# Fully automatic software testing

May 16 2011

University of Twente researcher Machiel van der Bijl has developed a system that eliminates the need to test software manually. The system not only facilitates quick and accurate software testing, but it will also save software developers a great deal of money.

Van der Bijl: "Software testing easily accounts for a third to half of total development costs. Our automated method can improve product quality and significantly shorten the testing phase, thereby greatly reducing the cost of software development."

Van der Bijl defended his dissertation on 12 May at the Faculty of Electrical Engineering, Mathematics and Computer Science.

The testing phase for new software consists of three steps: developing the tests, running the tests and evaluating the results. These three steps are generally performed manually. Model-Based Testing is a method that automates all steps in the software testing process. When used properly, the method completely eliminates the need for manual software testing.

Model-Based Testing has a number of major advantages: it makes the software testing process faster, cheaper and more accurate. It is not uncommon for manual software testing to take anywhere from several months to years. Van der Bijl's new system can significantly reduce the duration of the testing period and thus reduce costs. "We can reduce the duration of the testing phase by at least thirty percent. We were even able to reduce overall software development time for one of our customers by a factor of four." Model-Based Testing is more accurate,

because in principle there is no limit to the number of tests you run, says Van der Bijl. "If you want, you can even run a million tests."

Van der Bijl conducted his doctoral research with the Formal Methods and Tools department and the CTIT research institute. He was supervised by Prof. Ed Brinksma (who is also the Rector Magnificus of the University of Twente), Prof. Arend Rensink and Dr Jan Tretmans. Taking advantage of his research results, Van der Bijl started a company called Axini while working on his PhD. This company is marketing the new system. The system can be used for any kind of software, but the company is focusing initially on the financial and high-tech sector.

Provided by University of Twente