**PhD Opportunities in “Organisation, Management and Economics of Train Movement”**

**Name of Supervisor(s):**
Prof Mark Robinson
Dr Marin Marinov

**Duration:**
4 years

**PhD Project Description:**

NewRail invites PhD candidates to submit applications for PhD projects in “*Organisation, Management and Economics of Train Movement*”. Apart from the engineering aspect of the problem, the aim is also to look at innovative concepts for sustainable rail transport with a particular focus on services, production patterns and system designs where the interface between the technical, strategic, tactical, operational and commercial aspects of the service needs to be captured. Specifically the following areas shall be studied:

- **Generation of business** – to capture the commercial aspects of the business including business models and marketing;
- **Demand patterns/models** – to identify and specify the needs for service, type of products, O/D trips and iterations, time for delivery, etc.;
- **Supply patterns/models** – to set up the strategic and tactical orientation of the company as well as the operations model;
- **Grants and contracts** – to price the service and specify terms and conditions for providing it; integration with other transport modes falls within this component as well;
- **Execution of service** – to provide the service in accordance with the contract, i.e., specified terms and conditions;
- **Customer satisfaction** – to collect information, analyse the levels of customer satisfaction and take measures, if necessary.

The PhD projects will aim to develop methodologies to analyse, evaluate and improve:

- (a) Service Network Design – to identify the transport flows, study their behaviour in a network and develop alternative schemes to serve current and future transport flows;
- (b) Empty Run and Traffic Distribution - to develop tactical and operational schemes for efficient distribution of empty rolling stock in a network and to optimise the movement of trains within and between delineated geographical areas;
- (c) Terminal/Yard Policies and Interchanges – to study terminal/yard processing capabilities, to develop efficient terminal/yard operating patterns and to design and evaluate the performance levels of efficient interchanges and trans-shipment technologies;
- (d) Line Policies and Traffic Rules – to examine railway line/station capacity and study alternative services with trains to create operating capacity over time subject to traffic rules;
● (e) Investment Choice and Modernisation – to identify rail projects, analyse the associated risks and develop mechanisms to manage investments effectively over time;

● (f) Network-wide Policies – to study the organisation of train movement in a network, analyse the economic value of the network service provided and evaluate the impacts on the network service caused by disruptions.

**Person Specification:**

Applicants are requested to have a good Honours level first degree or equivalent such as: a BSc and MSc.

**How to Apply:**

Applicants must apply through the University’s [online postgraduate application form](http://www.ncl.ac.uk/newrail/) selecting PhD School of Mechanical and Systems Engineering (full time or part time).

NewRail are based in School of Mechanical and Systems Engineering’, therefore ‘PhD projects will be developed there.

Only mandatory fields need to be completed.

A PDF of applicant’s covering letter and CV should be sent to: newrail-education@newcastle.ac.uk

**Further Information:**

NewRail’s webpage: [http://www.ncl.ac.uk/newrail/](http://www.ncl.ac.uk/newrail/)

E-mail: newrail-education@newcastle.ac.uk