

# vVIRTUALtarget 3.0

## Testing Virtual AUTOSAR ECUs

### What is vVIRTUALtarget?

vVIRTUALtarget is a software that is used to generate virtual ECUs for all typical AUTOSAR projects. vVIRTUALtarget 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. vVIRTUALtarget 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

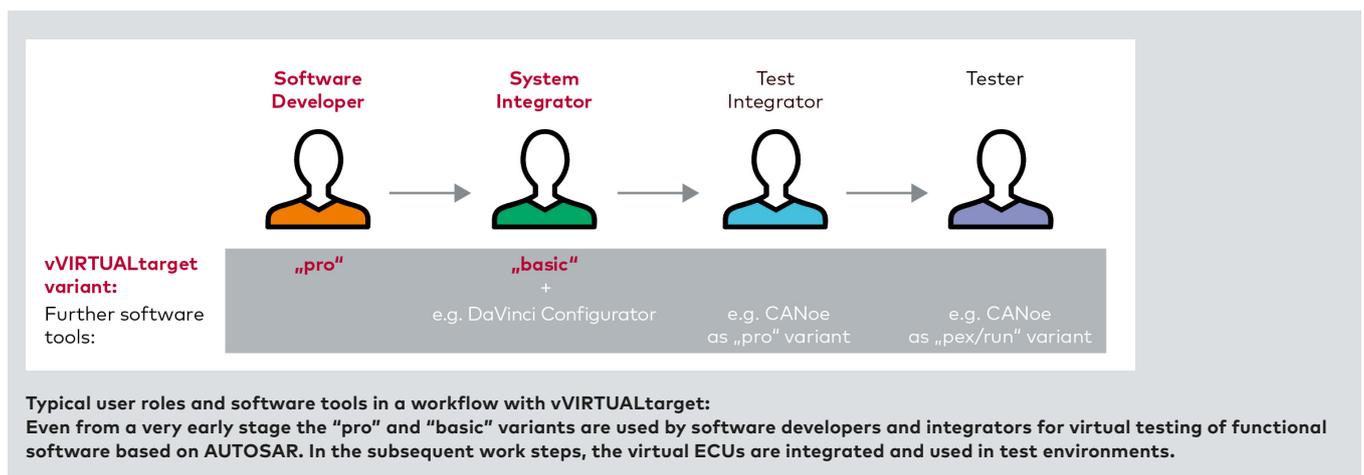
- > Testing of functional software, based on AUTOSAR, even during early phases
- > Supportive testing during design and implementation of the functional software
- > Testing and verification of software integration in a virtual environment
- > Synchronous configuration of the AUTOSAR basic software for specific physical hardware and associated virtual version
- > Verification of tests using virtual ECUs for reuse 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 MICROSAR 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 3.0

- > Initial release of AUTOSAR Adaptive support
- > Support for adding application code as binary
- > Improved Output Window with a new message grouping function
- > Custom plug-ins for the software build process
- > New help system based on HTML



### Connectivity and Compatibility

- > AUTOSAR 4
- > AUTOSAR Adaptive
- > Supported networks: CAN, LIN, FlexRay, Ethernet
- > Supported hardware interfaces: Digital I/O, ADC and PWM
- > Interfacing of vVIRTUALtarget pro with CANoe as of version 11.0

### Use of Product 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 computer 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.

### AUTOSAR Classic and AUTOSAR Adaptive

vVIRTUALtarget supports you in creating virtual Systems under Test (SUT) for both AUTOSAR Classic and AUTOSAR Adaptive:

- > AUTOSAR Classic has been the established standard for many years for use in primarily signal based applications.
- > AUTOSAR Adaptive, on the other hand, concentrates on service-oriented architecture as it will be increasingly used in future projects.

Both architectures complement each other and are used depending on the use case.

More information: [www.vector.com/vvt](http://www.vector.com/vvt)

		AUTOSAR		
		Classic	Adaptive	
Development Phase	Test Focus	vVIRTUALtarget basic	vVIRTUALtarget pro	
Software Component (SWC) integration	Virtual functional SWCs	–	✓	–
ECU integration	Virtual ECUs	✓	✓	–
Application integration	Applications and configurations of the AUTOSAR Runtime for Adaptive Applications (ARA) in a virtual environment	–	–	✓
System integration	Complete system with virtual and real ECUs	✓	✓	✓

Coverage of the use cases by the variants "basic" and "pro" in AUTOSAR Classic as well as in AUTOSAR Adaptive.