# System Modelling

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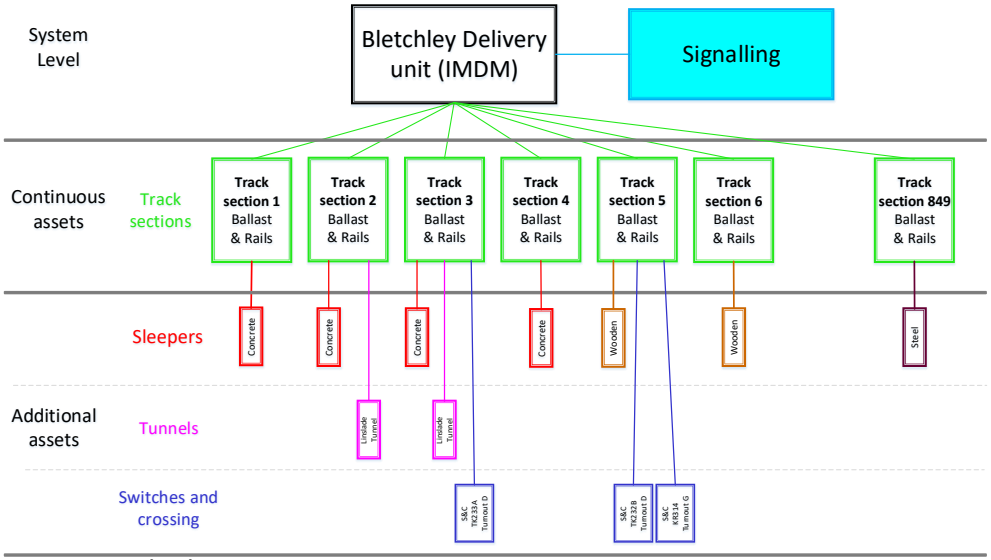
UNITED KINGDOM · CHINA · MALAYSIA

## Background

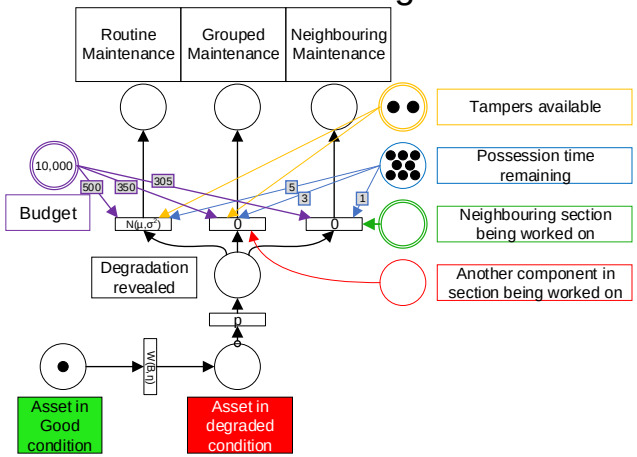
A railway network is made up of a large range of assets. These assets degrade at various rates and in vastly differing ways. Scheduling maintenance on this scale is a complex and diverse problem. Yet it is imperative to insure the railway is maintained to a high standard to reduce safety risk and avoid delays.




## Objective

Build a Petri net capable of simulating numerous railway assets to enable;

- Dependencies between assets deterioration rates to be analysis
- Various different maintenance strategies including cross asset maintenance and opportunistic maintenance to be investigated
- Producing a detail whole life cost assessment




| Hierarchy level | Module type | No. of module | Subsection |
|---|---|---|---|
| 1 | System Level | 1 | |
| 2 | Continues assets (Ballast and Rail) | 849 | Category 1A: 484<br>Category 1: 60<br>Category 2: 170<br>Category 3: 6<br>Category 4: 0<br>Category 5: 129 |
| 3 | Sleeper | 849 | Concrete: 705<br>Wooden: 51<br>Steel: 93 |
| 3 | Tunnel | 22 | Linslade Tunnel: 1<br>Stowe Hill Tunnel: 2<br>Kilsby Tunnel: 11<br>Hunbury Hill Tunnel: 5<br>Watford Lodge Tunnel: 1<br>Crick Tunnel: 2 |
| 3 | Switches and Crossings | 61 | Fixed Diamond Crossing: 1<br>TurnOut B: 2<br>TurnOut C: 9<br>TurnOut D: 14<br>TurnOut F: 18<br>TurnOut G :17 |