Background

The industry, through the Control, Command and Signalling Standards Committee has agreed that GE/RT8106 Management of Safety related Control, Command and Signalling (CCS) System Failures be mandatory for all railway undertakings (RU) and infrastructure managers (IM) since 6 December 2008. GE/RT8106 mandates the requirements for managing information about control, command and signalling system failures and how this information is communicated. It also mandates the implementation of a defect recording and corrective actions system (DRACAS) for new CCS systems. To enable and assist those mandated to comply with the standard, the first stage of this research project has been to develop a customer requirement specification (CRS). The purpose of the CRS is to establish how a national DRACAS system may be implemented, and to understand the specific requirements of individual users.

The research has established that the use of a national DRACAS system would enable greater consistency of reporting and managing information between RUs and IMs that would help identify failure trends, ultimately improving the reliability and availability of CCS equipment for the benefit of all. A full list of CCS systems affected can be found in GE/RT8106. This project has been carried out on behalf of the Vehicle/Train Control and Communications System Interface Committee (V/TC&C SIC), with the support of the DRACAS Working Group.

Aims

The aims of the research project were:

- To establish the stakeholder requirements for a nationwide CCS DRACAS.
- To understand how RUs and IMs currently comply with GE/RT8106, and how they plan to do so in the future with the addition of any new CCS systems.
- To understand any issues that may prevent the successful implementation of a national system.
• To engage stakeholders and to gain their support for a nationwide CCS DRACAS by improving understanding of the requirements of GE/RT8106.

Findings

The research project worked to establish the requirements of as many stakeholders as possible. This included research into the following:

• The failure recording systems stakeholders currently use, how they use them and the processes that are involved. The research found that a number of different platforms are used, ranging from paper-based, Excel, and Access databases, through to the use of more dedicated systems such as Network Rail’s Fault Management System. Data is usually entered manually and is used for a variety of purposes, including data and trend analysis, tracking of fault rectification, defect/vehicle/equipment history, and to monitor performance and safety.

• How RUs and IMs are able to satisfy GE/RT8106, both now and in the future. The research found that RUs and IMs are generally aware of the requirements of GE/RT8106 and go to considerable lengths to satisfy this. Though not all of the systems capture all of the data that is mandated to be shared, and communication of this data was also found to depend on a good working relationship between the infrastructure and railway undertakings managers.

• How current recording systems might form part of the national CCS DRACAS. The research found that none of the participants wanted to replace their current asset or fault management systems, but that most would be willing to participate in minor changes to aid compliance with GE/RT8106. It is recommended that any future proposed DRACAS system architecture should aim to take this into account, as a possible constraint.

• The level of participation in the national DRACAS that might be expected across the railway industry. Within the possible constraint noted above, most of the participants in the research were able to recognise both the long- and short-term benefits of a national DRACAS system. On this basis, it is to be expected that there will be a high level of interest and participation in a national DRACAS.

• Whether there might be a system currently in place that could be used or modified to operate the proposed CCS DRACAS. The research concluded that the decision to
develop an industry-wide DRACAS is already supported within the existing industry framework. Although it was thought unlikely that a single software application could be found for a CCS DRACAS, it was concluded that the incremental development of a DRACAS should be entirely possible by developing standards and guidance based on an agreed protocol for the sharing of CCS information.

Deliverables

The main project deliverables are:

- An interim report which outlines the early findings from the industry consultations. This includes the results of an initial investigation into the common and special requirements of stakeholders, the systems currently in use, and their suitability for inclusion in a nationwide CCS DRACAS. The report also makes some suggestions on who should own and manage a future DRACAS system.

- A high-level strategy document. This identifies an overall rationale for DRACAS, provides a summary of the high level customer requirements set as well as the likely benefits, and proposes a methodology as to how such a system could be developed for use by the railway industry.

- A high-level customer requirement specification. This has identified those customer requirements that could be expected to provide sustainable benefits to the railway industry, and provides a summary of the technical and business change requirements, as well as the communication and interface requirements between users.

Method

To enable the research project to progress satisfactorily, it was recognised that stakeholders needed to engage in the project from the outset. The large number of stakeholders that will potentially use the DRACAS was expected to give rise to many varying requirements, ideas and suggestions. Stakeholders were therefore encouraged to participate in the project to ensure their requirements were captured.

To do this, a questionnaire was initially sent to all stakeholder representatives to give them an opportunity to express their views, capture their requirements and gather information about the systems currently used to record equipment failures. In addition, a number of stakeholders were then interviewed in order to obtain a more in-depth view of their requirements.
Following this, a conference was held at which the results of the information gathering were presented to the industry stakeholders in a forum for further development; which was intended to provide an opportunity for feedback and comment.

**Next Steps**

The V/TC&C SIC met in May 2010 and has accepted the high level strategy document. The SIC has agreed to retain the document and in support of the next steps approved RSSB publishing the CRS and conducting an industry consultation on the content. The CRS is published alongside this research brief and RSSB will consult with the industry attendees to the DRACAS workshop and the wider industry through RSSB's formal consultation process.

Based on feedback from the CRS, the SIC will review, at a future time, whether any party should carry out a central co-ordinating role, and the need to prepare a functional requirements specification for the development of a DRACAS to support this.

The SIC has also identified the requirement and justification for the preparation of a costed business model, to help the railway industry better understand the potential costs and benefits of implementing a DRACAS. On behalf of the SIC, RSSB is developing this through the research project T957 *Development of a defect reporting analysis and corrective action system costed business model for control, command and signalling systems within the railway industry.*

Finally, the DRACAS Working Group, a sub-group of the V/TC&C SIC, is beginning to conduct some initial work on the agreement of an outline system architecture. In support of this activity, the SIC has requested and accepted a proposal for a research project but decided that, whilst development of the business case and detailed specification should progress, the decision whether or not to proceed should be taken after the results of the T957 research are available.

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