



21 March 2017

Big data and smarter tech set to make railways even safer

State-of-the-art risk monitoring technology could soon be used by safety managers to pinpoint faster, targeted improvements to safety and reliability on Britain's railways at the push of a button, according to the industry's independent safety body RSSB.

Technology already applied in the oil and nuclear sectors could be applied in rail to provide tomorrow's safety manager with a kind of real-time 'intelligence console' about incidents and rapid tactical analysis, automating parts of the existing paper trail.

According to RSSB, faults in the infrastructure and rolling stock could be detected and their severity analysed, understood and acted upon. This would allow efficient, nimble-footed board room decisions, based on clear analysis of the balance between cost, performance and safety, avoiding costly, excessive, reactive responses but also quickly halting the breakdown in defences before serious consequences occur.

RSSB believes such systems could significantly reduce and localise the decision-making time about where to target investment and interventions. In some cases this could cut the lead time from years to days.

The first step of rail's new data strategy has begun with a new Safety Management Intelligence System now up and running and being actively used by Network Rail and train operating companies. The new system will ultimately allow the rail industry to get richer intelligence more quickly, and so intervene to prevent incidents occurring, whether that's removing vegetation to improve visibility, changing procedures, repairing a fence, briefing staff locally, investing in new technology or training, or indeed any kind of intervention. It will also become accessible via a mobile app allowing an often remote workforce to log details at the scene of an event, capturing photos and GPS tagging with phones and tablets.

Accidents are rarely down to a single cause, but take place when a wide range of conditions conspire to expose people to risk, as happened in historic accidents at Ladbroke Grove (1999), Hatfield (2000), and Potters Bar (2002). Conditions such as simple infrastructure and rolling stock faults also have an impact on reliability of rail services causing delays and disruption to



passengers. Smarter tech can mine data to help rail make more sense of the myriad of minor occurrences before they add up to tragic consequences.

RSSB says that with no train accident fatalities in 10 years, Britain's railways are already highly regarded internationally for their approach to data, analysis and evidence-based decision making, but now need to take advantage of more data and smarter systems if they're to build on their excellent track record as one of the safest in Europe, retain high productivity and reliability, and continue to prevent train accidents, and improve safety of passengers and the workforce across the system.

Chair of RSSB's cross-industry Data and Risk Strategy Group, Brian Tomlinson said:

"It's easy to forget just how complex and vast the rail system is, and yet it has to function as a system, with a wide variety of assets and conditions. It's also a cost-constrained environment, meaning organisations need pragmatic, prioritised approaches to analysing risk, as well as detailed local data and knowledge."

"In Britain we're envied for our progressive safety culture and ability to scrutinise the data to target investment. But we still rely too much on disparate legacy systems and approaches, leading to duplication and inconsistencies. To take the next step, rail companies now want to work together to draw on RSSB's capabilities to help it to take data and risk to the next level, to harness the best available technology and enrich and enhance greater collaboration and intelligence sharing. In essence this is about ensuring we get the risk intelligence that a world class railway needs, efficiently provided to the right people in the right format and at the right time."

"It means potentially the time window from being alerted to incidents and close calls, and the ultimate remedial decision or investment to manage the risk, is reduced extensively. At the same time the industry is taking advantage of more cost-effective IT, with reduced costs in annual support, hosting and on-going development. The intelligence we gain will benefit the safety of everyone on the railway, passengers, workforce and the wider public such as level crossing users."

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Notes to Editors:

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1. The vision of the safety manager of the future has been illustrated with a storyboard, and is available in high resolution for use in publication – contact pressoffice@rssb.co.uk
2. RSSB has published 'The Rail Industry's Data and Risk Strategy', which is available in full on its website at: <https://www.rssb.co.uk/Library/risk-analysis-and-safety-reporting/2017-03-strategy-data-and-risk.pdf>
3. RSSB has also published a summary of the strategy which can be found at: <https://www.rssb.co.uk/Library/risk-analysis-and-safety-reporting/2017-03-strategy-data-and-risk-summary.pdf>
4. The strategy is steered by the cross-industry Data and Risk Strategy Group, managed by RSSB, and comprises representation from Network Rail, train and freight operating companies, and the Office of Rail and Road.
5. The strategy will support industry's broader objectives in making step changes on safety and technology, reflected in both its health and safety strategy and Rail Technical Strategy.

About RSSB

Through research, analysis, and insight RSSB supports our members and stakeholders to deliver a safer, more efficient and sustainable rail system.

Our vision is to be a centre of excellence, valued by its members and stakeholders as an essential contributor to their success.

Our independent evidence based approach is built on strong technical capability, and the enabling of collaborative industry engagement for the benefit of the whole rail system

Our strategic priorities are to support:

- Healthy and safe collaboration and inform industry decisions to reduce risk and harm
- Enhanced performance and efficiency updating standards, modernising systems, informing and enabling innovation
- The application of sustainability principles by collating and sharing tools and best practice.

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