In the 15 years since privatisation, the British railway has undergone a major transformation: investment has increased 60%; ridership has increased by 60%; and reliability has grown to over 90%. The railway is now being asked to improve capacity, reliability and cost further. It may be relatively easy to improve two, at the expense of the third, however improving all three factors at the same time is a major challenge.

This presentation will present the results of a study whose main objective was to understand the implications of doubling capacity on existing infrastructure. Whole system level modelling was applied in order to study the relationship between capacity and reliability. The study comprised two phases.

Firstly, building the base case for a double capacity railway with current operating approaches and asset reliabilities. A full network model that replicated the actual railway operation, including the signalling logic, was used and showed significant deterioration from current reliability levels.

Secondly, simulating a range of different incident prevention, control and mitigation measures to identify 'optimum' asset reliability requirements beyond which any further improvement ceases to have a significant impact on rail service performance. This showed that system reliability could be returned to an acceptable level if certain reliability improvements were realised.

A number of overall conclusions are drawn relating to the use of systems models generic to the analysis of performance within any industry characterised by the presence of a large volume of legacy assets and performance monitoring arrangements.

The meeting will take place at Atkins’s offices in Euston Tower, 286 Euston Road, 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, obtain directions or for any other questions, please contact the RIG Chair, Bruce Elliott at bruce.elliott@arbutus-tc.co.uk or on +44 (0)7970 694043.

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 click on the ‘Groups’ tab.