



An ICE 3 Operated by Deutsche Bahn Leaves the Krefeld Vehicle Maintenance Facility

Tobias Thiere is responsible for recording operations performed at the Krefeld plant. When the vehicle first arrives, he determines the faults and transmits them to the stationary SAP system via a tablet computer and WLAN. Any additional damage which is discovered later can be recorded online up until shortly before the vehicle leaves. This immediately triggers further processes in the system.

Robust tablets used at DB Fahrzeug- instandhaltung GmbH sites

Optimised Processes

When maintaining rail vehicles, documenting the results of inspections and maintenance work is crucial. And when carrying out the work itself, the relevant rules, regulations and detailed plans must be promptly available. So what could be more logical than a mobile solution for recording the data obtained directly on site, while also making the required documents available online via the same medium? DB Fahrzeuginstandhaltung GmbH saw the potential for optimisation offered by mobile IT and developed a solution for its sites and workshops. This allows employees in the workplace to communicate online with the central computer system using robust tablets. For faster handling of service processes, including online order entry, direct access to maintenance and repair documentation, the system allows an optimised production control and quality assurance processes. This in turn leads to improved access to information, less downtime for the trains and finally a rapid ROI.

Whether for locomotives, multiple unit trains or railcars and for high-speed transport or transport of passengers or freight, DB Fahrzeuginstandhaltung GmbH (FZI) is considered to be one of the most successful full-service providers for rail vehicles in the whole of Europe. Since the sites were merged by Deutsche Bahn AG, the German national rail company, and the limited company was founded in 2004, FZI has taken over inventory control across the whole group, as well as logistics for replacement parts for rail vehicles. Today, the 13 sites and additional workshops boast a state-of-the-art technical infrastructure. The approximately 8,400 employees have decades of experience. The full-service provision includes scheduled inspections, accident repair work and modernisation projects. Other tasks are the reconditioning of components and sourcing of materials for all lines of maintenance. FZI's ability to combine technical systems with modern information technology is a key factor in the economic development of the company.

Operator:	DB Fahrzeuginstandhaltung GmbH D-60326 Frankfurt/Main, Germany - www.db-fzi.com
Industry:	Maintenance
Application:	Mobile Communication for data collection, document presentation and other tasks
Products:	Tablet: CASIO V-T500 Software: PUMA apps (DB in-house development)
Partner:	Wincor Nixdorf International GmbH D-63263 Neu-Isenburg - www.wincor-nixdorf.com



Documentation and Regulations Available Online on a Tablet

The DuR app provides employees on-site with all of the necessary rules, regulations, protocols, circuit diagrams and information in a paperless format.

Potential Recognised, Strategy Developed

The need to constantly improve the company and to further optimise work processes gave rise to several initiatives, such as Project PUMA. PUMA (Produktions-Umfassende Mobile Applikationen – cross-process mobile applications) is part of an IT strategy designed to make work easier for the employees at the sites. At the same time, it is intended to optimise cumbersome processes involving lots of paperwork and help to add extra value.

The idea originated from examining the highly diverse information flows affected by various media breaks and significant delays typical of a maintenance organisation. One of the primary objectives of Project PUMA was therefore to develop a solution to record the current state of vehicles scheduled for maintenance in an accurate yet simple way and without any time lag. This process is known as „damage recording“ and has to date been carried out using paper forms and Excel spreadsheets. For larger trains, the process often takes several days. With the new solution, it should be possible to record individual work items and information on the extent of the damage directly online. This avoids the need to transfer data from paper format to the SAP system at a later date.

As Mobile as Possible...

When examining the tablet market, the first question the developers asked themselves was, which operating system would provide the desired level of flexibility for the software to be developed as part of Project PUMA. The decision was made to use the Android™ operating system because this open-source platform

supports simple development of in-house applications and even incorporates security-related features for professional usage.

DB Systel GmbH, IT service provider for Deutsche Bahn, helped to source tablet computers from well-known manufacturers to suit the needs of FZI. It quickly became apparent that neither the consumer model, nor the extremely robust industrial tablets were ideal. The industrial tablets were often too heavy and awkward due to the mechanical protective features that the term tablet hardly seemed appropriate. These „toughened“ devices were also out of FZI's price range, so the focus shifted to more suitable devices. Eventually, they opted for the CASIO V-T500 tablet.

Robust, yet Very Easy to Handle

The Casio tablet not only satisfies the fundamental requirement – the Android™ operating system – but also offers extra practical functions for professional use. For example, selecting „kiosk mode“ permits only FZI-approved applications to be used and blocks general consumer apps. This mode also reliably prevents changes being made to the device's configuration. An integrated NFC module allows secure, contactless authentication of employees using their company identity card.

The Casio tablet also scores points for its external features. The robust case has an IP54 protection rating, more than adequate for FZI's needs, and can



No More Annoying Folders Full of Documentation...

Large-scale plans would only get in the way when repairing the air-conditioning system on the roof of an ICE centre coach. Handling the documents on the Casio tablet's touchscreen is much more convenient.



Final Inspection in the End Car of the ICE 3

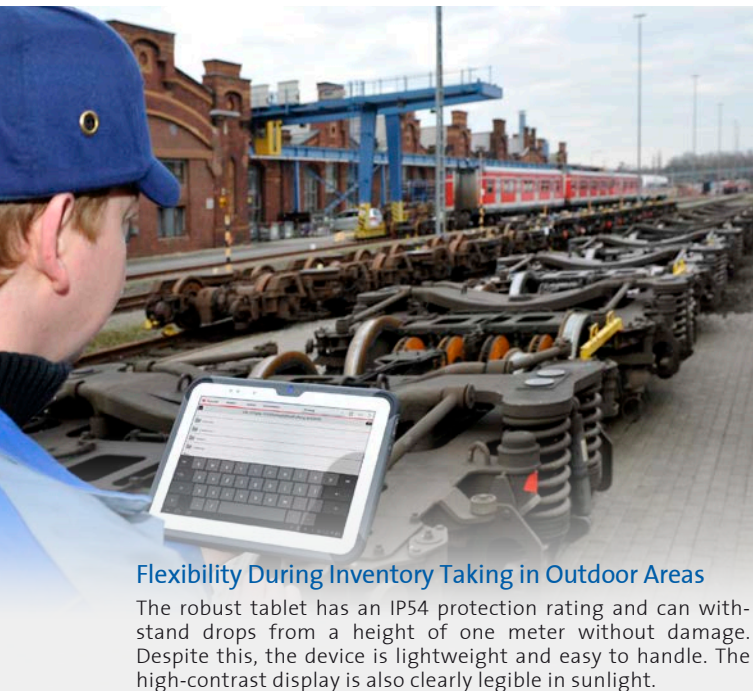
The mobility strategy behind Project PUMA aims to provide various apps to optimise selected processes that were previously paper-based. From mobile damage recording to logging final inspections, everything should be processed online using a tablet computer.

withstand drops from a height of one meter without damage. Despite this, the device is lightweight and easy to handle. Practical hand straps on the back of the device make it even more ergonomical. The standard features of the CASIO V-T500 meet all of the project team's requirements in terms of mobility, flexibility, communication methods, security and quality. As Project PUMA is expected to involve between 600 and 800 tablets when completed, FZI will also require professional mobile device management. This management service will ensure the roll-out process runs smoothly, e.g. by transferring software and configuration settings.

Compatible with Many Applications

The mobility strategy behind Project PUMA aims to develop additional apps to optimise selected processes. Employees already use the DuR app (documents and regulations) in addition to the MSA app. The DuR app provides online access to all of the required rules, regulations, protocols, plans and information during maintenance and repair work. The system is also set up to allow access to the DB Intranet. A professional time-recording app is used for mobile time capturing of individual work, multiple location work and group work. Collecting this data allows FZI to manage its time more efficiently. In turn, this improves marketability, costing accuracy and helps to secure planned productivity growth. Further applications are already in development.

The hardware has been well accepted. The staff appreciates the practical Casio tablets, which are not much heavier than consumer tablets but are much more robust and are therefore suitable for industrial applications. Thanks to the robustness of the device and the provision of a reliable service and spare parts concept, the Casio tablets offer high availability and long-term investment security. These factors are key when determining the cost effectiveness of the overall solution.



Flexibility During Inventory Taking in Outdoor Areas

The robust tablet has an IP54 protection rating and can withstand drops from a height of one meter without damage. Despite this, the device is lightweight and easy to handle. The high-contrast display is also clearly legible in sunlight.



„It must be clear to FZI customers that the rail vehicles would require even shorter stopovers in the workshop and that the vehicles could be back in the scheduled operation more quickly“, explains Katharina Siebke, DB Fahrzeuginstandhaltung GmbH, Frankfurt/Main.



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