LDRA
Software Technology

Westinghouse Brakes

Speeding up the Trains

Westinghouse Brakes of Chippenham have found that LDRA Testbed has enabled software testing procedures for each module coded in C, to be carried out in 2 days instead of the previous 5.
A saving of 60% !

The Project & Solution

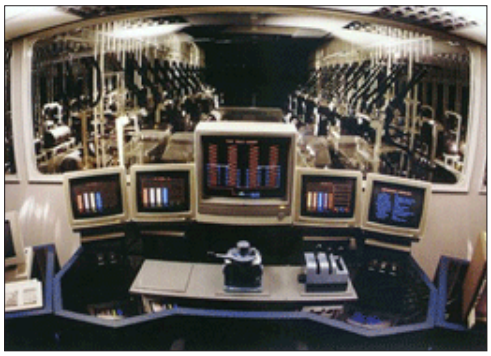
Westinghouse Brakes, who supply brake control systems to 80% of the trains in the UK, first contacted LDRA in 1995 to discuss how they could improve their testing productivity through the use of static and dynamic analysis techniques.

They purchased the C version of ***LDRA Testbed*** and implemented a process from which they are able to use complexity metrics to predict the test effort required to test their existing systems and dynamic analysis to measure the code coverage results.

Tests are carried out in both simulated environments and on large braking test rigs which have been set up on site at Chippenham. Their state-of-the-art test facilities include a replica of a London tube station for testing their Platform Sliding Doors.

Changes in the rail industry have led to increased safety controls. Westinghouse Brakes, working to the European CENELEC safety standard for railway applications software, use the MISRA C guidelines to formalise code reviews.

LDRA Testbed has been used to automate the MISRA guidelines checking as well as the recommended complexity analysis and code coverage measurement aspects of the standard. This test process has been introduced for the EP2002 braking system, the next generation intelligent distributed brake control system.



As other new projects have started, Westinghouse Brakes have adopted a bottom-up test strategy starting testing at the unit code and test phase. To assist with their unit testing Westinghouse Brakes purchased LDRA's Test Harness Generator, ***TBrun*** in 1999. Now complete software lifecycle testing at unit, module, integration and system level has been automated, primarily using LDRA tools.

The Benefits

The benefits to the system development process have been greater productivity in the test phase, reduced costs and the capability to ensure that effective test processes are repeatable and extensible throughout the product lifecycle.

*"**LDRA Testbed** has helped us to focus on our software development, to formalise procedures for code reviews and formulate the best test strategy for our embedded systems."* says David Owen, Software Development Manager. *"If a tool is easy to use it motivates engineers to test and this is proven with our use of **LDRA Testbed.**"*

Westinghouse Brakes have now outsourced some of their testing to a 3rd party in the knowledge that test repeatability can be assured with ***TBrun***. The usual concerns and misgivings about subcontracting can be put to one side in the knowledge that the ***LDRA Testbed*** toolset will not only ensure good productivity but that the required quality model is being adhered to.

New trains for the Gatwick Express

To find out more about saving money and improving quality of service contact LDRA

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