

# LDRA Rises in the East

## Large take-up in Chinese market



### The Industry

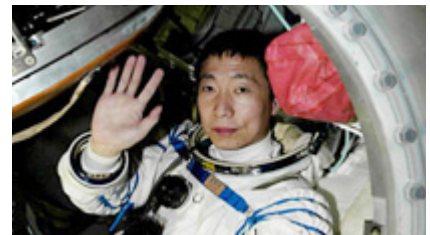
*LDRA have operated in the Chinese market since 2000 through their distributor Vision Microsystems.*

*In this time the Chinese aerospace and defense software market has developed at a dramatic rate and this in turn has lead to a high demand for software test tools capable of analysing complex safety-critical applications.*

### Project Requirements

A number of key projects including the China Manned Spacecraft programme and China Moon Exploration programme were looking for software tools. The tools had to meet several strict criteria, including the following:

- C/C++ coding standard enforcement
- Ability to check the Chinese Military Standards - GJB5369-2005K
- Code coverage analysis up to MC/DC for DO-178B Level A
- Assembler level code coverage
- Automated unit testing



Chinas first astronaut - Colonel Yang Liwei

### The Benefits

Mr. Zhiqiang Zhang, CEO, Vision Microsystems said:



Zhiqiang Zhang

“Coding standards enforcement has become a widespread requirement in China. LDRA have a large number of rules within the tool suite including MISRA C / MISRA-C:2004, which assists greatly with meeting customer requirements.”

“Being able to identify many deep dataflow defects which can not be detected by other tools is a key distinguishing factor for LDRA.”

“Many software testing standards in China are derived from US or European standards such as DO-178B & DEF-STAN 00-55. The Chinese software testing standards request code coverage verification.”

“For example the China Manned Spacecraft programme has now entered into the second phase, which requires MC/DC coverage analysis for DO-178B Level A software.”

“LDRA takes this one stage further and carries out object verification testing. The *LDRA tool suite* is the only tool in the market which can provide both C and assembler level coverage analysis.”

**“The ability to integrate with difficult embedded systems.”**

### The Future

The *LDRA tool suite* provides an open scheme for software instrumentation. This feature continues to allow users to integrate with any platform, especially embedded systems.

Automated and effective unit testing is becoming increasingly important in China.

Zhiqiang Zhang commented:

“The ability to automate the unit testing process and not have to also learn a script based language is very important for Chinese customers. The automation facilities within *TBrun* make unit testing a seamless and highly productive process.”

**“Easy to configure for coding standard enforcement”**



SECOND MISSION: China's Shenzhou VI manned space mission carrying two astronauts, the country's second manned space flight, lifts off from the launch pad at the Jiuquan Satellite Launch Center in Jiuquan, in China's Gansu province.

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

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## PRESS RELEASE

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This press release can be downloaded from <http://www.hughescom.net/pressroom/LDRA.html>

## LDRA Wins \$1 Million Contract in China's Manned Spacecraft Programme

### *Distributor Vision Microsystems sells LDRA software testing tools and service to China space program*

**Wirral, UK. 30 November 2009.** The China Manned Spacecraft Programme (CMSP) selected LDRA, the leading provider of automated software verification tools, and the LDRA tool suite to analyse complex safety-critical applications related to the Tiangong 1 spacecraft. The Tiangong spacecraft, required to meet DO-178B Level-A certification, will carry out space rendezvous and docking experiments that support the overall mission of CMSP. The LDRA tool suite will enable CMSP developers to achieve the stringent safety-critical standards required to ensure the safe launch of the spacecraft.

The LDRA tool suite has successfully enabled the Chinese space program to achieve safety- and mission-critical certification for its software applications since 2001. In this latest development phase, the CMSP is required to check programming standards to the Chinese Military Standard GJB5369-2005K, undertake and automate unit test, analyse code coverage up to DO-178B Level-A for Modified Condition/Decision Coverage (MC/DC) and verify object code for the critical systems in the Tiangong 1 spacecraft. The LDRA tool suite is the only commercially available tool that meets all of these latest requirements for software testing and providing full lifecycle support.

“Coding standards enforcement has become a widespread requirement in China,” noted Zhiqiang Zhang, CEO of Vision Microsystems. “The LDRA tool suite identifies many deep dataflow defects which cannot be detected by other tools. In addition the tool suite’s automation facilities make unit testing a seamless and highly productive process.”

Key elements of the LDRA tool suite support for CMSP test processes include LDRA Testbed, the process management tool at the core of the LDRA tool suite, which forms the foundation of automated software verification. LDRA Testbed exercises the code, performing quality and design reviews on the source code. It also conducts test verification for code coverage, including statement, branch/decision, MC/DC, test path and procedure/function call metrics.

Coupled with LDRA Testbed is TBrun, LDRA's automated unit testing tool. With TBrun, a graphical user interface automates the production of test data vectors creating a test harness and stub generation automatically. LDRA takes this technology a significant step further than other vendors by enabling users to create test cases for structural coverage of high-level source code using the object-box mode. These exact same test cases are then applied to the corresponding object code to satisfy DO-178B Level-A requirements. The advanced and highly automated test facilities provided by TBrun pinpoint code defects more efficiently and earlier in the development lifecycle thereby reducing the defects found during formal testing and facilitating on-time and on-budget delivery of software.

"This win extends LDRA's extensive experience in the Chinese market where the LDRA tool suite has been used by the aerospace and defense software market for projects such as the China Manned Spacecraft and the China Moon Exploration programs," noted Ian Hennell, LDRA Operations Director. "At LDRA, we are committed to helping developers achieve excellent software quality. It's exciting to be a part of China's move to implement these techniques into the entire software development lifecycle and with the entire project team."

### **About the China Manned Spacecraft Programme**

The LDRA tool suite has been used within the China Manned Spacecraft Programme since 2001. There are over one hundred licenses of the LDRA tool suite used by more than 30 individual research institutes or companies involved in this programme. The LDRA tool suite helps CMSP software to achieve the necessary high levels of quality and safety.

The CMSP's primary mission will be to carry out space rendezvous and docking experiments, to guarantee the working and living conditions of taikonauts (i.e., a Chinese astronaut) and to ensure their safety during short-term parking orbits. It will also carry out space application and aerospace medical experiments, space science experiments and technical testing of the space station, as well as establishing a space experiment platform that can carry out short-term manned missions and long-term independent and reliably-operated unmanned missions.

### **About the LDRA tool suite**

The LDRA tool suite has been derived from many ground-breaking testing techniques developed by LDRA. The LDRA tool suite assists with the eight primary tasks: traceability verification, design, code and quality review, unit testing, target testing, test verification and test management. Focus on these key areas is required to achieve a company's software development and maintenance goals. The LDRA tool suite can be used by an entire project team—developers, QA managers, test engineers, project managers and maintenance/support engineers—to automate the software development lifecycle. Through the deployment of the LDRA tool suite, companies are able to deliver well-constructed, documented and tested software, and benefit from significant time, cost and operational savings. For more information on the LDRA tool suite, please visit: [www.ldra.com](http://www.ldra.com).

## **About LDRA**

For more than thirty years, LDRA has developed and driven the market for software that automates code analysis and software testing of safety-critical, mission-critical and business-critical applications. The LDRA tool suite is widely used in the aerospace, space and defence technology, nuclear energy and automotive industries. Through the use of the LDRA tool suite, companies ensure that their systems are built in accordance to prescribed industry standards and are durable and reliable in use. The LDRA tool suite is available for a number of programming languages over a wide range of host and target platforms. Boasting a worldwide presence, LDRA is headquartered in the UK with subsidiaries in the United States and an extensive distributor network. For more information on the LDRA tool suite, please visit: [www.ldra.com](http://www.ldra.com).

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