vVIRTUALtarget 2.0

Testing virtual AUTOSAR ECUs

What is vVIRTUALtarget?

vVIRTUALtarget is a software that is used to generate virtual ECUs for all typical AUTOSAR-4 projects. It supports function and software developers, software integrators and test engineers throughout the entire ECU development process. With vVIRTUALtarget, you develop and test functional software unchanged in combination with a behavioral model or with virtualized, complete AUTOSAR basic software. It gives you a far-reaching insight into your software and enables you to perform detailed analyses by allowing you to influence the entire simulation environment in a range of different ways. Thanks to the extensive automation capabilities, you also benefit from the ability to perform continuous integration combined with fast, parallel testing capabilities.

Application Areas

> Testing of functional software, based on AUTOSAR 4, even during early phases
> Supportive testing during design and implementation of the functional software
> Testing and verification of software integration in a virtual environment
> Synchronous configuration of the AUTOSAR basic software for specific physical hardware and associated virtual version
> Verification of tests using virtual ECUs for re-use at physical ECUs

Overview of Advantages

> Because it runs on Windows PCs, vVIRTUALtarget is available quickly and easily for a wide range of users.
> vVIRTUALtarget as well as the DaVinci tool suite and MICROSA basic software are fully harmonized within the Vector AUTOSAR solution
> The virtual drivers are an integral part of the Vector AUTOSAR basic software
> You can execute your software either in or independently of real time
> You can also set up and run tests of the entire ECU software even in the absence of the target hardware – from the application software, through the AUTOSAR basic software and on to the hardware drivers
> vVIRTUALtarget allows you to modify and simulate your configuration for the physical hardware
> It is a simple task to examine time-based sequences in the ECU software
> Simple connection to other test tools

Highlights of Version 2.0

> Commissioning of functional software independently of the basic software
> Automated task and service mapping
> Automated creation of ECU configurations
> Seamless client/server communication in CANoe

Typical user roles and software tools in a workflow with vVIRTUALtarget:

Even at an early stage, software developers and integrators use the “pro” and “basic” variants for the virtual testing of functional software based on AUTOSAR 4. In the subsequent work steps, the virtual ECUs are integrated and used in test environments.
**Connectivity and Compatibility**
- AUTOSAR 4
- Supported networks*: CAN, LIN, FlexRay, Ethernet
- Supported hardware interfaces: Digital I/O, ADC and PWM
- Interfacing of vVIRTUALtarget pro with CANoe as of Version 10.0

*vVIRTUALtarget executor: CAN

**Use of Variants in Software Development**

You can start verifying your results with vVIRTUALtarget as early as the software component (SWC) design and development phases.

The vVIRTUALtarget pro variant allows you to automate the connection of one or more SWCs to a runtime environment via your AUTOSAR interfaces. In this case, vVIRTUALtarget pro emulates the typical behavior of the AUTOSAR basic software so that you do not need to worry about configuring basic services – as in the case of ECU configuration – or about the implementation of these services – as in the case of a unit test. On the one hand, the tool delivers an automatically generated proposal for the typical management layer services while, on the other, also allowing you to determine these yourself. Thanks to this flexible approach, you can concentrate fully on the task of test implementation itself, which means, simulating the inputs to your software and observing the reactions at the outputs.

The next step is to test the entire ECU configuration as visualized in vVIRTUALtarget basic. This is done using an original target ECU configuration – again created using the designated tools from the Vector DaVinci tool suite – in order to obtain the greatest possible level of fidelity to detail. There is no need for any reconfiguration or new configuration work. The result is a binary file that you can use in your PC runtime environment, for example CANoe. In the same way as with physical ECUs, your test interfaces are network messages and I/Os.

The created virtual ECUs can be used in the cluster as well as with physical ECUs in order to test the entire system.

More information: www.vector.com/vvt