

# LDRA Adds Fuel to the Development of Safety Critical Software



Fairchild Controls Headquarters, Frederick, Maryland, USA

## The Client

*Fairchild Controls - a division of EADS North America (Fairchild) designs and manufactures vapour cycle systems, air management systems, control electronics and air turbine drives for military and commercial aerospace and defence applications.*

*In the defense arena the systems provide cooling for externally mounted aircraft pods that carry targeting, navigation, reconnaissance and electronic countermeasure systems for U.S. and foreign military services.*

## The Project

Fairchild selected the LDRA tool suite and made use of its advanced Static and Dynamic software analysis facilities in the development of the aerial fuelling capability for a generic military aircraft program.

## Project Requirements

A key requirement for the software development team working on the project was to be able to integrate the selected test tool into their development environment and utilise the test facilities provided to achieve DO-178B Level C certification.



Boeing 767

The specific technical requirements associated with this overall goal included a need to integrate the LDRA tool suite with the CodeWarrior IDE and a Motorola MDC555 target processor. Coupled with this was a requirement to accommodate the analysis of both manual and auto-generated code with the latter created through The MathWorks Real Time Workshop.

In tandem with the Structural Coverage Analysis elements of Fairchild's development plan best practice processes were also put in place to ensure that all code met the MISRA-C:2004 coding guidelines. Compliance with this chosen standard was then automatically verified and reported via the LDRA tool suite's sophisticated Programming Standards Checking facilities.



*Dr Haik Biglari, Chief Design Engineer: "The LDRA tool suite was vitally important in developing the processes, procedures and methodologies required by Fairchild. We were able to find errors earlier in the software development process, lower development costs and increase productivity."*

*"Fairchild have worked on developing a completely tools based approach which mean we were able to develop a process which could be used for future projects."*

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***"LDRA was the only company able to support our automatically generated code out-of-the-box"***

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## The Future

LDRA has recently extended the facilities of the LDRA tool suite with the addition of the TBreq module. TBreq is specifically designed to satisfy DO-178B compliance criteria in respect of the verification and traceability of requirements.

In so doing the tool generates and maintains a user-specific Requirements Traceability Matrix (RTM) for all High-Level, Low-Level and Derived requirements associated with the software under development. TBreq was not utilised on the generic military aircraft program but Fairchild recognise the significance of the facilities that TBreq brings to the task of DO-178B certification and have expressed an interest in making use of it for future projects.

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***"The LDRA tool suite automated our development processes and dramatically increased efficiency by 1000%"***

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