



ASD For Medical & Analytical Equipment

verum®

Verum's Analytical Software Design Suite is a design automation tool enabling companies to build complex machine controls with zero defects

- Improves software quality by a factor of 10
- 30 - 50% increase in productivity shortens time to new innovations
- FDA approved means of generating safety critical software
- Guarantees precise, complete, correct and traceable software code
- Helps manage 3rd party supply chains by aligning software designs and interfaces
- Eases the use of formal mathematical methods for verifying software

Typical Applications:

- Medical Diagnostic Systems
- Medical Treatment Systems
- Analytical Biomedical Instrumentation
- Analytical Biotech Equipment
- Analytical (Bio)chemistry Equipment

Key Benefits of ASD:

- Eliminates debugging of asynchronous, concurrent, event driven software
- Ensures that all behavioral characteristics of systems are known and specified before software generation
- Eliminates the risk of costly recalls due to defective behavior of software
- Easier field maintenance of software and software upgrades

Create Defect Free Medical and Analytical Systems Software

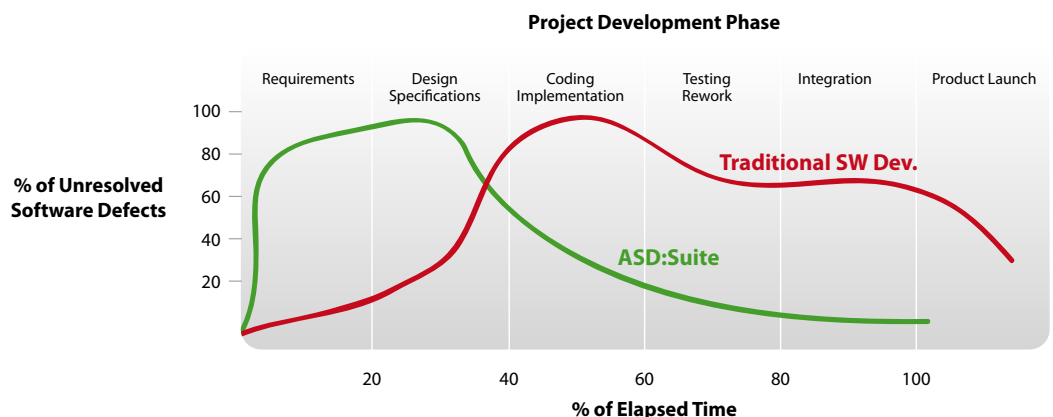
Verum's ASD:Suite is a patented software design automation tool changing the way medical and analytical systems software is designed, developed, and tested. The ASD:Suite turns the art of software programming and development into a formal rigorous engineering science backed by mathematical proofs. For the first time, using the ASD:Suite, embedded software development teams can now mathematically verify and prove the correctness, completeness, and conformance to specifications of their designs before any code is created. Thus the ASD:Suite puts embedded software engineering on par with other math based engineering disciplines such as structural, mechanical, electrical, and civil engineering, where products are first fully modeled and tested and proven to be correct before any building starts.



How ASD Improves Software Development Cycles

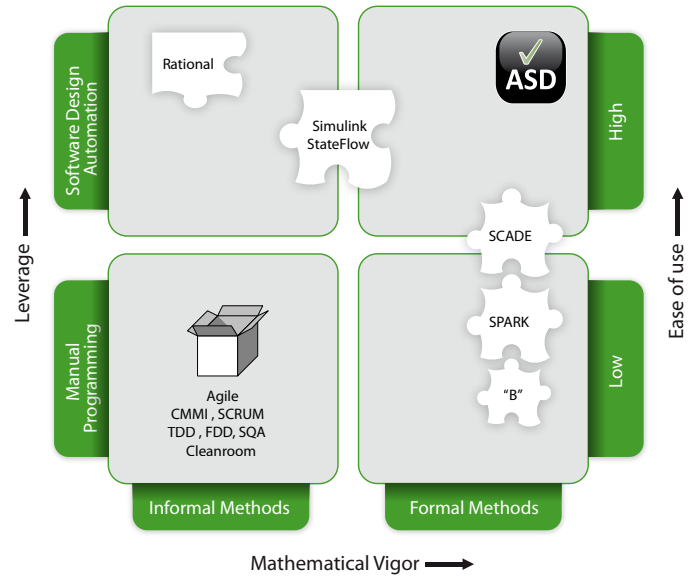
First, the ASD:Suite aligns all stakeholder's interests at the earliest stages of product development. The ASD:Suite identifies all possible behaviour of medical and analytical equipment software facilitating the understanding of desired and undesirable modes of operation. This results in the completeness of the requirements specification and the optimal alignment of customer requirements with individual software specifications that address system, architecture, and module designs before software is written.

Second, the ASD:Suite guarantees to identify all behavioural software defects early in design cycles as shown here in the figure. Removing such defects early is the key to improving productivity, reducing rework, improving integration of software components, and reducing costs.



ASD:Suite Uniquely Positioned For Maximum Benefit

There are numerous well established informal and formal methodologies and tools for helping software development teams produce high quality code as shown in the figure here on the right. However, the ASD:Suite is the only formal methods tool that scales to large code bases (hundreds of thousands of lines of code), is accessible for average engineers, and economically affordable for large projects.



Who Benefits from ASD:

- Business Unit Managers - reduced business risk, improved margins
- Engineering Managers Embedded Software - better use of technical resources
- Product Development / Management - shorter time to new innovations
- Integration, Test, & Verification Managers - focuses testing on requirements not defects
- Embedded System Software Architects - complete, correct, precise designs
- Senior Embedded Software Design Engineers - first time right software

Why Should Your Company Use The ASD:Suite

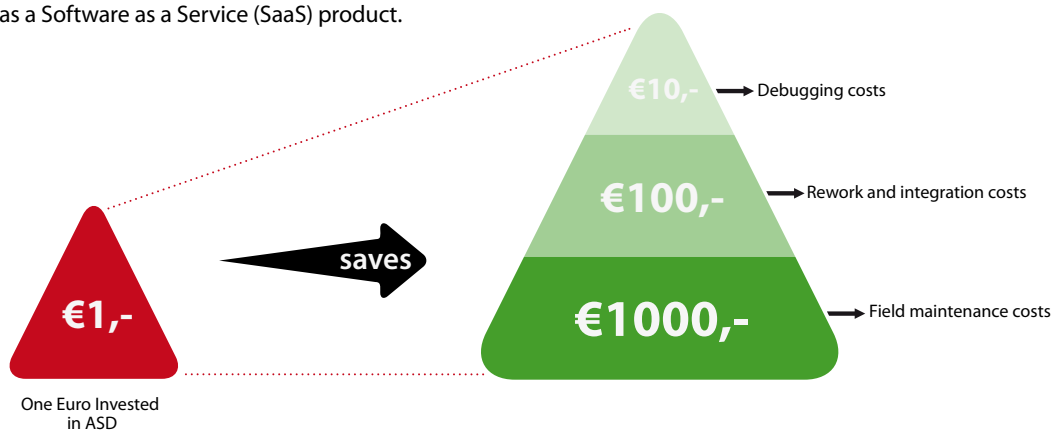
Post production testing and verification of software are well recognized practices in the Medical and Analytical Systems Software industries. Testing is necessary but insufficient to achieve the benefits that the ASD:Suite provides. First, testing is an exercise in sampling - many programs result in hundreds of millions of combinations of possible behavior which cannot all be tested. Second, inadvertent designs leading to nondeterministic software codes are not testable.

- **Testing causes unwanted rework -**
- **Testing is the most expensive way to remove defects -**
- **Testing has the maximum impact on time to market delays -**

By combining the ASD:Suite with conventional testing programs, testing becomes more effective, focusing on true product quality, rather than proving minimal functionality. In fact the ASD:Suite is compatible with existing medical and analytical equipment software development environments.

The Economics of Verum's ASD:Suite

The ASD:Suite is sold as a Software as a Service (SaaS) product.



All descriptions herein are subject to change, Verum is not liable for changes, omissions, or errors to the product descriptions of the ASD:Suite herein. Customers are advised to contact Verum for the latest product details.