The paper outlines research being undertaken at the University of Huddersfield Institute of Railway Research to understand how the big data revolution might be applied to enhance railway system safety with the eventual goal of moving from lagging indicators to real-time or even possibly leading safety indicators. The paper will examine the most promising applications identified to date and will illustrate these with examples from research projects currently underway at the University. These include automating analysis of free text records of safety ‘close calls’, developing tools to count red approaches to signals on a national basis to aid understanding of SPADs and approaches to integrating big data into safety bow ties. It will discuss the parallels between big data to enhance safety and operational performance and it will briefly consider the possible impacts on the staff who have to deliver the daily operation of the railways in the future. The paper concludes with the authors personal views on the potential future developments in this field.

Julian Stow is Assistant Director at the Institute of Railway Research at the University of Huddersfield. He has 18 years’ experience in the rail industry specialising in rail vehicle dynamics and wheel-rail interface engineering and he has led a wide range of projects for the GB rail industry in these areas. He is currently responsible for the delivery of a programme of research work under the strategic partnership between RSSB and the University of Huddersfield. Julian is a chartered engineer and a Fellow of the Institution of Mechanical Engineers.

The meeting will take place at Atkins, Euston Tower, 286 Euston Rd, London NW1 3AT. There is no charge for attendance and the event is open to non-members but places must be booked in advance. To book, click book button on the INCOSE Calendar for this event or contact the RIG Board Member, Mike Morua at m.morua@fnc.co.uk.

The International Council on Systems Engineering (INCOSE) is an international professional society for systems engineers whose mission is to foster the definition, understanding, and practice of world-class systems engineering in industry, academia, and government

The INCOSE UK Rail Interest Group has been formed:

- To provide a forum for those interested in Systems Engineering in rail to network in a less formal environment, to exchange good practice and to provide mutual support in an area which can require some sustained perseverance;
- To promote, improve and share the practice of Systems Engineering within the rail industry;
- To foster connections with other professional bodies within rail and thereby promote cross fertilisation of knowledge and experience across sectors and community disciplines; and
- To promote awareness of INCOSE UK and encourage membership within the rail industry.

For further information about the RIG, see www.incoseonline.org.uk and follow the ‘Groups’ link.