



# Trimble

INFORMED DECISIONS.

KNOW WHAT IS AHEAD.

## WITH DIGITIZED ROLLING STOCK CONDITION DATA INCREASE THE VALUE OF RAIL DATA AND ACT ON DATA INSIGHTS WITH CONDITION MONITORING SOLUTIONS THAT OPTIMIZE EFFICIENCY AND AVAILABILITY.

As the focus on innovation within the rail industry increases, many rail operators are looking towards digitization to optimize their performance, improve safe operation, reduce costs, and streamline their business processes.

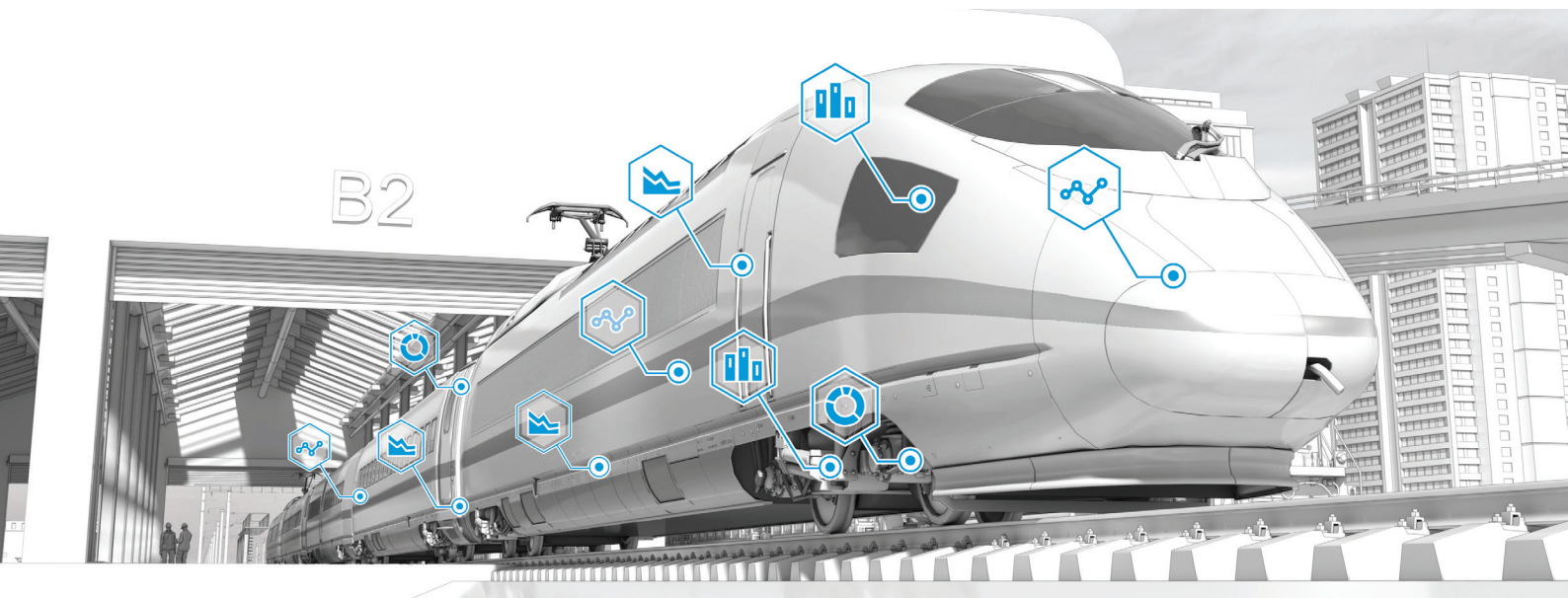
Every railway has specific fault modes, safety, mechanical and operational challenges, and opportunities. Many of these can be positively impacted through the digitization of rolling stock condition information.

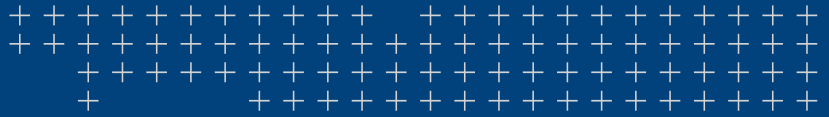
### Condition Data Digitization

Trimble® Beena Vision® vision-based technology provides digitization via a comprehensive suite of wayside systems to harvest digital condition data—supported by a range of software to utilize the digitized data. Trimble condition monitoring software, uses condition data, together with sophisticated rules engines, analysis and processing tools to generate the information and business insights that drive real and sustainable change in railways' operational and asset performance.

Trimble software has been designed in partnership with key rail operators and is built to integrate with real world rail businesses. Trimble Beena Vision wayside inspection systems are supported by sophisticated analysis tools and software that turn the raw data and images Trimble systems collect into information and insights that define and provide a complete overview of train fleets and rolling stock condition.

Trimble Beena Vision CMMS™ (Condition Monitoring Management System) software is a condition monitoring data management platform that provides a unified environment for wayside detector data. The Trimble Nexala range of data aggregation and analytics solutions consolidate and utilize digitized data from multiple data sources to optimize maintenance programs, increase asset utilization, and improve fleet management.





## Integration to Rail Ecosystem

Importantly, Trimble recognizes that condition monitoring software must operate within a wider railway “ecosystem” of applications and business processes and Trimble software is designed to be integrated with these types of applications and services. Data from this “ecosystem” can also be imported into Trimble software to enrich insights provided. This complete overview delivers timely information to the right people to inform proactive operational and engineering decisions.

Deriving actionable insight from data is the key to improving efficiency and reliability across a rail operator’s organization. Via faster enhanced data preparation and contextualization, and the application of intelligent analytics, data can be modelled to show trends and patterns that would otherwise remain hidden.

## Complete Rolling Stock Awareness

Rolling stock awareness across multiple platforms facilitates condition based maintenance. The ability to inspect trains and vehicles using Trimble vision-based systems significantly improves the overall safety performance of fleets by inspecting them more efficiently and effectively, at a much higher frequency. For one Australian customer train partings were almost eliminated through the ability to detect a leading indicator of the causal factor up to seven days before the failure would have occurred.

## Real World Rail Solutions

Trimble Rail solutions are relied upon to improve safety, reduce costs, improve asset utilization and optimize reliability for some of the longest, heaviest and fastest trains in the world.

Using this comprehensive portfolio of on-board and wayside condition monitoring solutions, rail companies can improve operational efficiencies, increase safety, manage service levels and reduce costs. Customers using Trimble Beena Vision and Nexala solutions include major freight operators such as BNSF, Aurizon, Norfolk Southern and Canadian National as well as many passenger operators such as SNCF, SJ, NS, Eurostar, Irish Rail, the Go-Ahead group, Arriva and Greater Anglia among others.

Trimble is working within the rail industry to create meaningful predictive analytics solutions that reduce risk and boost efficiency. By using its expertise in optimizing the data value chain, Trimble is focused on building tools that enable predictive operational awareness across an entire networks’ operation.

