MicroNova
Software and Systems

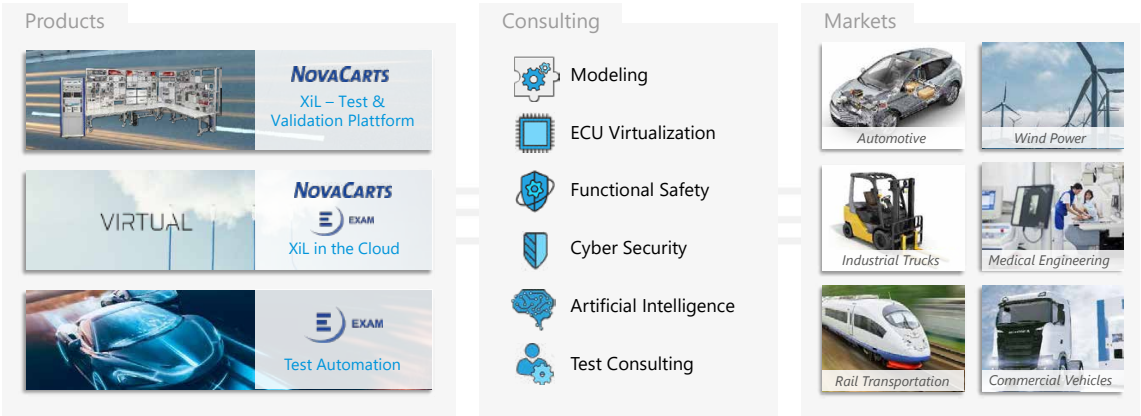
Testing Solutions

Driving Reliability in Electronic Systems

EXAM

NovaCarts

MicroNova offers holistic solutions for all aspects of testing: from turnkey Hardware-in-the-Loop (HiL) test benches, to software solutions for test automation, professional on-site support, and comprehensive consulting services. MicroNova's portfolio of products and services fully covers the testing process and supports companies in optimizing their entire testing landscape.



NovaCarts Hardware-in-the-Loop Simulation for ECU Tests

For over 35 years, MicroNova has been synonymous with powerful and future-proof HiL simulators, components, and software for comprehensive testing applications in technologically challenging fields. The NovaCarts solutions cover all test requirements of the entire V-model – from testing individual ECUs and software or hardware functions, to the entire vehicle electronics.

The NovaCarts HiL product family is characterized by maximum modularity and scalability, as well as diverse networking options. The solutions can easily and efficiently be adapted to dynamic conditions thanks to short changeover times – perfect conditions for cross-departmental or cross-project testing processes.

Automotive manufacturers and suppliers benefit from cost efficiency and high investment security, optimally equipping them for future challenges.

HiL Simulation

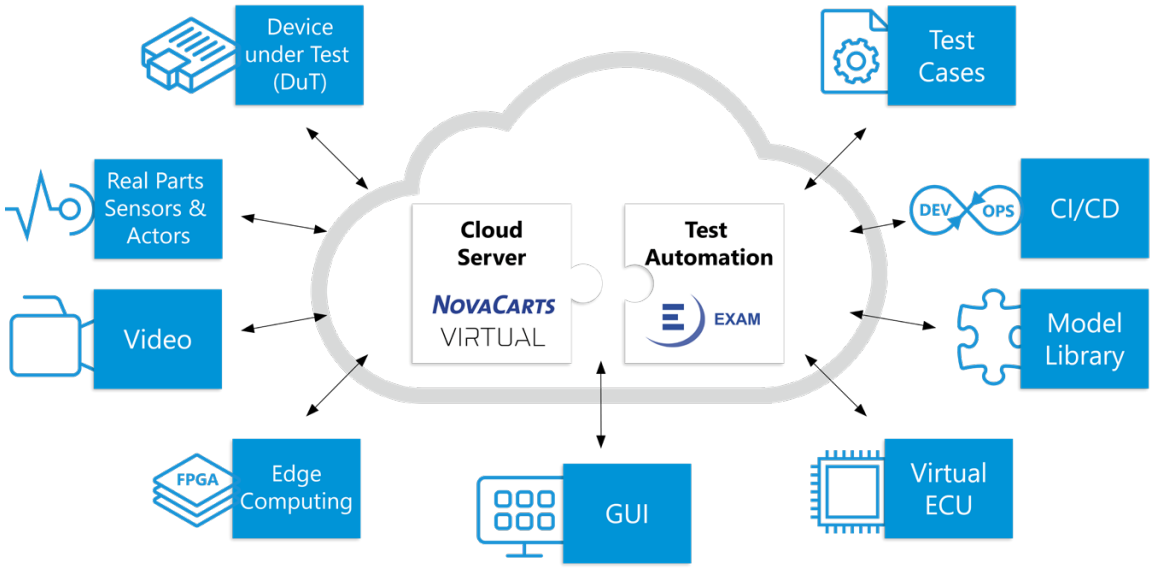
For more information about NovaCarts HiL simulators, NovaCarts software, and the boards and modules, please see www.micronova.de/en/hil-simulation

Next Level Virtualization – Faster Testing in Mixed Environments

New ECU architectures, increased networking, and technologies such as self-driving cars mean that the complexity of vehicles and the dynamics in development are steadily on the rise. Consequently, many new functionalities have to be validated quickly and reliably. To increase the test capacities in this respect and to accelerate processes, the NovaCarts Virtual simulation platform combines the advantages of HiL systems with the strengths of cloud technology.

Real, simulated, and virtualized components are combined in mixed test environments. In addition, the Test Cloud Controller (TCC) is a suitable tool for the EXAM test automation solution. The TCC automatically distributes test cases to the various execution instances in the cloud. NovaCarts Virtual and EXAM thus enable a universal XiL test concept based on a uniform platform, from component testing to the complete system.

- Up to 50% cost saving
- Agile testing with distributed teams
- Managed Continuous Integration & Continuous Delivery in the cloud



NovaCarts Virtual

For more information about the virtualization of ECU tests, please see:
www.micronova.de/en/novacartsvirtual

MicroNova Consulting

With a comprehensive range of consulting services, MicroNova supports companies in the implementation of their testing projects: From concept creation and the evaluation of current technologies and trends, to process consulting and support during integration into project and quality management. The optimization of complex test trades is also part of the services of our international team of experts.

We offer professional consulting projects in the following areas to companies involved in the validation of ECUs:

Workflow of a consulting project

Clients benefit from our experts' wealth of experience. We are constantly responding to the changing market and can support our customers even in the face of new challenges in the best possible way.

01 Kick-off
- ✓ Identification of issue
- ✓ Establishment of concept team from stakeholders
- ✓ Definition of project focus

02 Planning
- ✓ Goal definition and task prioritization
- ✓ Coordination of requirements with stakeholders
- ✓ If necessary, definition of KPIs

03 Implementation
- ✓ Involvement of subject experts at MicroNova
- ✓ Concept development
- ✓ Implementation of the tools
- ✓ Go-live

04 Verification
- ✓ Validation of the concept
- ✓ Documentation of results
- ✓ Detailing of further requirements, if necessary

05 Conclusion
- ✓ Presentation of results to stakeholders
- ✓ Support during assessments
- ✓ Realization of productive use

A selection of services from MicroNova's consulting portfolio

Functional Safety: Process consulting, tool qualification, and safety concepts
- » Competent advice on project coordination, requirements creation, and documentation based on decades of experience in development and test processes in the automotive sector
- » Support in the identification and use of improvement potentials for processes and tool chains in the area of functional safety as well as development according to ASPICE processes
- » Qualification of tools and toolchains in accordance with ISO 26262, and preparation of assessments

Artificial intelligence: Data Science and Machine Learning
- » Building IT infrastructure for scalable AI solutions
- » Optimization of existing AI initiatives
- » Data Science as the basis for developing AI systems
- » Machine Learning / Deep Learning

Cyber Security: Support in the implementation of UNECE regulations
- » Identification and prioritization of potential vulnerabilities with regard to cyber security
- » Establishing a Cyber Security Management system taking into account cyber security risk management
- » Threat assessment: Analysis and assessment of potential threats in terms of probability of occurrence and severity

Consulting

For more information on all consulting services, please see:
www.micronova.de/en/consulting

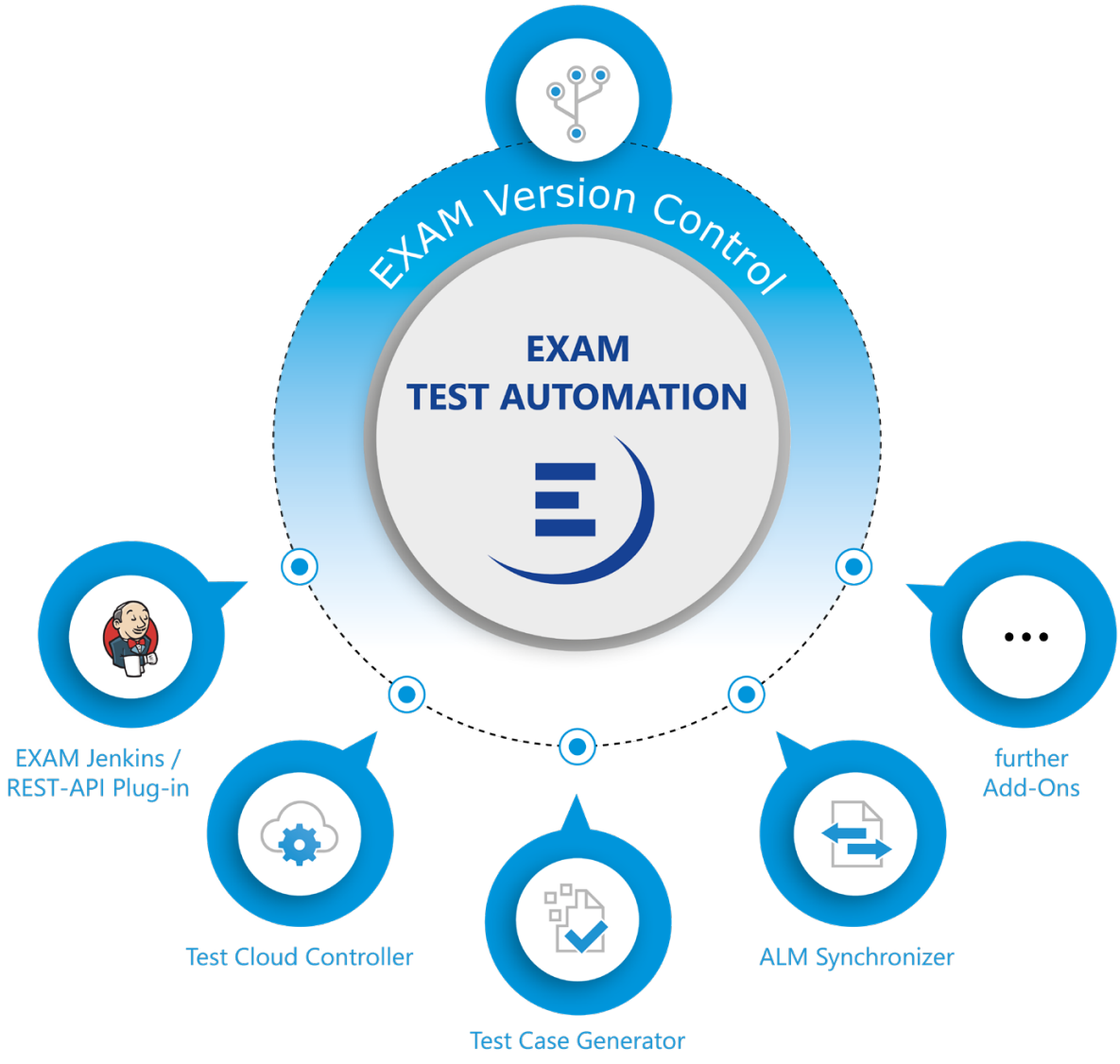
EXAM Test Automation for Efficient Test Processes in ECU Development

Standardized test processes, reusable test cases, testing across different sites: Areas of application for the EXAM (EXtended Automation Method) test automation software include HiL simulation and test bench automation, as well as industrial automation, embedded development, and Software-in-the-Loop (SiL) simulation.

The abstraction of test hardware and test contents makes it possible to conduct the same test with different variants and different hardware. This allows many test cases to be reused in subsequent projects. As a result, HiL resources are used in the best possible way, employees are relieved of some of their workload, and costs are reduced.

Since 2006, AUDI AG, Volkswagen AG and MicroNova have been jointly developing the test automation solution. EXAM has since established itself as the uniform standard for HiL simulators in the Volkswagen Group.

Worldwide, more than 1,500 users from various industries work with EXAM, as the software is available free of charge under a freeware license for creating and executing tests and reviewing results – unique for a solution of this kind. The core libraries are available as open source. In addition, licensable extensions supplement the test automation solution and make it even more versatile.



Add-ons for EXAM

EXAM Version Control
Model-based versioning of test cases enables safe work on the 'live system'. This allows the respective test cases to be restored and executed again for each software version of an ECU.

Test Case Generator (TCG)
The TCG increases the efficiency of test case creation many times over. Based on a uniform and clearly structured procedure, the add-on creates test cases in EXAM from test specifications fully automatically. This substantially reduces costs for maintaining test cases and improves traceability, comparability, and reproducibility.

Test Cloud Controller (TCC)
The TCC automates the global distribution of test jobs to free resources. This lessens the workload on test engineers and improves the utilization of existing HiL systems.

EXAM Jenkins plug-in
For the Jenkins build platform, the EXAM Jenkins plug-in integrates the test automation solution into the continuous development workflow (Continuous Integration, CI). To do this, the plug-in connects the Jenkins CI system and EXAM via a REST interface. The result is remote control of the test automation solution. Automated test execution improves the utilization rate of resources employed, and results are quickly available to be used in the development process.

EXAM ALM Synchronizer
This extension for the test automation solution synchronizes test cases and results between ALM systems and EXAM. The reconciliation ensures a reliable, efficient, and consistently traceable test process.

Services for EXAM Users

As an exclusive distributor, MicroNova is the central point of contact for training, support, or customer-specific expansions and modifications of the EXAM tooling.
We support companies with an extensive service portfolio in the professional use and seamless operation of the test automation solution.

EXAM

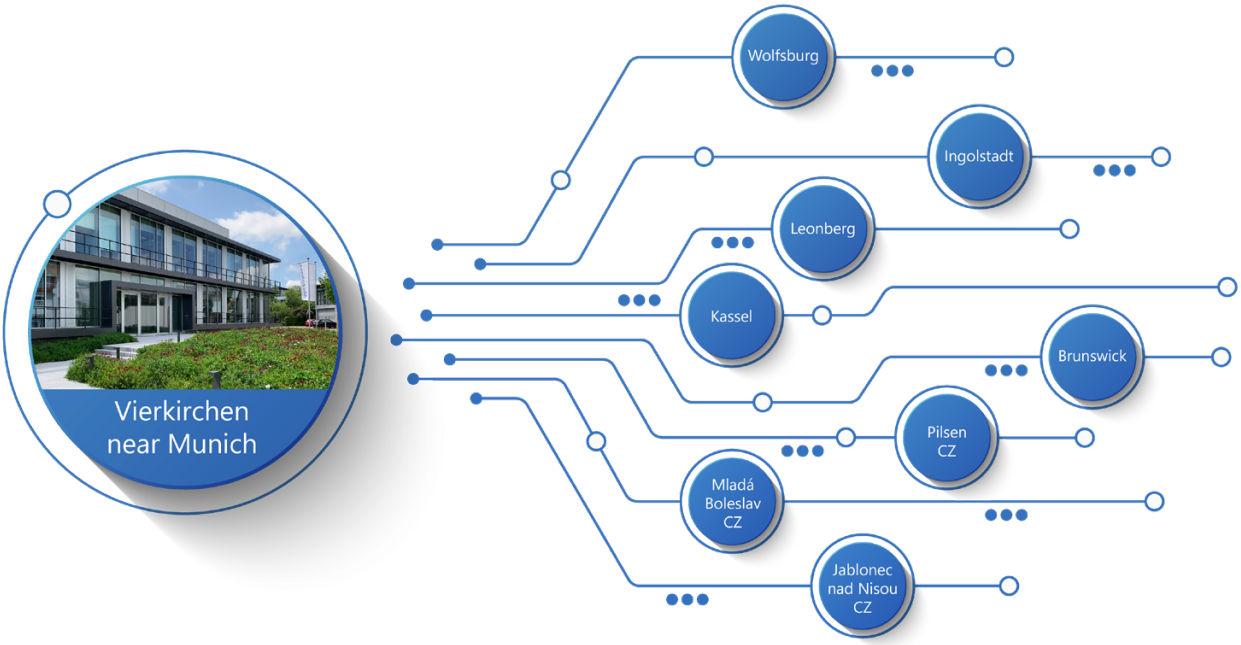
For more information about EXAM please see:
www.micronova.de/en/exam

Subscribe now: MicroNova's customer magazine

In our free customer magazine InNOVAtion, we report twice a year on new developments and interesting solutions from the areas of Testing Solutions, Telco Solutions, and Enterprise Solutions. To subscribe, please see: www.micronova.de/customer-magazine-subscription

Never miss any news about our products, events, solutions, and services!

Subscribe to the MicroNova Newsletter now and choose the topics that you are interested in: www.micronova.de/en/newsletter



Follow us on social media:

LinkedIn @MicroNova

YouTube @MicroNova

XING @MicroNova

facebook @MicroNova

@MicroNova_Group

Copyright:

© Open Studio / Shutterstock.com
© lukeruk / Fotolia.com
© elenabsl / Shutterstock.com
© TCmake_photo / iStock.com
© Q-stock / Shutterstock.com
© rikkyall / Shutterstock.com

MicroNova
Unterfeldring 6 - D-85256 Vierkirchen
Phone: +49 8139 9300-0
Fax: +49 8139 9300-80
Email: sales-testing@micronova.de