



# Optimised train operations

## Progress against short-term vision

GOALS	RECENT POSITION (2020)	RECENT PROGRESS AGAINST STEPPING STONES			VISION FOR 2025	
<p><b>Flexible and reliable train planning</b></p>	<p>The timetabling process has a long lead time and the working timetable generated doesn't learn from actual running times.</p> <p>The 'short-term' and 'very short-term' planning processes are very manual and not robust.</p>	<p>Single common model of GB rail infrastructure used for all planning. <a href="#">NR SO</a></p>	<p>Prioritised improvements of train planning data. <a href="#">NR SO</a></p>	<p>Greater integration of crew and stock planning for long and short term planning. <a href="#">RSSB</a> COF-G26 case study of Advanced Model Interface L3 of TM and Stock and Crew integration on ECML underway, due to complete 2024.</p>	<p>Solutions to allow the working timetable to learn from actual train performance. <a href="#">NR SO</a></p>	<p>Improved working timetable allocates allowances optimally, decreasing the risk of significant disruption if perturbations occur.</p>
<p><b>Improved real-time operations and decisions</b></p>	<p>Manual train handling leads to acceleration, braking and coasting lacking consistency.</p> <p>Initial deployments of Traffic Management (TM) and Connected Driver Advisory Systems (C-DAS) are used in a few locations. Shared understanding of where to deploy optimisation solutions and how to get best value out of them is limited.</p> <p>Richer data to better understand disruptions is starting to be explored.</p> <p>Incidents of Signals Passed at Danger remain a problem.</p>	<p>Development and validation of new simulation tools to reflect the complexity of the railway and allow the outcomes of different optimisations to be compared and understood. <a href="#">NR SO</a>, <a href="#">NR Target 190plus</a> &amp; <a href="#">UKRRIN</a> NR Prior Information Notice for Target 190plus Synthetic Environment for the design and testing of signalling solutions published in July 2023.</p>	<p>Solutions available to increase flexibility and robustness of very short term planning. <a href="#">RSSB</a> and <a href="#">V/TC&amp;C SIC</a> 3Squard completed Solent Stevedores pilot to locate and load containers onto trains, and is refining an algorithm that shows probabilities of freight paths being used. Tracsis /Bellvedi path searching and automatic initiation of contingency plans now available.</p>	<p>Train paths are added easily and reliably at short notice. Increased (predictable) quality of service during disturbances and faster recovery.</p>		
<p><b>Improved degraded operations</b></p>	<p>Degraded Mode Working System (DMWS) has been developed in the lab but not yet piloted.</p>	<p>Open-source software infrastructure description. <a href="#">NR</a> Project Axiom East Coast pilot underway (includes track, platform, S&amp;C, signals and track circuit data). Proofs of concept include geospatial viewer, gradient data, data interoperability and automated schematics.</p>	<p>Crew and rolling stock resources linked to traffic management (TM). <a href="#">NR Projects</a> Western Route deployment of Integrale and Luminare, extended across Western Region and Anglia Route.</p>	<p>TM integration with signalling systems. <a href="#">V/TC&amp;C SIC</a> Thameslink Class 700s to be upgraded following Class 387 testing, as part of the ECDP.</p>	<p>Wider roll-out of TM to support, and where appropriate, automate decisions in perturbation. <a href="#">NR Regions</a> National TM Strategy exploring the range of options for deployment.</p>	<p>Strong business case in place for widespread roll-out of TM based on positive results from early implementations.</p>
<p><b>Signalling and train capabilities support higher route capacity</b></p>	<p>Thameslink is successfully ramping up its capacity but traditional signalling and management of nodes continue to limit capacity on most of the network.</p> <p>The migration strategy to digital signalling is unclear.</p> <p>Conventional signalling is based on the worst performing train, which means that the improved performance of modern rolling stock in terms of braking and acceleration are not utilised.</p> <p>Reliable braking in low adhesion remains a challenge.</p>		<p>Widespread roll-out of C-DAS in conjunction with TM to improve passenger and freight performance. <a href="#">RSSB</a>, <a href="#">V/TC&amp;C SIC/DAS PCB</a> Class 387s running with C-DAS operational, Class 802 operations not yet commenced. C-DAS benefits paper from operational trial expected Autumn 23.</p>	<p>Elements of ATO-ETCS piloted to remove variability in driving profiles. <a href="#">V/TC&amp;C SIC</a> In use on Thameslink Core, with uptake of ATO increasing as new cohorts of drivers are trained.</p>	<p>Agreed strategic deployment plan for driving task support systems to maximise value for money. <a href="#">NR Projects</a></p>	<p>Reduction of variability in acceleration, braking and coasting on key routes.</p>
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<p><b>Signalling and train capabilities support higher route capacity</b></p>	<p>Thameslink is successfully ramping up its capacity but traditional signalling and management of nodes continue to limit capacity on most of the network.</p> <p>The migration strategy to digital signalling is unclear.</p> <p>Conventional signalling is based on the worst performing train, which means that the improved performance of modern rolling stock in terms of braking and acceleration are not utilised.</p> <p>Reliable braking in low adhesion remains a challenge.</p>		<p>Trial and initial fitment of ETCS Limited Supervision on non-ETCS infrastructure. <a href="#">V/TC&amp;C SIC/TPSG</a> Proof of concept largely demonstrated on Class 150/2. Development has migrated to a speed management system with trials being planned on the West of England line with a Class 159, but funding is not yet secured.</p>	<p>Mainline trials of DMWS. <a href="#">V/TC&amp;C SIC/DMWS</a> Plans for 'track-only' trial cancelled due to funding constraints.</p>	<p>Agreed deployment plan for DMWS which exploits quick wins enabled by some of its elements. <a href="#">V/TC&amp;C SIC/DMWS</a></p>	<p>SPAD risk is virtually eliminated, with positive impact on service reliability.</p>
<p><b>Signalling and train capabilities support higher route capacity</b></p>	<p>Thameslink is successfully ramping up its capacity but traditional signalling and management of nodes continue to limit capacity on most of the network.</p> <p>The migration strategy to digital signalling is unclear.</p> <p>Conventional signalling is based on the worst performing train, which means that the improved performance of modern rolling stock in terms of braking and acceleration are not utilised.</p> <p>Reliable braking in low adhesion remains a challenge.</p>	<p>Agreed migration strategy and roll-out plan for radio based ETCS with no lineside signalling. <a href="#">V/TC&amp;C SIC/TPSG</a> ETCS pilot on Northern City Line (Moorgate-Finsbury Park complete and deployed. East Coast delivery programme continuing train and infrastructure fitment through 2024.</p>	<p>Lessons identified and implemented from Thameslink mainline ATO deployment over ETCS Level 2. <a href="#">V/TC&amp;C SIC/TPSG</a> Included in the European ATO over ETCS (AoE) specifications, recently published in the updated CCS TSI. Learnings from DRACAS also available for AoE projects.</p>	<p>Optimised ETCS braking curves for freight. <a href="#">V/TC&amp;C SIC/TPSG</a></p>	<p>Schemes deploying radio based ETCS with no lineside signals are in delivery.</p>	
<p><b>Signalling and train capabilities support higher route capacity</b></p>	<p>Thameslink is successfully ramping up its capacity but traditional signalling and management of nodes continue to limit capacity on most of the network.</p> <p>The migration strategy to digital signalling is unclear.</p> <p>Conventional signalling is based on the worst performing train, which means that the improved performance of modern rolling stock in terms of braking and acceleration are not utilised.</p> <p>Reliable braking in low adhesion remains a challenge.</p>	<p>Validated freight train integrity devices. <a href="#">RSSB</a>, <a href="#">RFG</a> Findings from T1264 provided GB freight industry with an evaluation framework and shared evidence base for introduction of Digital Automatic Coupling.</p>	<p>Enhanced train position systems. <a href="#">Various</a></p>	<p>Block lengths shortened and optimised by automated design for new schemes. <a href="#">V/TC&amp;C SIC</a></p>	<p>Faster operating, inherently safe, point mechanisms piloted. <a href="#">NR R&amp;D</a> &amp; <a href="#">UKRRIN</a> IN2TRACK3 project on redesigning actuators and simulating interlocking &amp; actuators (based on REPOINT) due to complete end of 2023.</p>	<p>The overlaying of ATO can be planned and delivered in a more informed way.</p>
<p><b>Signalling and train capabilities support higher route capacity</b></p>	<p>Thameslink is successfully ramping up its capacity but traditional signalling and management of nodes continue to limit capacity on most of the network.</p> <p>The migration strategy to digital signalling is unclear.</p> <p>Conventional signalling is based on the worst performing train, which means that the improved performance of modern rolling stock in terms of braking and acceleration are not utilised.</p> <p>Reliable braking in low adhesion remains a challenge.</p>	<p>Rationalisation of train classes and applicable speeds to create homogeneous operations. <a href="#">OPG</a> and <a href="#">TOM SC</a> T1266 is assessing the benefits of applying a speed differential based on the actual braking capabilities of freight trains using the same methodology that is required for ETCS and ERTMS. The final report is due to be published by the end of 2023.</p>	<p>Fundamental review of operational principles for mixed-traffic. <a href="#">TBD</a> Rail Partners' 'Freight Expectations' report published in March 2023 outlined the potential economic contribution of rail freight and calling for a set of commitments to support the shift from road to freight.</p>	<p>Capacity in the process of being increased at key bottlenecks thanks to better design and solutions.</p>		
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