



The Royal Academy
of Engineering

Shaping the 30 year Rail Technical Strategy

A response to the Technical Strategy Advisory Group

December 2010

Introduction

The Royal Academy of Engineering welcomes the consultation on *Shaping the 30 year rail technical strategy*. Much of what is proposed in the consultation document is robust and makes good sense and the Academy is pleased to see that the Technical Strategy Advisory Group (TSAG) has recognised that the railway system in the UK needs a systems approach and strategic planning to realise its full potential.

In June 2010, Anna Walker CB, Chair of the Office for Rail Regulation (ORR), asked a roundtable of Fellows of The Royal Academy of Engineering for advice on three questions relevant to this consultation:

1. Where is engineering innovation likely to occur in the UK railway sector?
2. How can such innovation help to deliver better service and value for money?
3. What, if anything, will inhibit achieving desired improvements?

Held under the Chatham House non-attribution rule, the meeting outlined the rail network's current strengths, weaknesses, threats to the network environment and opportunities to improve.

One of the key conclusions of our Fellows was that significant amounts of money were being spent on projects such as HS2, Crossrail and Thameslink but the majority of traffic on the system, including the bulk of freight, relied on infrastructure which in size and capability was still constrained by its original build standards from the 19th Century Victorian era. Little innovation appears to have been focussed on overcoming such inbuilt constraints, especially structure gauge and station size. The cost reduction opportunities of compliance with universal European standards have therefore been missed. There also was a strong emphasis on the need to address safety and risk culture within the industry.

The meeting identified many current strengths within the rail network, those being a strong, highly developed operations culture; the pervasiveness of existing infrastructure; a strong, if over-prescriptive, standards regime and the fact that innovation is happening, even though mostly undertaken by small supply companies.

Ultimately, the view was that the ORR should focus less on cost and more on value, both to farepayer and taxpayer, seek out best practice (Japan and China were cited as countries with best practice worthy of examination in addition to Switzerland and the Netherlands); and continue a more public debate on safety and fare issues.

The Academy is willing to form another roundtable discussion similar to the one held with the ORR. Should TSAG wish to participate in such a discussion please contact Katherine MacGregor, Policy Advisor on 0207 766 0623 or Katherine.macgregor@raeng.org.uk.

Consultation questions

Question 1: Have we understood the context – i.e. are we dealing with the right business issues and tackling the right problems?

Yes, to a limited extent.

The Academy views the strategy as an important document that effectively recognises and addresses the need for the industry to be more pro-active in developing industry-level strategies to meet the objectives set by Government, including those relating to capacity, safety, cost-reduction, standardisation, technology development and implementation. There are several factors that need to be highlighted: cost, integration of services, passenger experience, technology and reliability.

Cost

The costs of any intervention on the rail system have risen disproportionately over the last 20 years. For example, in the 1970s a new station could be built for around £500,000; now, however, it is now difficult to build one for under £10 million which makes this a difficult approach to improving rail access. Various industry commentators have cited other examples suggesting an increase in costs of a factor between four and five in real terms over this period. It was noted that the cost of track renewal appears to be between three and four times the unit cost reported in the Netherlands, Germany or Switzerland.

Integration of services and passenger experience

The rail industry operates in a fragmented business model and any system-wide interventions need to overcome the inefficiency caused by rail providers and operators failing to integrate their services. This can be seen through examples of failure to integrate and simplify fare structures, to provide effective connecting services and to provide consistent information, leading to management and operational weaknesses. Technological solutions are available to some extent, but will only be effective if the management structure of the whole adopts that technology consistently. Our Fellows have suggested that it would be worthwhile to focus on institutional and managerial improvements with a view to better integration.

Because passenger experience, and hence custom, are influenced by these factors, they are particularly affected when things go wrong. Unreliability in the system and the need for remedial measures when things go wrong are critical challenges, yet they do not seem to be acknowledged as triggers for technological development and innovative solutions.

Technology

A key objective for the railway appears to be greater penetration of the long-distance inter-city market, yet High Speed Rail is excluded from this exercise. At the other end of the spectrum, more effective provision of local services by innovations such as tram-trains should be addressed.

Reliability

The reliability issue is important but reliability is achieved by attention to detail. For example, we completely support emphasis on remote condition monitoring, but it must be recognised that its success depends entirely on intelligent analysis and use of the data collected.

Question 2: Have we got the right ‘key interventions’? i.e. are there any other whole system issues that should be given this level of priority, and if so, why?

The “key interventions” identified are the right ones and the priorities allocated are appropriate.

Question 3: Do you agree that industry needs to change to become better at enabling innovation? And are the steps described in this document the way to achieve this? If not, what else should be done?

The Academy agrees with the key interventions described in the consultation, particularly with establishing a top-level ‘sponsor’ function to provide business ‘pull’ rather than technology ‘push’ for innovation and to integrate with industry planning.

The rail industry needs to change to become better at enabling innovation and support the steps described in this document. The key to making innovation happen is to overcome the risk aversion that permeates all parts of the rail industry. Many in the industry view reliance on standards as being as likely to inhibit innovation as it is to enable it. This can be overcome with strong rail ‘technology leadership’ as described in the consultation.

Question 4: What significant technology issues would you like to draw attention to – particularly any not mentioned in this document?

The railway has a tendency to invest large sums in marginal improvements, often driven by inquiry recommendations and fear of prosecutions. There is a need, in some cases, to challenge current safety standards for normal service operations, particularly where the cost is disproportionate to the risk and/or new technology is being applied. It needs to be recognised that there are different public perceptions and tolerance of safety on the railways as opposed to say, the road. However, it is easy to imagine the case where many millions of pounds are spent to reduce or avoid the risks associated with a particular level crossing, but if the accident black-spots on the road leading to and from it are not addressed, the safety benefit of that spend could be legitimately questioned.

Question 5: How would you like to engage further in this process?

Many of the Academy’s Fellows are experts in this area and would be willing to meet with TSAG to discuss the 30 year Rail Technical Strategy. Should you require more information please contact Katherine MacGregor, Policy Advisor at the Academy on 0207 766 0623 or Katherine.macgregor@raeng.org.uk.

Question 6: Is there any other matter, not covered in this document, which you would like TSAG to consider?

The Academy views this consultation as substantial with any matters to be raised covered in the questions above.

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