

Depot Modelling and Optimisation

The combination of maintenance regime requirements, staff rosters, facility availability and timetables is a multi-aspect problem which must be solved to successfully run a depot. Simulation reduces risk, cost and enables optimisation.

THE CHALLENGE

Our clients require a tool to enable analysis and investigation of depot operations and the suitability of upgrades to maintenance depots before they commit to significant changes. These depots have complex requirements which mean that the performance of the depot during and after completion of changes are unknown.

OUR SOLUTION

Frazer-Nash has developed a tool to help investigate proposed depot layouts, maintenance schemes and resource requirements.

The tool is designed to allow the user to define depot models in an intuitive, user friendly interface. Each model describes a proposal for the full line, layouts of depots, maintenance requirements, timetables, staffing and facility availability to closely simulate how the line will operate. The tool then analyses all maintenance activities on a line wide basis and determines whether the proposed plans could meet timetabling, resource availability and reliability targets.

Our tool provides a user-friendly interface for the set-up, simulation and review of results; allowing different depot designs to be quickly simulated and issues or improvements to be identified.

We have experience in building fast and bespoke solvers to address a number of metrics including reliability, resilience, resources and performance. This tool simulates the movements of all the trains on the line to find optimal routes, arrangements and timings for each model input data set.

RESULTS

Our depot modelling tool is now being used to analyse maintenance activities and depot designs on a number of lines. It has provided capability that helps our clients understand and plan both current and future requirements for their depots.



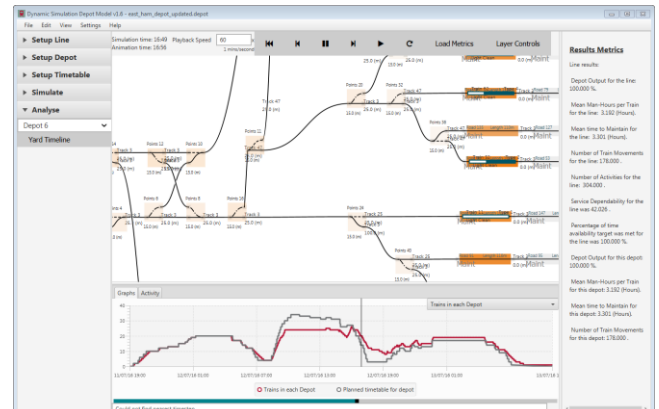
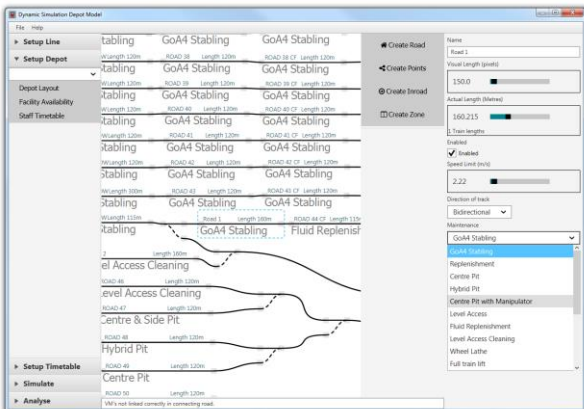
Hitachi: “The Frazer-Nash model has enabled Hitachi to explore a wide range of options and to satisfy ourselves that the complex depot design has the flexibility to meet the foreseeable demand. All analysis is presented in a way that makes it easy to review the status of operations.”

David Everton, Project Manager at **John Laing:** “The Frazer-Nash team worked proactively with us to develop a software model that was able to empirically prove depot functionality and effectiveness. The software also allowed the proposed depot layout to be interrogated in various ways to identify potential areas of risk, opportunity and potential efficiency savings. This has subsequently led to further depot optimisation.”

OUR DEPOT MODELLING SERVICES

Our range of services covers a large set of depot planning requirements. Examples include:

- ▶ Development of modelling tools
- ▶ Analysis of operational change
- ▶ Review and assurance of business cases
- ▶ Capacity Modelling
- ▶ Modelling and Analysis of modified depots performance



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