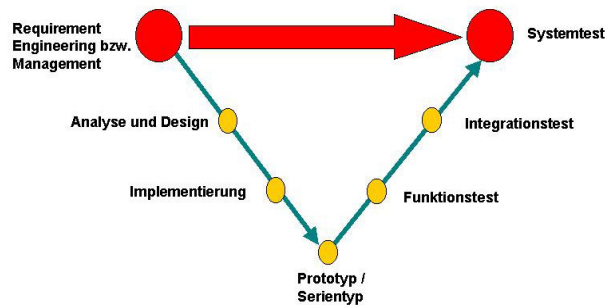


MicroConsult ST

The perfect solution for system design specification and testing.

The engineering system MicroConsult ST (System Test) establishes a direct connection between design specification and testing. With verifiable specification, businesses extensively safeguard their projects as the specification becomes the test. Despite increasing system complexity, risk decreases and with it the amount of returns.



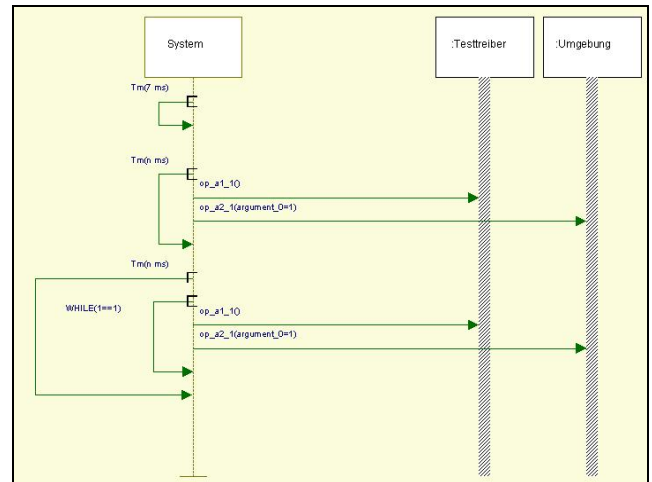
MicroConsult ST bridges a gap for those customers who want clean tests on all levels. The MicroConsult System Test is independent from which paths the customer decided to follow in analysis, design, implementation, unit testing and integration testing.

UML Specification as Basis

The first step is the creation of a system UML specification by the customer using Rhapsody from I-Logix. The MicroConsult Test Management Tool reads sequences from the model and this way works with the same tree as Rhapsody.

Then the tests are selected. The solution recognizes non-reserved parameters which can be defined in the configurator of the management tools. Eventually a test run is created as an XML file.

Exact timing is described in the sequence diagrams and to this end the solution makes commands like Wait and Watchdog available.



MicroConsult ST offers development businesses the choice between 3 test environments:

1. Software-in-the-Loop (SIL) in the PC: In this pragmatic approach, the developer uses the device (s)he uses in his/her daily work and creates random signals.
2. Hardware-in-the-Loop (HIL) with a classic realtime controller: Here, programmers utilise the HIL device of the PXI family from National Instruments to create signals from 1 ms upwards.
3. Hardware-in-the-Loop (HIL) with FPGA: National Instruments has developed a FPGA measurement card which can be used to define the functionality of a processor using software. In this way, signals upwards of 50 ns can be created.

Test Mixes for all Requirements

Alongside the large bandwidth of signal resolution, the three test environments from MicroConsult ST offer lots of other advantages. The customer can combine HIL and SIL as they see fit thereby covering all possible test requirements. And all this using the same sequences. For example, developers use their PC if they don't have continual access to the PXI system and yet want to carry out quick tests in the meantime. HIL would be first choice if the whole circuit board has to be included.

Although many development businesses give SIL preference, HIL is establishing itself strongly in professional test environments.

HIL with added value

- It allows scenarios to be run through where, under real conditions, the test item is damaged mechanically or even destroyed.
- Test cycles are noticeably shortened because mechanical procedures always involve some inertia like, for example, waiting for water to boil. Saving time allows businesses to test deeper with more combinatorial possibilities.
- The test procedure is automated and saves employee resources. The tedious pressing of buttons according to a given test plan belongs in the past with HIL.
- The software being tested does not have to be complete. Using National Instruments' LabVIEW, suitable test drivers can be flexibly created for the current intermediate product stage.
- National Instruments offers a wide spectrum of cards for all important measuring tasks.

All this means a significant increase in product quality.

LabVIEW from National Instruments under MicroConsult ST serves the development of complex environment models with extremely high productivity. The selected Rhapsody sequences are exported over LabVIEW and transferred to the control unit.

This is then tested against the environment model that runs on a hardware or software simulator. All test protocols are created according to IEEE829 and archived for historical analysis. LabVIEW plays an important role also in the drivers that run against the I/O ports of the HIL device. These are created with LabVIEW or tailored specifically to the project.

MicroConsult ST Components

MicroConsult Test Management Tool

The developer imports sequences from Rhapsody with this tool, creates the tests, loads these into the HIL device or PC and generates protocols.

I-Logix Rhapsody

The model-based development environment uses UML 2.0 and SysML for the system, software and tests. With the integrated Model Driven Development (MDD) Technology, developers graphically specify systems and the software design. MicroConsult ST uses the basic package Rhapsody Architect for the specification of the embedded system.

National Instruments PXI

PXI (PCI eXtensions for Instrumentation) is an open, PC based platform for measurement technologies and automation systems. Because it uses the standardised PCI bus, businesses profit from a large market of hardware and software components. PXI enlarges these with a robust package for industry, various I/O slots and functions for the toughest timing and triggering problems.

National Instruments LabVIEW 7.1

Developers can create flexible and scalable applications with this graphical interface for tests, measurement and control. LabVIEW serves as an interface to the various measurement apparatus. More than 450 functions extrapolate the data and analyse measurement values and processor signals.

The advantages of MicroConsult ST come from combining established tools from I-Logix and National Instruments with a unique internally developed framework from MicroConsult. MicroConsult combines and optimises these solution elements as system integrator for tailored test solutions.

Contact

MicroConsult GmbH
Dieter Volland
Tel. +49 89 450617-66
d.volland@microconsult.com
www.microconsult.com