The software tool chain of the DaVinci tools, vVIRTUALtarget and CANoe efficiently and easily creates virtual AUTOSAR ECUs for development and testing. In this tool workflow, vVIRTUALtarget handles the important task of virtualizing the ECUs. Their behavior is identical to that of real ECUs, which are created from them in a later development phase.

The Challenge
Testing Efficient AUTOSAR ECU Software for Unavailable ECUs
When the process of integrating functional software (software components) into an ECU project begins, it is often the case that the physical target hardware is not yet available or can only be acquired in small quantities. For ECU testing, however, not only is the ECU itself required, but special hardware for stimulating and monitoring it as well. This awkward situation is a common challenge faced by software developers and integrators, who are frequently also under time and cost pressure here.

The Solution
Virtualization Needs No Hardware
The possibility to create a virtual counterpart to the test hardware with little effort eliminates the need for target hardware for the System Under Test. This also eliminates expensive testing equipment, which is laborious to set up. Using vVIRTUALTarget, a project is created from the fully configured AUTOSAR ECU together with the implementation of software components (SWC). This project can be compiled on standard Windows computers and run in CANoe, thus opening up a wide variety of testing and simulation options to users – from classic remaining bus simulations to graphical test implementations to complete vehicle simulations.

The workflow result is identical to the one for the target ECU. It is even the same ECU configuration being worked with here. This being the case, all faults which have been remedied in the virtual ECU are already eliminated in the physical ECU at this point.

In addition to the reduced effort required to build a simulation environment, virtualization makes it possible to reach the goal faster. Test runs can – but don’t need to be – carried out in real-time, and the duration of testing can be reduced using powerful simulation computers.

The Advantages
> Quick and easy setup of virtual testing and execution environments for AUTOSAR ECU software
> Testing and execution environments can be run on all standard Windows computers
> Faster maturity of the virtual system under test
> Reduced effort during subsequent testing of physical hardware thanks to the transferability of all results from the virtual workflow to the physical target hardware
> Reducible test duration as compared to execution in real time which can be scaled accordingly by selecting the computer used

More information: www.vector.com/vvirtualtarget
Video: "How to Generate a Virtual AUTOSAR ECU"