AGENDA ITEM:

MEETING: RSSB Board Meeting
DATE: 06 November 2014
SUBJECT: The evolution of the Safety Management Information System (SMIS)
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1. Purpose of the paper

1.1 The purpose of this paper is to:

- Outline work already underway to redevelop SMIS to meet industry’s immediate needs.
- Present the strategic vision for the evolution of the SMIS system to better meet future industry need. Present initial estimates of the cost of the full project, and outline how the business case will be fully developed for approval at the next board meeting in January.

2. Strategic Vision

2.1 Over recent years enterprise safety management system software packages have been developed which provide a comprehensive toolset for managing the safety of an organisation and its operations. These systems are intended to support a change in approach from reactive management of safety to a more proactive, risk-based approach.

2.2 The packages broadly cover elements such as:

- Occurrence reporting
- Managing corrective / preventive actions
- Audit management and document management
- Hazard identification and risk management
- Performance measurement

2.3 These systems allow safety incidents to be captured in real time via mobile devices and processed seamlessly, so that the right incidents are documented and investigated by the right people at the right time. Events can be geographically tagged, stored with pictures and documents, and automatically alerted to those who need to know, when they need to know. This learning can be efficiently stored, analysed and presented to the right
people in the business through integrated analytical tools. Such systems can also be designed such that effective safety management activities are demonstrably compliant with relevant standards and legislation.

2.4 Some of the functions described above are already automated in the GB railway industry, some in systems managed for the industry by RSSB and others meeting the individual requirements of particular organisations.

2.5 The Data and Risk Strategy Group (DRSG) has been formed to support the industry in the achievement of a vision for the development of risk tools in the GB railway industry. The DRSG’s vision is:

The risk intelligence that a world class railway needs, efficiently provided in the right format, to the right people at the right time.

3. Where we are now

3.1 The SMIS is the GB rail industry’s primary safety database and reporting system and has been in operation since 1997. Network Rail and the train and freight operators are required\(^1\) to enter information into it. The system is used for a number of purposes at both national and company level, for example:

- Meeting regulatory reporting and investigation requirements and tracking progress and closure of recommendations.
- Safety performance reporting and provision of safety intelligence
- Risk assessments and modelling – including to support development of the industry Safety Risk Model (SRM).

3.2 SMIS was innovative at the time of its introduction; it has been instrumental in delivering a strong safety reporting culture in the GB rail industry, and in developing risk information and models which are currently recognised across the international railway community as being world class. However, there are now a number of difficulties with its continued use. In particular:

- Because it was developed as a bespoke application to meet the industry’s particular requirements, it is expensive to host and support
- For similar reasons, it is costly and time-consuming to develop new functionality in the system. In many cases new functionality that the industry might want for SMIS will be the same functions which are readily available in modern enterprise SMS software.
- Over time a separate internal RSSB database (the Safety Intelligence Database – SIDB) has been developed to capture additional data to complement the data in SMIS. This data includes better causal classification to support the SRM, and asset data and

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\(^1\) Railway Group Standard GERT8047.
information, including fault data. The existence of this additional database creates inefficient working practices and the potential for inconsistent data being stored in separate databases.

3.3 A number of train operators including Southern, Southeastern and Virgin have purchased enterprise SMS software to help them manage their businesses. This creates the need to link such systems directly to the current SMIS system so that companies can readily meet their mandatory reporting requirements through it. As individual companies are choosing their own systems from a wide range of potential suppliers this approach risks creating significant complexity and cost over time.

3.4 Given that most, if not all, companies are now actively considering the use of such systems, it has been recognised that the industry is at a ‘tipping point’ where, there will not be the business case for developing a core industry safety system, if the decision is not considered now, and the benefits of a common industry system will not be able to be realised.

3.5 Removed for publication.

3.6 At initial meetings of the DRSG, a project to build the SIDB functionality into SMIS, and a project to link SMIS to enterprise SMS software to deliver Network Rails’ requirements were being considered separately. Initial work to develop the requirements for these projects was undertaken in early 2014. Sentence removed for publication.

3.7 The DRSG therefore proposed the migration of SMIS to Commercial off-the-shelf (COTS) software whilst implementing the required functionality. This was considered to be the preferred approach as long as a business case could be made and the project could be delivered in timescales acceptable to the industry

4. Proposed way forward

4.1 In response to the recommendation of the DRSG, RSSB has started to investigate the preferred option and begin any initial assessment that is needed in order to meet the industry’s desired timescales.

4.2 The approach being followed is based on making rapid progress, whilst still delivering the best possible solution and is in three stages:

- The development of a high level specification for the work by December 2014
- A fast track procurement process resulting in a successful bidder by April 2014
- An agile approach to software development, working closely with the delivery partner – it is currently estimated that the project would
take of the order of 12 months, and therefore the estimated delivery date is April 2016.

4.3 This approach has been endorsed by the DRSG and supported by Network Rail IT team.

4.4 To be in a position to go to tender in April 2015 RSSB needs to specify industry requirements to a sufficient level of detail that potential suppliers would be able to provide an accurate estimated cost for the work. A small number preferred suppliers would be selected.

4.5 RSSB has allocated funds to bring in expert resource to assist in the capturing of the high level system requirements and to undertake the tendering exercise. Note that further expenditure of this nature might prove necessary as the project progresses.

4.6 The scope of work includes:

- Introducing electronic reporting forms utilising business workflow to assist with data capture.
- Incorporating functionality from SIDB into SMIS and decommissioning it.
- Expanding the SMIS data warehouse to include more data types, and to meet the future reporting needs of industry, including creating more capacity for stored asset data.
- Better integration with industry’s control logging and bespoke safety management systems software.
- Introducing investigation management workflow software.

4.7 It is estimated that this work could be delivered within 12 months of contract award i.e. by April 2016.

4.8 As the requirements are developed, a full business case will be produced. This will be reviewed at the next RSSB board meeting in January. At this stage appropriate funding options would be discussed.

5. Benefits

5.1 For the reasons outlined in section 3 it has become increasingly clear over recent years that a modernisation of the SMIS platform is needed to put it on a firm footing to continue to fulfil its role in the industry. The project outlined here, will deliver that strategic objective whilst also delivering a number of significant further benefits.

5.2 Firstly, the approach allows the industry’s immediate needs for making data collection and accident investigation processes more efficient to be met. This will have tangible benefits for all SMIS users.

5.3 Removed for publication.
5.4 The updated platform will also have the advantage that it will be easier to link it to existing databases so that data can be uploaded to SMIS from these databases automatically. The project is being specified in such a way as to ensure that linking to other databases is as simple as is possible.

5.5 The plan of work includes elicitation of safety reporting and information requirements from the railway companies such that existing needs can be met by the new system wherever possible. This creates the potential for members to minimise their reliance on third party systems with potential cost savings for them.

5.6 Another benefit is that the packages being considered have integrated analytical software allowing easy development of safety performance dashboards. In recent months provision of dashboards has been limited because of incompatibility issues with third party business intelligence software.

5.7 Because enterprise SMS software is developing in a strongly commercial cross industry market it is being innovated constantly. In the longer term the project will open up a range of future possibilities for the evolution of the system to take advantage of additional functionality that enterprise SMS software has, some of which are currently unclear.

5.8 An early consideration would be the longer term potential for migrating other safety data collection systems in the industry (such as Close Call, CIRAS and NIR online) onto SMIS infrastructure. This would create the opportunity for richer safety analysis and reporting across the data sets those systems hold. At a recent RSSB hosted Close Call seminar (held on 16 October) there was strong support from the across the industry that the Close Call system should develop as an industry system.

5.9 The project also potentially opens up further areas of innovation to be considered by the DRSG, such as:

- Greater use of hand held devices for data collection and safety monitoring.
- Replacement of Control Centre Incident Log (CCIL) with software that would be fully integrated with SMIS and have the capability to trigger investigation.
- Integrated Bow-Tie modelling functionality, to help understand and manage hazards and safety requirements in compliance with regulatory requirements.
- Greater use of geospatial data, fault data and asset data in the estimation of risk, potentially creating more predictive risk models.
6. **Recommendations**

6.1 The board is asked to:

- **DISCUSS** the strategic vision presented.
- **NOTE** the expenditure already committed at risk in order to meet industry’s required milestones, and to develop a robust business case.
- **NOTE** approval of the full project will be requested at the January board and **DISCUSS** any specific issues to address at the time.