# **System-wide Approach to Asset Management**

#### UNITED KINGDOM · CHINA · MALAYSIA

The University of Nottingham

### Background

Railway infrastructure asset base:

- geographically dispersed
- very diverse (age, type)

Asset management decisions based on the **whole-system** view and **whole lifecycle** values can offer a means for achieving the most benefits in terms of infrastructure outputs

## Objective

Development of the framework for construction of the **multi-asset system** lifecycle **model** that can predict:

- \* the state of the infrastructure system based on:
  - states of individual assets
  - · availability of resources
  - interactions between asset maintenance activities
  - · availability of access to infrastructure

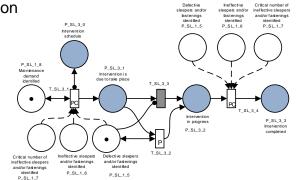
#### the impact on railway performance:

- infrastructure dependability
- · train services interruption
- costs

### Methodology

Petri net modelling technique

Monte Carlo simulations





#### Resource Utilisation Model Library of Asset State Models Abstraction Assets level management Asset Asset strategies historical data Railway Degradation System State $\bigtriangledown$ Utilisation performance Module Model information prediction Intervention Network options configuration Intervention Strategy Module Intervention **Train Services** policies Model

