

# Alstom TrainScanner™

## A Railway Revolution

### 01 THE CHALLENGE

The Alstom TrainScanner™ is a system that will scan train carriages as they pass through carefully positioned lasers and cameras, taking status measurements of the hundreds of components trains contain. This data would then be delivered to train engineers, highlighting any potential problems that are likely to impact operations.

The company addressed Critical Software with the challenge of implementing a software solution that would be able to receive and integrate this all-important data, making it useable.

### 02 THE SOLUTION

Critical Software developed a highly-modular and flexible Web 2.0 software system that delivers information to train engineers through a real-time web interface.

An Agile process was used during development which, because of its flexibility, helped ensure that the final solution was easy to use and fulfilled all requirements. The 'Data Processing Visualisation and Reporting System' (DPVRS) was built using open standards, and applied to Critical Software's internal development framework for condition monitoring.

The system integrates and analyses all data collected, providing a holistic, user-friendly view, and offers faster access to current information. This allows important cross analysis between current status and historical data.

Seamless integration of several fleets containing different train models in a single system is possible, providing an insightful top-level perspective. Users can perform complex data analysis across several key indicators, moving from a simple component view, to a more complex multifleet level.

The DPVRS will use advanced time-series algorithms for predicting the remaining useful life of train components. It will also enable the development of more advanced diagnosis and prognosis algorithms, by providing a modular and open approach for their development.

Future extension of the system is made possible through the use of an open data interface based on the OSA-CBM standard, allowing the inclusion of new data sources provided by additional sub-systems.

### 03 THE RESULTS

The DPVRS offers advanced alarm functionality, notifying users when a potential problem is identified. This allows the timely collection and use of precise information about the current and predicted state of key train components, supporting the implementation of real condition-based maintenance.

By providing this key data, the unique TrainScanner™ system – the first of its kind in the UK – will revolutionise the strategies used by operators in dealing with the deterioration of stock. This raises safety levels, and allows for more cost-effective and efficient planning of maintenance activities.

### 04 THE STANDARDS

- Agile software development
- Web 2.0 solution based on Microsoft development stack: SQL Server, C# and ASP.NET

### 05 THE CLIENT

**ALSTOM**



### ABOUT CRITICAL SOFTWARE

Critical Software provides systems and software services for safety, mission and business-critical applications. We work closely with our clients, helping them to meet the most demanding standards for performance and reliability.

We were founded in 1998, with NASA our very first client. Today, we work across many international industries and have offices across the globe.

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