Tool Debugs Component-based Software

Intermetrics Accelerates Technology Development Three Years Ahead of Time

The project validated an important technical concept about probe architecture that continues to be just as relevant in the software environment in 2006 as it was in 1997.

The Challenge—In the late 1990s, software systems for e-business transactions were increasingly built of components across multiple platforms or operating systems, programming languages, and network protocols. At that time, no tools were available for detecting potential problems, or "bugs," in these software systems. However, the need for such a tool was critical for the e-business industry.

The challenge was to find a debugging tool for component-based software systems. If a "detective" probe could be inserted at key points in the software code to detect anomalies and then send a message back to the computer server about its observation, the programmer could easily locate the error and remove the bug.

In 1997, Intermetrics, a software engineering company in Massachusetts, proposed to develop a debugging tool for component-based software systems or server-based applications using this concept. Error-free software systems or the early resolution of errors in software would save billons of dollars for the U.S. economy. Developing this probe technology would involve high technical risk and capital allocation. Intermetrics applied to ATP under its 1997 "Component-Based Software" focused program and received cost-shared funding.

The Outcome—As a result of the ATP award, Intermetrics developed:

- A debugging technology for component-based software systems
- A prototype of debugging tools
- A unique probe technology for detecting and diagnosing anomalies in software behavior and displaying the message on a console on the user's desktop
- An automatic insertion feature by which probes could be placed by the software developer with a mere click of the mouse on a point in the software code

During and after the ATP-funded project, Intermetrics became part of Averstar, then changed to Titan Corporation, and finally was acquired by L3 Communications. At the end of ATP project, Titan licensed the new debugging technology to a large computer manufacturer. The details of this agreement are proprietary. However, the interceptor technology was used to build a stand-alone module that monitored the performance of web-based applications and collected data to rapidly isolate problems within the web server, the web browser, and other Java-based application servers. It was commercialized as part of a large enterprise-wide software management solution.

A November 2002 ATP study on this project determined that without ATP funding to Intermetrics, similar technology would have taken at least three more years to develop.

Partnering Organization:	L3-Titan Group (formerly Intermetrics, Inc.) Reston, VA
Project Duration:	10/1/1997 – 1/1/2000
Project Cost:	$1.7M ATP cost-share; $1.0M industry cost-share
Project Brief:	http://jazz.nist.gov/atpcf/prjbriefs/prjbrief.cfm?ProjectNumber=97-06-0038
Project Status Report:	http://statusreports-atp.nist.gov/reports/97-06-0038.htm Research conducted March 2006
Economic Case Study:	http://www.atp.nist.gov/eao/gcr02-834/b-4.htm