Semantic Designs Wins $1M Department of Energy Phase II SBIR Grant for C++ Refactoring Engine

Automated software engineering tools company Semantic Designs chosen by DoE to tackle tough problem of handling large, complex software systems supporting science and industry.

Semantic Designs (SD) announced today that the U.S. Department of Energy (DoE) has awarded it a 2 year, $1 million grant, to develop software tools that will enable engineers to improve large, complex application software more easily and help scientists to revise experimental supercomputer codes more quickly. The result will be earlier delivery of more robust software systems, thus providing immediate benefit to commercial organizations and society.

A crucial part of application software development is the creative activity by programmers of defining and implementing new functionality for that application. However, there is often considerable work in understanding the existing structure, and reorganizing ("refactoring") the application to enable the new functionality to be integrated. The large scale of modern applications makes this increasingly more difficult. Shortening refactoring time will allow engineers and scientists to concentrate on the new value they can provide.

The grant by DoE to SD funds research and development leading to a practical refactoring tool for understanding and restructuring applications coded in the C++ language. C++ is widely used to develop large and complex software for science, trading, engineering, defense, and embedded applications. This particular research will build deep semantic analysis tools for C++11, the most modern C++ standard, with the typical additions such as OpenMP and MPI commonly used in high-performance computing. Using results from this analysis, engineers and scientists will be able ask the tool to "refactor" the code into forms that enable further changes.

Such refactoring tools exist for other computer languages, but C++ is an especially difficult language to process, and reliable tools for C++ are difficult to find. The work will leverage the effort that SD has invested in processing C++, including patent-pending ideas for handling pre-processor directives, a classic thorn for refactoring tools.

This effort will build on Semantic Designs' unique core technology, the DMS® Software Reengineering Toolkit™, which provides general analysis and code transformation capabilities for arbitrary software systems. SD has applied DMS over the last decade to a wide variety of commercial, large-scale software architecture analysis and mass change tasks for various Fortune Global 500 companies, including Northop Grumman, Australia-New Zealand (ANZ) Bank, Rockwell Automation and currently Dow Chemical, as well as government agencies such as NASA and currently the U.S. Social Security Administration.

Dr. Ira Baxter, CEO of Semantic Designs, said, "The SBIR award is a vote of confidence in the technology vision behind SD. It will enable SD to deliver that technology more effectively to the community, while providing more very high-tech jobs here in Central Texas". The award is one of 53 Phase II Small Business Innovation Research (SBIR) grants made by DoE in 2012 and one of only 4 made to Texas-based companies.

Semantic Designs was founded in 1995, presently has 11 employees in Austin, Texas. For further information, contact info@semanticdesigns.com.

Contact Information
Ira Baxter
idbaxter@semdesigns.com
512-250-1018

Online Web 2.0 Version
You can read the online version of this press release here.