



CAB Advisory

ON-TRAIN PERFORMANCE & TIMETABLE ADHERENCE



The **Trimble® CAB advisory system** is an on-board solution that informs the driver about train performance and adherence to timetable.

By facilitating improved driver behavior and timetable conformance the Trimble CAB advisory system minimizes delay penalties and improves overall service to customers.

Linked to real-time diagnostic and timetable information this tablet-based solution allows the driver to report any faults or issues with the train directly to the control room and maintenance depot.

Energy and fuel consumption information is continually updated for the driver's attention to ensure an optimal journey can be achieved. The system will also advise the driver in the event of a fault on the best recovery actions providing advice to keep the train in-service.

The CAB on-board advisory system delivers data from Trimble's R2M remote diagnostic and the Trimble P2M planning and performance

management systems to drivers, providing a complete train diagnostic system for the fleet. The system brings real-time fault information into the control room and provides an intelligent decision and planning support system with GPS to ensure effective and rapid fault recovery.

The system is designed for use on a tablet PC (Android, IOS or Windows) and can also be installed on an in-cab computer.

Benefits

- ▶ Reduced in-service failures
- ▶ Improved timetable conformance
- ▶ Delay penalties minimized
- ▶ Capture defect information in service
- ▶ Improved downstream maintenance process
- ▶ Event recording for post journey analysis
- ▶ Improved environmental impact
- ▶ Non-intrusive installation



Features

- ▶ Diagram information including formation length and special stop orders
- ▶ Information on safety or performance restrictions
- ▶ Shows next calling point, train length, time to next stop and variance to the predicted benchmark run
- ▶ Displays power or fuel used from deviation to benchmark or energy meters
- ▶ Driver delay attribution and fault reporting using on-train data
- ▶ Guided recovery assistance
- ▶ Back office analysis tools including performance to timetable
- ▶ Recognition of acceleration and deceleration rates in normal running conditions
- ▶ Information on compliance to environmental standards
- ▶ Fuel usage and management
- ▶ Interfaces to Enterprise Asset Management systems
- ▶ Integrated with Trimble's R2M remote diagnostics system
- ▶ Integrated with Trimble's P2M planning and performance management system
- ▶ Portable tablet based solution



CAB Advisory System

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THE SYSTEM IN ACTION

JOURNEY LIST

- ▶ Before each journey the driver logs into the system.
- ▶ The driver is presented with a list of available journeys ordered by start time and proximity to the driver with the ability to search for a journey by headcode to find next journey on the diagram.

JOURNEY CONFIRMATION

- ▶ After selecting the journey the driver confirms that unit data as provided by the train allocation system is correct, and acknowledges important details, such as the train length, and it is also possible to edit incorrect information.
- ▶ The system shows advisory information from the asset management system informing the driver of any restrictions.
- ▶ A summary of journey stopping points is supplied.

ACTIVE JOURNEY/STATUS

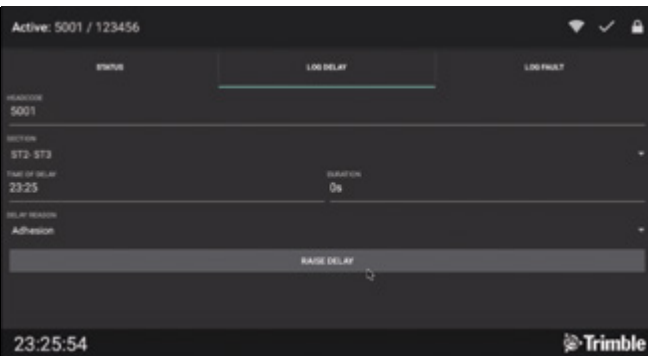
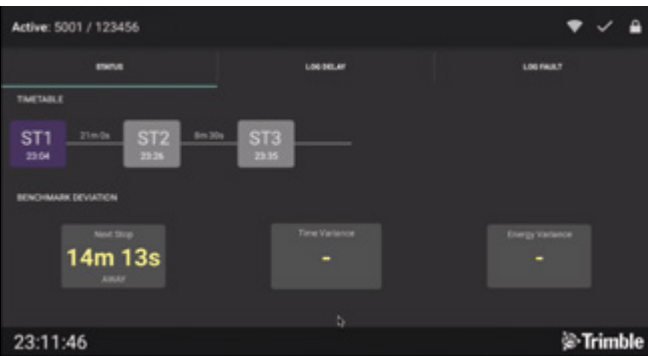
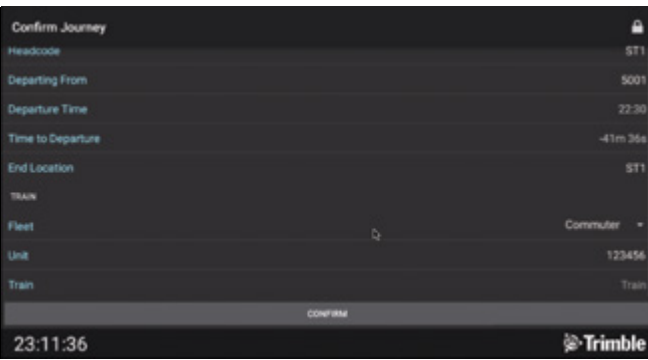
- ▶ Data collected from the Trimble R2M remote diagnostics system, or other third party sources, is used to build an optimal benchmark run for the journey which is shown as a baseline 'ideal' for the driver to try and attain.
- ▶ By analyzing statistics from previous runs of the same route, using the same type of train, a picture of the best runs is generated based on trains which were on time and used the least energy.
- ▶ This data is then used to provide feedback to the driver through a number of measures, such as the timetable deviation and energy deviation.
- ▶ By monitoring performance against the 'ideal' run the driver can adjust to reach optimum drive for the journey.
- ▶ The driver can also be informed of special stop orders and fault events from Trimble R2M, together with advice on the best recovery actions and guidance on how to keep the train in-service.

ACTIVE JOURNEY/DELAY/FAULT LOGGING

- ▶ While the journey is still in progress the driver can report delays and faults to the control room by submitting information when stopped at a station to build a full picture of reasons for delays and faults.
- ▶ For safety this function is not available while the train is in motion.

END OF JOURNEY REPORT

- ▶ At the end of the journey the driver is presented with an end of journey report showing the timetable deviations per station.
- ▶ If the journey has been delayed beyond a specified time frame the driver is required to log a delay reason to build a picture of reasons for delays through post journey analysis.



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