a focus for areas like:

- Cooperating to maximise the value GB rail can get from European-funded
  research, primarily through the EC’s Framework Programme
- aligning research strategies, and identifying gaps in research and innovation
- promoting opportunities for the supplier community, including SMEs

5.3 One particular aspect of sharing knowledge that needs to be brought to the
attention of the Board is with regard to the previously agreed policy that RSSB
should move to a position where the reports and tools produced through the
industry research programme are secured and accessible free of charge to
members of RSSB and key stakeholders (RIA, DfT, ORR, relevant Universities)
only. This policy is being challenged by the principal funder of the programme
and it is therefore appropriate to review our approach.

5.4 The basis for the challenge from DfT is that as the rail industry research is largely
funded from the public purse, the results of the research should be made freely
available. However, as previously agreed the grant for research is made to
RSSB to support the research it does on industry’s behalf. It is not for specific
research projects; these are determined through the established governance set
by the RSSB Board. The current policy direction is the same for all RSSB’s IPR,
regardless of the funding source, though the Board confirmed that any income
from research products would be reinvested in research and development.

5.5 The intention has been to implement through the knowledge portal, SPARK,
which will be accessible to all members of RSSB and to key stakeholders. This
policy underpins RSSB’s efforts to leverage the knowledge and IP created for the
benefit of the rail industry so as to gain greater access to other research and
provide additional income to further invest in research and innovation.

5.6 The Board is asked to REVIEW the policy on the availability of research
reports and tools derived from research activity and CONFIRM its
continuing support.
6. **Growing capability**

6.1 During 2010/11, RSSB created and built up an industry resource in the area of knowledge management, together with research evaluation and analysis. One of its key focuses is on ensuring that research that is undertaken within the programme is new and value-adding in terms of the knowledge it creates. Potential investments in research are evaluated for the business benefits that are likely to accrue to industry set against the likely costs to introduce change.

6.2 RSSB is beginning to consider how it can combine this capability with the expertise it possesses in the area of risk analysis and its technical competence, to enhance support to the industry in addressing broader business risks.

6.3 However, an essential element of this is being able to base analysis on good quality and comprehensive data, as is the case for safety risk modelling.

6.4 A key challenge therefore is for the industry to collectively agree on the wider sources of data and information that would be needed for RSSB or anyone else to provide high quality business risk analysis in support of industry decision making.

7. **Research project with strategically significant results**

7.1 The Vehicle Train Energy SIC is exploring a number of areas where there is the potential to ‘change the game’ to reduce energy consumption and to reduce the cost of delivering energy.

7.2 One such piece of research looked at the technical, engineering, safety and performance issues associated with the electrification systems on the three southern routes. It has identified what may be described as a ‘once in a generation’ opportunity to consider changing from DC Third rail to AC Overhead Line on this critical part of the network.

7.3 A short presentation will be made to the board to summarise the issues, business case and next steps. A more extensive version was presented to the TSLG in June and has been identified as a project that should be further evaluated with a view to changing the planning and engineering asset policies for the future, such that short term plans are aligned with this direction and do not perpetuate existing technologies and equipment that may soon become redundant.

7.4 This item is being shared to raise awareness and illustrate a number of generic points relating to significant changes in the railway system, and there is no action for the Board to consider.

8. **Recommendations**

8.1 Directors are asked to:

- **ENDORSE** the general direction for innovation support described in section 4
- **CONFIRM** its support for the policy concerning the availability of research reports and tools
- **NOTE** the outcomes of the research project (T950) on conversion from DC third rail to AC overhead line electrification.