TREsure - Data Validation

TREsure is an application that comprehensively tests interlocking, in addition to the design and validation process. Using virtual infrastructure models in conjunction with adjacent interlocking areas, cross-boundary faults can be identified and eliminated as well as checking the focus interlocking for any errors.

Offering a new level of automated assurance, TREsure is designed to exercise the complex data which constitutes the safety critical element of a signalling interlocking over a wide number of Computer Based Interlocking systems.

The process for validation begins with the collation of the Client provided scheme plan information, routes, and data into a TREsure simulation engine.

The simulator then forms the ‘host’ for the TREsure system which will create its own Excel format control tables for the post-to-post routes, independent of the client provided Control Tables.

It is these independently generated control tables that enable TREsure to test the interlocking data against first principles of Interlocking.

The Testing Process
TREsure will perform tests by running test scripts which fall into two main categories:

A. Tests which validate the post-to-post signal routes against generic UK Railway Standards.
B. Additional tests which check that routes do not get disturbed by other route requests & or point calls.

This ensures flank / overlap are safe and to reveal faults which may not be found by conventional testing methods.

Type A Test Scripts
- Track Dead Locking of Points
- Route to Point Locking
- Route to Point Maintained Locking
- Route to Route Locking
- Route to Route Maintained Locking
- Point Detection in Ascon
- Track clear in Ascon (main & warner routes)
- Signal Ahead Lamp Alight in Ascon (main & warner routes)

Type B Test Scripts
- No other conflicting route request will set, or cause a change of state, when a route & its forward route are set.
- No other route or point request affects the Ascon on the route set.
- No other route or point request affects the Ascon on the route, or its forward route when both are set.
- Another, more complex operation of the above 2 Ascon tests combined with maintained locking.

TREsure can Currently Test:
- Points
- Routes (including cross boundary)
- Permissive/Non Permissive routes
- Preferred/Non Preferred Routes
- Warner Routes
- Shunt/Call-On/POSA Routes
- Route Perturbation

It is recommended that TREsure be utilised at a point in the programme where data is stable and as error free as possible. This could be at the end of the data production and whilst the “set to work” takes place.
Hitachi Information Control Systems Europe
Hitachi Information Control Systems Europe is a provider of software products for railway Command and Control, including simulators and automatic route setting systems. We are also the integrator of Hitachi traffic management systems for the UK and European market, working closely with Hitachi Rail Europe.

Maintaining Safety Standards
Our railway signalling and operations simulation system (TREsim) has a strong record in operator training and is used by Network Rail at signalling centres throughout the UK to train and continuously assess signallers.

Network Modelling
Simulation enables major project schemes to be evaluated before detailed design and implementation. This reduces technical, programme and operational risk. Automated data verification tools provide added assurance that safety integrity levels are consistently maintained.

Traffic Management
In addition to our role as UK systems integrator for Hitachi's Tranista Traffic Management System, our training simulator has been developed specifically for use with multi-vendors' products and solutions. This ensures that the current levels of high fidelity offline training facilities for railway operations are maintained during the introduction of new technology and business change does not compromise safety or performance.