

The Condition Based Supply Chain



Our vision for delivering the Condition Based Supply Chain

Digital technology has been transforming business practices and processes for some time and the Industrial Revolution 4.0 is having a huge impact on all commercial sectors including the rail industry.

The increasing expectations of passengers and government regulators are providing the impetus for train and network operators to invest in new systems and technology that will deliver long term financial and operational benefits. At the core of these performance gains is the ability to keep trains running for longer without disruption by minimising planned or unscheduled maintenance interventions and to massively transform maintenance regimes so that assets are in service for longer and service episodes are controlled by asset condition intelligence.

The Integrated Condition Based Supply Chain as a Digital Eco-system

The concept of an integrated Condition Based Supply Chain is the seamless management of real-time data and information, combined with multiple data sources relating to the asset, to deliver increased operational efficiencies and maintenance savings.

This concept brings together several existing and emerging technologies and capabilities into a complete Digital Eco-system. To drive the system it needs data that is collected and combined from multiple sources. Condition Based Monitoring (CBM) sensors are one source of data but other useful information can be used to help monitor and predict the need for replacement parts. For example, CBM data can be combined with historical demand patterns, defect, warranty and repairable reports and vehicle maintenance schedules to deliver increased benefits.

With all of the data sources combined, processed and converted to actionable information, automated reports and actions can be generated to improve operational efficiencies and asset availability. CBM can tell a web server that an asset is degrading or failing and the reasons why, decisions can then be made regarding asset maintenance, how and when to intervene. The next step in this evolution is for the system to automatically communicate with a parts

system, order a spare, ship it to site and have it delivered line side for installation. In parallel to this, a work instruction could be sent to the depot, so they are prepared for the delivery of the part.

Creating the System

The development of a fully integrated condition based supply chain is built around several key components. Capability in technology and the ability to automate the generation of demand levels based on components coming to the end of their serviceable life is vital as is the scale and reach of the supply and distribution capability. Sector knowledge and expertise is also important together with a network of sourcing channels including manufacturing resources, repair and overhaul capability and rail approved OEMs to provide greater levels of safety assurance.

Unipart Rail has all of these capabilities and their integration into a seamless process is already available for certain assets. These are being expanded by a dedicated digital systems development team to address a comprehensive portfolio of applications. In addition, the experience that the company has in Lean and business transformation enables greater efficiencies in clients' operations ensuring that new digital platforms work together with enhanced systems and processes to provide the optimal performance improvements.

The acquisition of Instrumentel, which has driven innovation in providing electronic sensors for exacting environments such as Formula 1 engines and nuclear power plants, has given Unipart Rail an excellent capability to monitor asset condition and provide actionable information to clients as well as complimentary supply chain systems. Instrumentel provide the full suite of sensor technologies, diagnostic hubs, data centre and user portals to view and access the outputs of the data. These tools are being used across the portfolio of Unipart Rail's information systems to provide a unified visual interface to access the performance data that is available to clients.

But why is a Condition Based Supply Chain Important?

The Condition Based Supply Chain looks to address many of the key themes identified in the UK's Rail Technical Strategy Delivery Plan. This includes minimising disruption to train services, generating more value from data, delivering intelligent trains and delivering lower cost railway solutions.

For the train or network operator there are many benefits in having a Condition Based Supply Chain and these ultimately have a large impact on the 4Cs (Cost, Carbon, Customer and Capacity) that the UK rail industry has as performance imperatives.

The Condition Based Supply Chain will deliver cost reductions for materials and parts through minimised inventory and more efficient management of assets. There will also be increased efficiencies in the utilisation of the workforce who can then focus on vehicle and track enhancements to the benefit of customers and capacity.

Capacity and customer experience will be enhanced as asset availability and uptime are improved by

fewer interventions, whilst maintenance downtime can be further minimised through improved availability of parts at the point of use.

Improved availability at the point of use will enable quicker turnaround and lower cost working, so for example, trains will be more readily maintained at lower cost lineside rather than in the depot.

Improved coordination of the supply chain will result in fewer delivery vehicle movements and reduced carbon emissions.

The Condition Based Supply Chain will not only address the 4Cs, it will enhance safety and risk management. The Digital Eco-system provides access to full product information history and everything can be tracked at item level. As the Digital Eco-system uses cloud based connectivity, the monitoring of performance data and notifications of automated delivery schedules can be accessed at any time, on any device, providing transparency and traceability of the supply chain network.

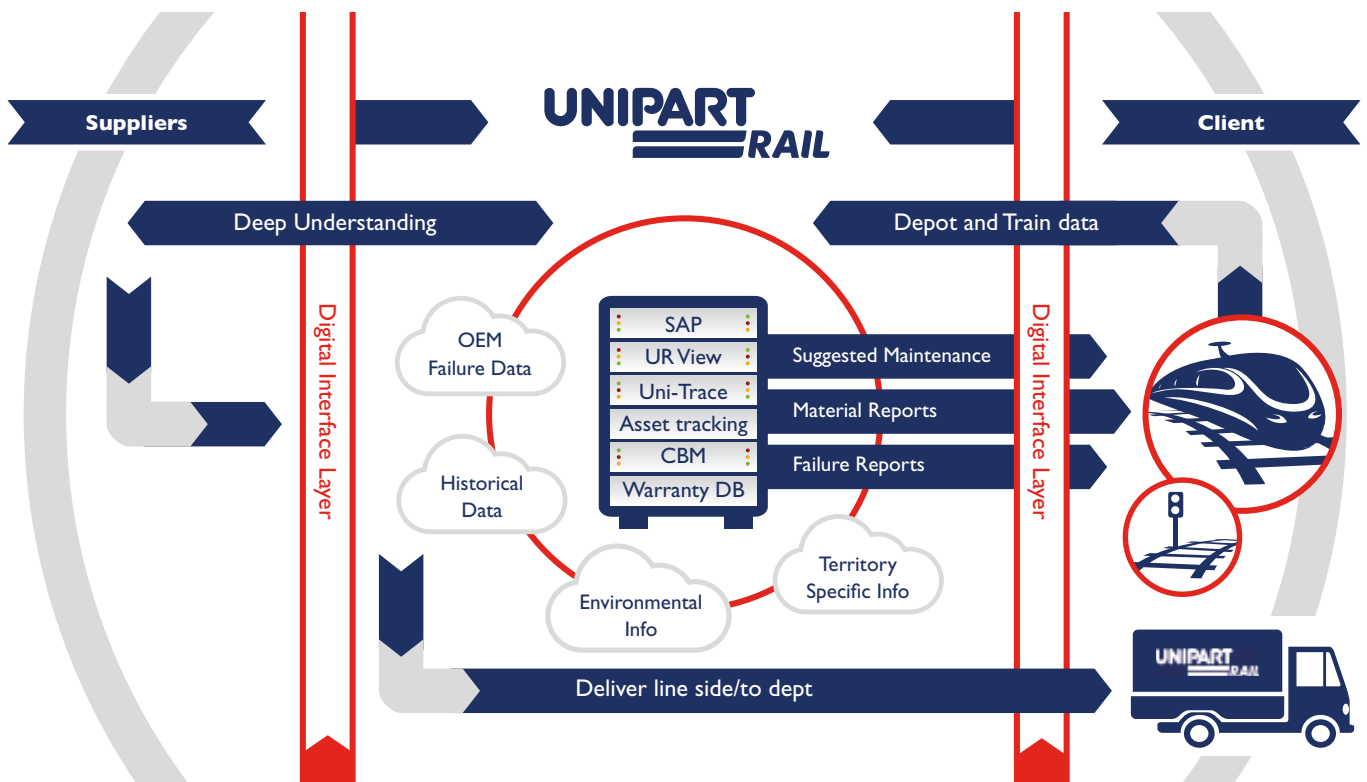


Figure 1: Unipart Rail Condition Based Supply Chain Flow

Ready for the Future

Unipart Rail has now developed the roadmap for innovative CBM supply chain solutions. The use of condition based data to transform clients' maintenance activities is at the heart of our focus to reduce operational risks, improve performance and reduce costs. The increased use of smart technologies continues to enhance our service as the Digital revolution continues apace.

Unipart Rail is architecting Logistics 4.0 to help our clients deliver the railway of the future that the travelling public now demand.

About Unipart

The Unipart Group is a leading UK manufacturer, full service logistics provider and consultant in operational excellence. Operating across a range of market sectors, including automotive, manufacturing, mobile telecoms, rail, retail and technology, Unipart offers a breadth of services to a wide range of blue chip clients internationally.

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