

# IAV MiL-Desk

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## Engineering Tool Chain for Generating Autonomous Real-Time Models on a Windows PC

### IAV MiL-Desk: Model in the Loop on Your Desktop

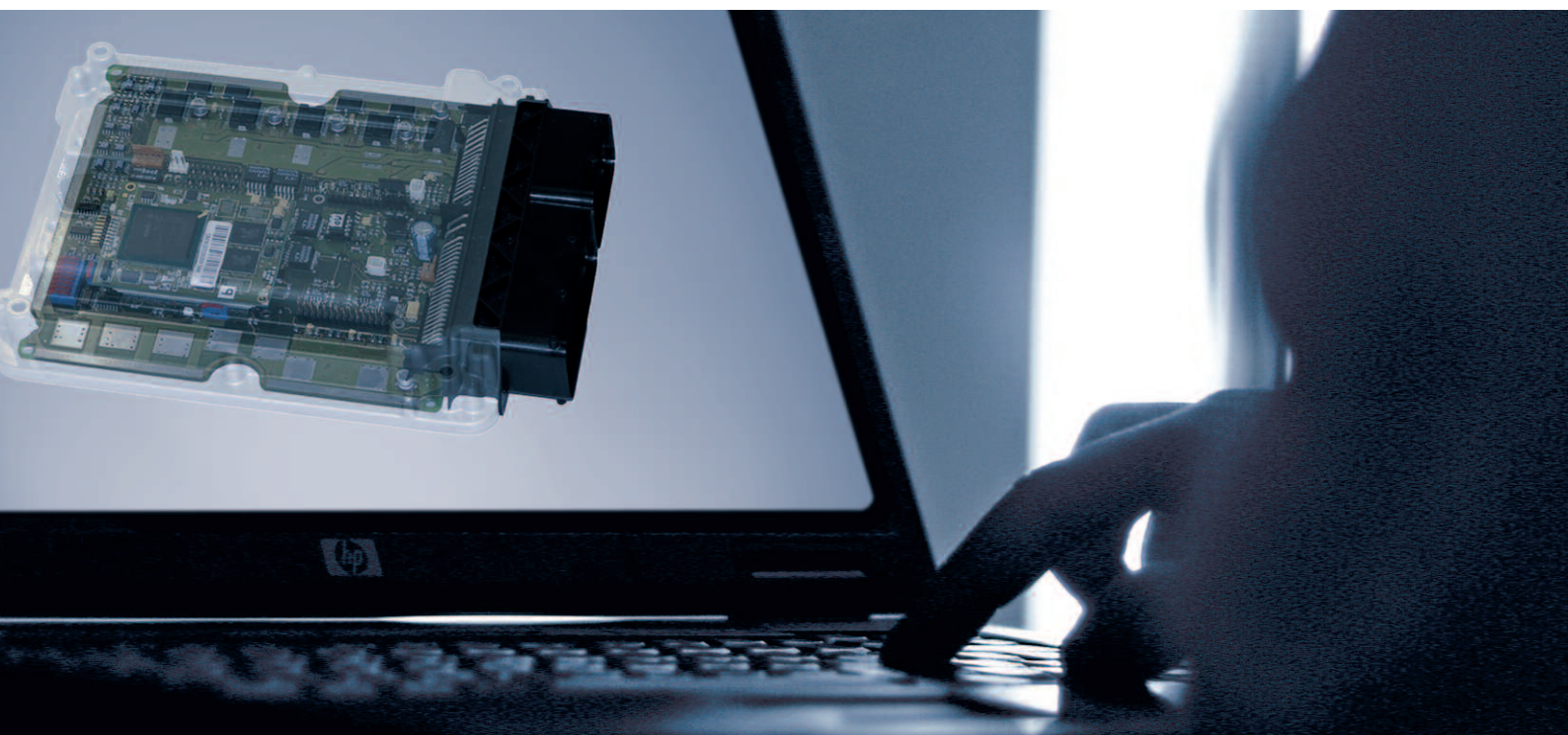
The IAV MiL-Desk tool chain allows you to combine real-time software modules with the benefits of modern calibration tools. Using a special Matlab/Simulink block set, the IAV MiL-Desk tool chain provides access to measured and control variables in real time. Using a Simulink model, it generates an executable autonomous file as well as the interface descriptions required by the calibration tool.

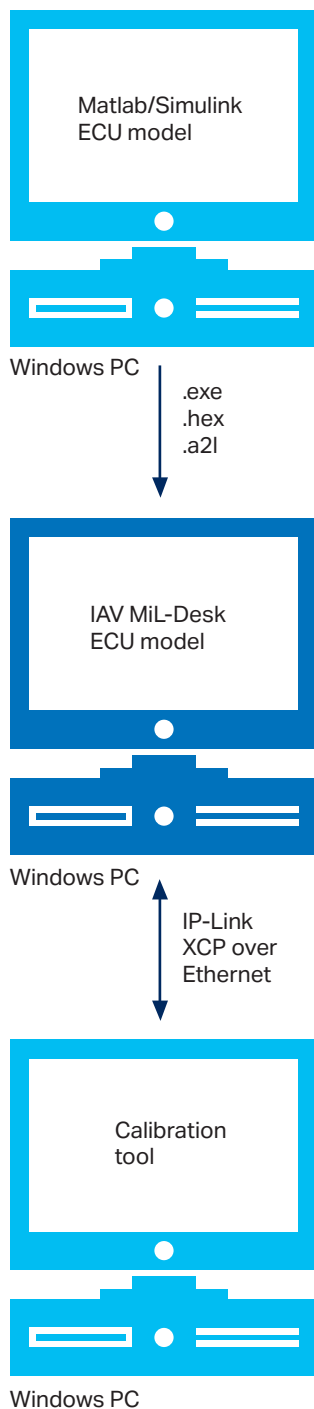
### Benefits at a Glance:

- Simulation in real time without Matlab/Simulink
- Use of modern calibration tools for parameterizing the model
- No expensive hardware necessary
- No special real-time operating system required
- Communication via CAN and XCP over Ethernet
- Less need for the "test vehicle" project resource
- Reproducible conditions for testing and calibration
- Software modules are tested before integration on the target platform

With these properties, IAV MiL-Desk provides the benefits of modern calibration tools, such as online access to measured and control variables or dataset management, as early as the concept phase.

*Two objectives played a key part in developing IAV MiL-Desk: simplifying the software development process for automotive requirements and cutting the costs involved in developing automotive software. IAV MiL-Desk obviates the need for parallel development work and expensive simulation hardware. Switching over later on from simulation to real-world target hardware can be done without major cost or effort.*





Working with IAV MiL-Desk

## IAV MiL-Desk

Using the IAV MiL-Desk tool chain, real-time models can easily be extended to include the interfaces to the calibration tool. This is where IAV MiL-Desk utilizes the flexibility of Matlab/Simulink for integrating software modules, such as controller functions, diagnostics or models of controlled systems. An executable IAV MiL-Desk frame file (\*.exe) is generated at the press of a button using the Simulink coder (formerly Realtime-Workshop). Besides this frame, which contains the integrated software modules, an ASAP file (\*.a2l) and a HEX file (\*.hex) are generated for the calibration tool.

Integrated in the IAV MiL-Desk frame in this way, the software modules can run autonomously on any Windows PC. Use of a calibration tool provides unrestricted access to measurement signals and parameters – what's more, simulation is faster than real time.

## IAV MiL-Desk uses XCP over Ethernet

With its integrated XCP slave (Ethernet), each IAV MiL-Desk frame has a standardized and open calibration interface for exchanging data. XCP over Ethernet provides high data transmission and also permits configurations beyond the computer's limits (server <-> client solutions).

## Software Testing and Parameterization with IAV MiL-Desk

In addition to the XCP interface, the IAV MiL-Desk tool chain comes with other interfaces. These include interfaces for using measurement data in MDF format as data for stimulating the inputs of software modules, supporting various CAN measurement cards as well as communicating via TCP/IP. With commonly used automotive interfaces being supported, a wide range of different options are opened up for testing software. Incorporating CaliAV® software from ETAS/IAV, it is also possible to automate software testing and parameterization in any way.

## Application Example: Diagnostics

1. In an initial step, the diagnostic function's input signals are recorded as an MDF file in the vehicle during a test drive.
2. Using the IAV MiL-Desk block set, the recorded signals are linked with the inputs of the diagnostic function and the IAV MiL-Desk frame, including A2l and HEX file, is generated at the press of a button.
3. During simulation, the diagnostic function's inputs can be fed with any MDF measurement data on a reproducible basis within the IAV MiL-Desk frame.

Otherwise behaving in the same way as it would in the real-life control unit, the diagnostic function can also be accelerated in any way on a PC using a speed factor. This methodology produces no restrictions whatsoever in relation to accessing parameters or recording measurement data with the calibration tool.

To read more about IAV MiL-Desk, go to [www.iav.com/mil-desk](http://www.iav.com/mil-desk)