INNOVATION
Customer Magazine of MicroNova

MICRONOVA
Software and Systems

Artificial Intelligence for the automotive industry
New consulting offer for
AI applications

Innovationsfield 5G
Current industry development around
the new mobile phone standard

Protection against data loss
MicroNova extends portfolio by
Data Loss Prevention Solution

„When Crisis is the New Normal"

Dear Readers,

As an exception, please allow me to begin by thanking my colleagues: The entire MicroNova team has responded to the challenges of the coronavirus crisis with bravura and is doing its work dependably on your behalf every day, even with sometimes unusual processes under these extraordinary circumstances. We are in the fortunate position of being able to do most of our work from home, which is not the case everywhere … That is why I wish you and all of us that we will soon get back in more structured waters, which will make it easier for all of us to work together in a more coordinated manner.

I am fairly certain that we would all like to have a regular daily routine, but I think it will take a while before that happens. So the crisis has become the new normal, and we at MicroNova are as motivated as ever to face it. This also involves you receiving a customer magazine from us – with information on innovations and topics that hopefully will be of interest to you and even of direct added value.

One hot topic of our days is artificial intelligence (AI). This "tool box" can be used for a wide variety of tasks and is therefore naturally also in use with us and will be increasingly applied. That is why you can also read an article in this issue about our (new) testing services revolving around AI. An article about OpenSCENARIO – the new standard for uniform test scenarios for autonomous driving – and one about the test automation solution EXAM 4.8 add to the picture in the Testing section.

A new mobile communications standard is moving from the focus of interest to reality in the form of 5G. Networks are being built and our Telco team is active in a wide variety of places (not only) with COM5.Mobile – our solutions for network expansion and optimization. We keep you, our readers, regularly informed about the latest product developments. That is why we would like to present you with the opinion of an external expert in this issue. MicroNova is a member of 5G BERLIN e.V., and its Chairman, Professor Dr. Erich Zielinski, gives insights into the association's activities and 5G use cases in an interview.

The IT Management division once again presents new ManageEngine products and this time even a new partner: For the company Safetica and its solution for "Data Loss Prevention", MicroNova acts as a Value Added Distributor in Germany, Austria, Switzerland and Luxembourg. A further customer reference completes this part of InNOVAtion.

Our founder and Chairman of the Supervisory Board, Josef W. Karl, again wishes to share important news with you – as I myself am "affected" this time, I will not go into details here, but simply say: Dear Josef, I would like to join with Klaus Eder in thanking you and the entire Supervisory Board for the past few years and look forward to the next years together. The sails are set. More about this on the final pages of our InNOVAtion.

I now wish you, as ever, happy reading.

Orazio Ragonesi

Table of contents

Using AI Properly

Many companies in the automotive industry are currently investigating how they can apply artificial intelligence (AI) to make more efficient use of data. MicroNova supports them with expertise in data analysis and machine learning (ML).

TEXT: Tobias Weimer, Juliana Geißler, Dr. Mohsen Firouzi
PICTURES: © svetlichniy_igor, metamorworks / Shutterstock.com; © telmanbagirov / Fotolia.com

» **Business understanding:**
The identification of problems or use cases usually marks the beginning of cooperation. The definition of the data required for the solutions is also part of the consulting service.

» **Data cleaning, data mining, data exploration:**
Data records are first prepared and cleaned up so that they are consistent in form and content. This makes it easier to derive relevant information from the data at a later juncture.

» **Predictive modelling:**
Comprehensive advice on this topic in particular makes it easier to get started. Our experts also provide support in post-processing results from existing models. Performance analyses of these models are also part of MicroNova's service offering.

» **Feature engineering:**
Data mining techniques are used in this process to extract measurable properties of a dataset – the features – from the raw data. Combining and transforming these features allows new ones to be generated. The aim is to prepare the data in such a way that more patterns can be identified. Thanks to its feature engineering service, MicroNova supports companies in making more out of existing datasets than they appear to be at first glance.

» **Data visualization:**
The graphical representation of data sets is of crucial importance in most cases. It allows basic trends and characteristics of the data to be identified. Simulations, graphics and dashboard representations are among the most effective forms of data visualization. MicroNova provides support both in the selection of the appropriate tools for the creation of graphical representations and in their production.

Furthermore, MicroNova offers special workshops to concretize requirements and to examine data that are already available in the company. These are precisely tailored to meet the needs of the company concerned and include, for example, an introduction to the principles and methods of artificial intelligence.

Implementing AI projects

Corporate projects always benefit from the involvement of all relevant stakeholders, a clear definition of goals and requirements, and an orderly structure. This is why our consultants not only assist with the analysis of the problem, concept development and the construction of prototypes, but also help with the implementation and use of the developed solutions within the organization. Figure 1 gives an overview of the implementation of an AI project.

Capturing and interpreting the volumes of data generated by people and systems and drawing reliable conclusions is a growing challenge for technology. Conventional systems and programs are no longer able to manage the mass of data and use it sensibly. Technologies and procedures in the field of artificial intelligence can provide assistance and help companies to use available information profitably. If companies want to be or remain competitive, they need to recognize the signs of the times and make the right response as quickly as possible.

Since there is more than one suitable AI solution on the market for every problem, companies often face a wide range of choices – which does not exactly make the first steps in using AI any easier.

MicroNova Consulting's AI portfolio

As a leading software solution provider in the field of automotive testing, MicroNova has established an international team of experts to advise customers on the use of AI and ML solutions. Its consultants use methods taken from agile software development. The toolchain used in AI projects includes Python, Keras, TensorFlow, scikit-learn, YOLO and the NVIDIA Jetson Nano development kit.

One of the ways in which MicroNova's experts support companies is in selecting the right process, including advice on the use, evaluation, and comparison of algorithms. Projects focus on important aspects such as costs, efficiency and flexibility of the system.
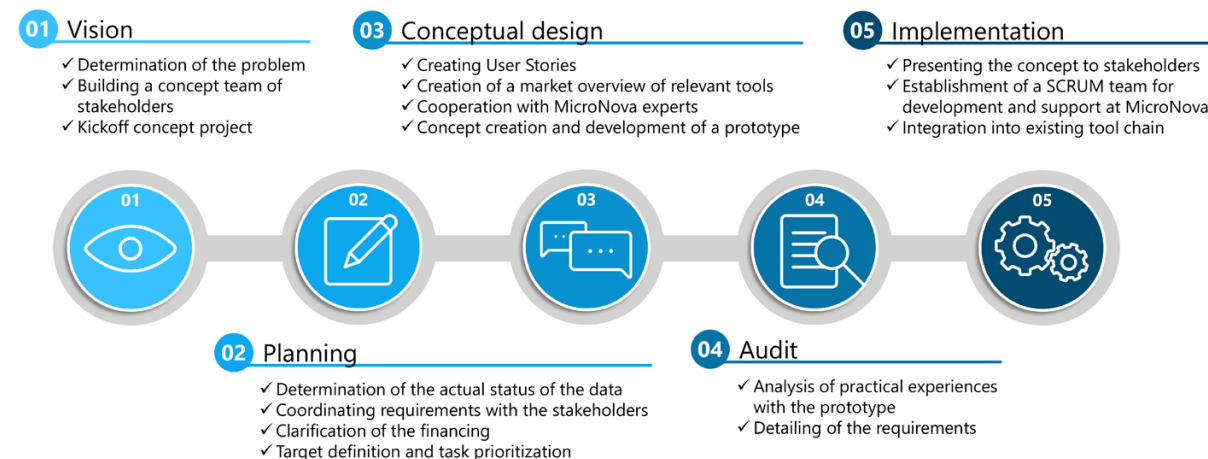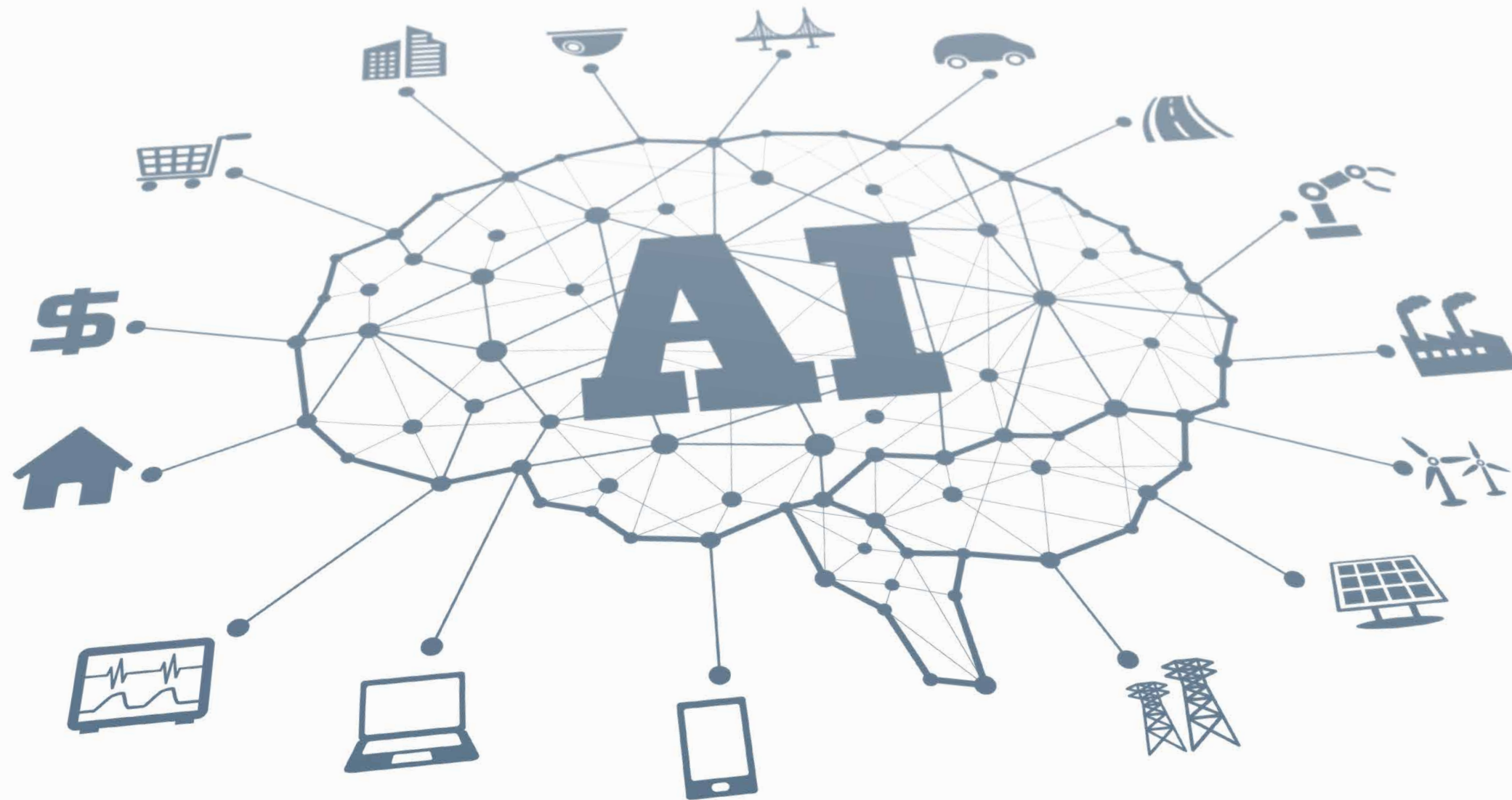
The consulting portfolio in the field of AI includes different approaches in order to optimally respond to the individual needs of the particular company. In addition to advice on choosing the appropriate AI method for a specific problem, MicroNova offers support in the following areas:

01 Vision
✓ Determination of the problem
✓ Building a concept team of stakeholders
✓ Kickoff concept project

03 Conceptual design
✓ Creating User Stories
✓ Creation of a market overview of relevant tools
✓ Cooperation with MicroNova experts
✓ Concept creation and development of a prototype

05 Implementation
✓ Presenting the concept to stakeholders
✓ Establishment of a SCRUM team for development and support at MicroNova
✓ Integration into existing tool chain

02 Planning
✓ Determination of the actual status of the data
✓ Coordinating requirements with the stakeholders
✓ Clarification of the financing
✓ Target definition and task prioritization

04 Audit
✓ Analysis of practical experiences with the prototype
✓ Detailing of the requirements

1 Process for implementing AI projects

MicroNova focuses on comprehensive consulting and custom solutions, since every company has to master different challenges and issues when introducing AI-based technologies. The team of consultants for data science and artificial intelligence provides assistance throughout the entire project – from identifying requirements to developing prototypes and productively implementing the solution in the organization. The aim is to create reliable, high-quality solutions and services based on standard requirements. To ensure this, MicroNova always uses the latest development standards and techniques for AI applications.

Application examples

There are various use cases for the application of artificial intelligence in the automotive sector. In the following four examples of AI applications are briefly explained.

Simulation models

The creation of a so-called digital twin accelerates vehicle development because it enables control unit software to be tested in a virtual environment – without the need for a real prototype. An increasing number of simulation models is necessary for this approach. With regard to autonomous vehicles in particular, such models can cover many different scenarios and factors virtually.

Neural networks are particularly suitable for those components of the vehicle that are difficult to reproduce with physical modeling, such as individual parts of an engine. MicroNova Consulting supports companies in data analysis, in the selection of suitable AI technologies for modeling, and in the integration and validation of individual model components.

Testing AI

Validating AI systems in vehicles – especially driver assistance systems and autonomous vehicle functions – requires new test methods, such as scenario-based testing. The necessary test environments must be able to integrate the control unit software and must also be massively scalable in order to perform the high test efforts for autonomous driving functions within an acceptable time frame. MicroNova Consulting assists in the conception, implementation and further development of processes, methods, and tools for AI-supported systems for autonomous driving. Other areas of application include functional safety in accordance with ISO 26262 or the ASAM OpenSCENARIO standard.

Error mining

One challenge when testing autonomous vehicles is how to evaluate the large amounts of test results in a meaningful and practical way. MicroNova Consulting assists with the design and implementation of appropriate solutions.

Sensor data analysis

A vehicle must be able to recognize its surroundings and decide correctly which route to take or what response is required in order to move autonomously on the road. Sensors such as radar, lidar and cameras that complement each other are used for this purpose. If, for example, weather conditions such as heavy rain or fog make it difficult to visually capture the environment via cameras, the system needs to be augmented with automotive radar technologies. These have been enhanced in recent years through new developments such as micro-Doppler automotive radars, standalone radar perception, and semantic radar. MicroNova Consulting supports companies in designing solutions for visual or radar-based object detection, e.g. traffic light detection or measurement of visibility in fog as well as the calculation of travel paths based on trajectories.

Contact

You can contact MicroNova Consulting at +49 8139 9300-0 or sales-testing@micronova.de. Please visit www.micronova.de/en/consulting for further information on AI services.

OpenSCENARIO: Standardized Test Scenarios for Autonomous Driving

How do you actually test autonomous vehicles? By examining their "behavior" in as many situations as possible. ASAM e. V. has developed the OpenSCENARIO standard in order to ensure uniform quality standards and compatibility for joint developments. It has been available since March 2020.

TEXT: Abduelkerim Dagli, Christian Demmelmeier, Tobias Weimer
PICTURES: © Just_Super / iStock.com; © Golden Sikorka, PureSolution, alexdndz / Shutterstock.com

An essential part of securing driver assistance systems and autonomous vehicles is to first test possible traffic situations in a simulated environment – before such tests are performed with actual vehicles. Conversely, events from real test drives are recreated in the simulation environment. The exact number of scenarios required for a reliable verification is difficult to de-

termine – after all, the real world is complex and always puts motorists in unexpected situations. Nevertheless, the aim of scientists and engineers in the field of autonomous driving is to compile the greatest possible number of situations and generate test scenarios from them that can be tested early on in vehicle development.

The various automobile manufacturers and suppliers follow different approaches to replicate such scenarios on hardware-in-the-loop (HiL) systems or in a virtual software-in-the-loop (SiL) environment. The Association for Standardization of Automation and Measuring Systems (ASAM e. V.) has therefore launched a project to develop an official standard for testing

autonomous driving functions using such scenarios. The aim is to achieve standardization that, on the one hand, makes it possible for different research results to be compatible with each other for the first time and, on the other, simplifies joint developments. The new standard OpenSCENARIO was released in March 2020.

What is OpenSCENARIO?

OpenSCENARIO is used to define dynamic content in a simulated world, i.e. specifically road users and their movements. These are defined in the standard as data structures using UML and mapped in a database or as files, preferably in XML format. A working group of ASAM e. V. has developed version 1.0 of this standard in cooperation with automobile manufacturers, suppliers and service providers as part of the "OpenSCENARIO Transfer Project". The basis was provided by the already publicly available specification for version 0.9.1, which had been developed in previous years by a core team and has now been handed over

to ASAM e. V. for further development and long-term maintenance. ASAM OpenSCENARIO 1.0 is not backward compatible to version 0.9.1, but an XSLT migration script is included in the standard that allows version 0.9.1 XML files to be converted to version 1.0.0.

Static contents in the simulated world such as houses, trees, or road markings are not part of OpenSCENARIO, but they can be integrated. ASAM e.V. has developed two additional standards for this purpose, OpenDRIVE and OpenCRG: OpenDRIVE enables the logical description of road networks (e.g. straight lines, curves, intersections and lanes), which can then be used as input for a simulation of vehicle dynamics, traffic or sensors. OpenCRG offers a detailed description of the surface of a road that is created e.g. from scans on roads. These are used for vehicle dynamics simulation and for testing driver assistance systems and autonomous vehicles. Together, the three standards offer a comprehensive definition of the static and dynamic con-

tents in simulations for testing autonomous vehicles.

Differentiating test case and scenario

Two terms need to be distinguished in order to describe scenario-based testing of driver assistance systems and autonomous vehicles: the scenario and the test case.

Besides the actual procedure (the action), a test case also includes the necessary preparation and post-processing, such as the initialization and de-initialization of the measurement and simulation technology, as well as an assessment of whether the test was passed or not. It therefore also forms the framework for the execution of the scenario during the action of the test case. The scenario defines in detail the behavior of the individual components of the simulation, i.e. in particular the road users. Table 1 provides an overview of the differences between scenarios and test cases.

	Test case	Scenario
Main area of application	Tests on HiL and SiL systems, unit tests	Testing in virtual, purely software-based environments in the cloud
Abstraction level	Tests at signal level	Tests at road user level
Elements	Vehicle functions (e.g. ignition, gear selection/selector, accelerator pedal, brake, steering wheel, lights)	Dynamic elements of the virtual world (e.g. road users and their behavior, traffic signs, weather)
Process	Mainly sequential process: precondition, action, expected result/evaluation, postcondition	Parallel process: road users move simultaneously through the simulated world
Assessment	Assessment of whether the test was passed or failed is part of the test case	Assessment of whether the scenario passed or failed is not part of the scenario

Table 1: Differentiation between test case and scenario

Element	Description
RoadNetwork	Static road network consisting of a roadway with straights, curves and intersections as well as the corresponding lanes. This can be implemented as a reference to an OpenDRIVE file.
Storyboard	A storyboard is a container element that contains the other elements of a scenario. The storyboard provides a simple overview of a scenario.
Story	A storyboard contains one or more stories. A story groups sections (acts) in the scenario, which can then be viewed independently of each other.
Act	A story contains one or more sections called acts. An act is started by a trigger if the associated conditions are fulfilled.
Action	Actions can be used to create or modify dynamic elements in the simulation.
Event	Events serve to combine several actions into meaningful groups.
Maneuver	A maneuver contains several events, of which only one can be active at a time during execution. To this end, maneuvers determine the priorities between their events.
Object	An object moves or changes its state during the simulation. It can include, for example cars, bicycles, buses, motorcycles, pedestrians, animals, barriers, and street lamps.
Catalog	Elements can be defined centrally in a catalog for reuse and referenced in scenarios.
Parameter	Parameters can be used to vary the attributes in OpenSCENARIO. This allows a scenario to be changed, for example by running it for different speeds.

Table 2: The most important elements of OpenSCENARIO

OpenSCENARIO in Detail

Parameterization

A central function in OpenSCENARIO is parameterization. A test scenario can contain parameters to which a value is assigned prior to simulation. These parameters can be used to define an initial situation, such as initial speeds or the distance between vehicles at the start of the test. They can also be used to set properties of elements in the scenario, such as the color of a car. This allows the same scenario to be reused for different tests by running it with a new combination of parameters.

In addition, scenario-based tests benefit from the fact that the value ranges permitted for the parameters and the dependencies between the parameters can be defined. For example, the scenario creator can specify that during an overtaking maneuver the initial speed of the vehicle in front should be lower than that of the following vehicle. What is more, statistical distribution functions can be used to determine as representative a subset as possible from the large number of possible parameter sets, taking into account the dependencies. This function is not part of OpenSCENARIO 1.0, but can be performed by a test automation solution such as EXAM.

Transferability of OpenSCENARIO between simulators

A major goal of the ASAM Open-SCENARIO 1.0 standard is to allow the transferability of driving scenarios between HiL simulators. This exists in the form of XML files. The fact that scenarios are stored in a central database that all simulators can access also supports this goal. However, the same scenario does not necessarily lead to exactly the same simulation behavior on every simulator. Different elements outside the scope of the OpenSCE-NARIO description can play a decisive role here, such as 3D models of the vehicle environment, driver models, or vehicle dynamics models. The simulators themselves would therefore have to be standardized to allow a general exchangeability of scenarios between simulators, which is outside the focus of OpenSCENARIO.

Application

To illustrate the practical use of OpenSCENARIO, Figure 1 shows a traffic situation that can be simulated using the new standard. It is an overtaking operation with oncoming traffic involving one car and two trucks. The passenger car is the so-called ego-vehicle: the focus of the scenario is on this passenger car, and its behavior is to be examined more closely in the scenario.

In an initialization phase, the vehicles in OpenSCENARIO are first placed on the road at their initial speed. Movement paths, so-called trajectories, describe their behavior after initialization. The behavior of the ego-vehicle is influenced by its driver assistance systems or is completely determined by the autonomous control software. For this reason, its exact trajectory is not known before the scenario is executed.

In addition, distances $d1$ and $d2$ can be varied through parameters, which allows the behavior of the ego-vehicle to be examined under the following aspects, for example:

1. How great does the minimum distance $d1$ have to be in order for the sensors of the ego-vehicle to detect the oncoming truck early enough, although the truck in front is in the way? How does the ego-vehicle behave if the oncoming truck is detected very late due to sensor failure?

2. How great does the minimum distance $d1$ have to be in order for the ego-vehicle not to lose its stability in terms of driving dynamics when veering away?

3. How small may the maximum distance $d2$ be in order to allow the ego-vehicle to overtake without a collision? What is the maximum distance that must be observed in order to maintain a comfortable ride in the ego-vehicle?

4. Did the desired scenario "overtaking in oncoming traffic" take place at all, or did the ego-vehicle decide to drive behind the truck in front and not overtake?

Such criteria (key performance indicators, KPIs) for assessing scenarios in terms of safety, driving dynamics, and comfort are not part of OpenSCENARIO. However, when a scenario is performed, measured values can be recorded that can be used to determine the KPIs in a downstream data analysis.

$v_{ego} = 100$ km/h

$v_a = 70$ km/h

d1

$v_b = 70$ km/h

d2
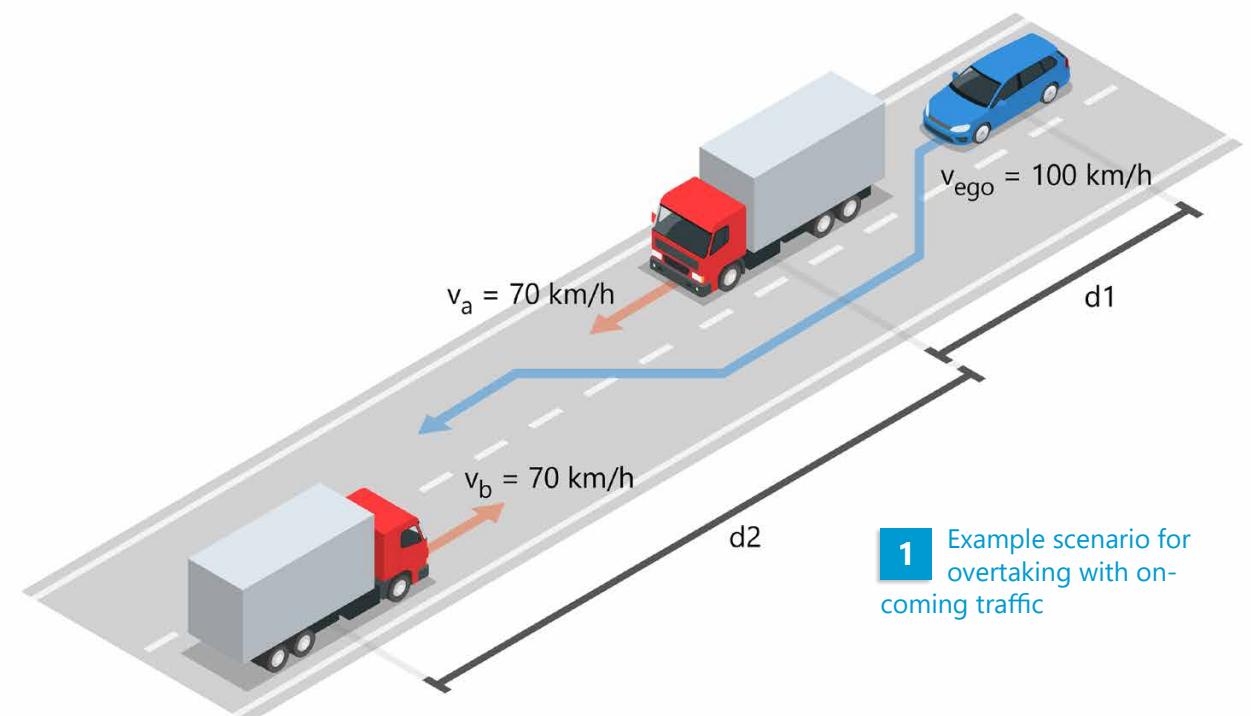
1 Example scenario for overtaking with oncoming traffic

Process for scenario creation

A uniform process is required to be able to create the large number of scenarios required for the comprehensive testing of an autonomous vehicle, while at the same time ensuring the high quality of scenarios. Such a process should include the roles on the right.

The individual roles within such a process benefit from OpenSCENARIO in different ways:

» The solution supports the Scenario Creator by providing the required elements for a scenario, enabling quick modification through parameterization, and allowing the reuse of scenario elements using catalogs.

» OpenSCENARIO gives Test System Operators greater flexibility because they can exchange scenarios between test systems more easily.

» The clear data structures provided by OpenSCENARIO facilitate the Data Analyst's role. In addition, the standardized and uniform approach saves having to deal with different formats.

» Last but not least, these clear structures also facilitate the Test Manager's review tasks.

OpenSCENARIO 2.0 Concept Project

ASAM carried out the "OpenSCENARIO 2.0 Concept Project" alongside the OpenSCENARIO 1.0 Transfer Project, and it was also completed in March 2020. The result of the Concept Project is not a further version of the OpenSCENARIO standard, but a proposal on how OpenSCENARIO should be further developed in the future.

Both versions differ significantly in the structure that defines simulated

Test Manager — Test System Operator

Szenario Creator — Data Analyst

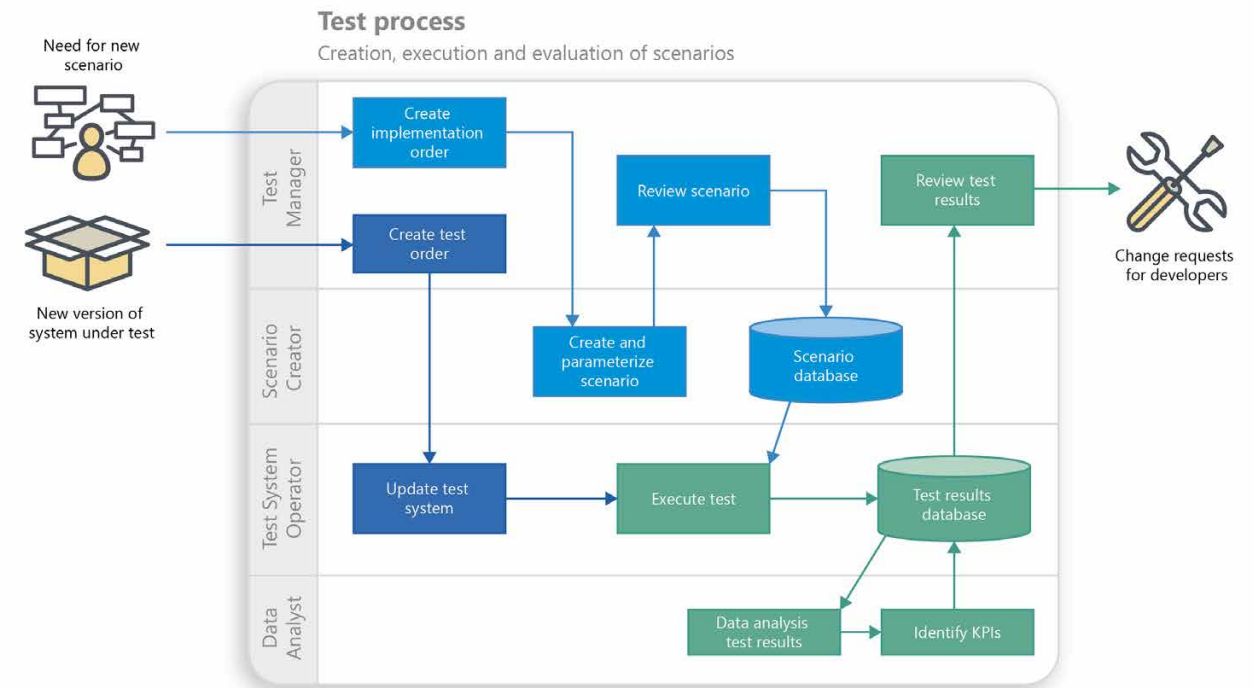| Role	Description
Test Manager	Test activity coordination
Szenario Creator	Creation and parameterization of OpenSCENARIO, creation of the road net-work in OpenDRIVE, creation of road surfaces in OpenCRG; storage of these data in the scenario database
Test System Operator	Setup and operation of the test system, execution of tests; storage of these data in the test results data-base
Data Analyst	Evaluation of test results, identification of KPIs (e.g. test coverage, time to collision), analysis of reasons for failed tests

Table 3: Roles in scenario creation

objects and their behavior: OpenSCENARIO 1.0 describes a data structure in which simulation objects are defined in a nested tree structure that can then be saved as an XML file, for example. In contrast, the concept for OpenSCENARIO 2.0 provides for a so-called domain-specific language (DSL). This type of formal language is similar to a programming language and is specially adapted to define the behavior of traffic objects in the simulation.

From the point of view of the Scenario Creator there is virtually no difference, since they usually process OpenSCENARIO data structures using a tool and do not come into direct contact with storing the scenario either as XML file or as DSL code. On the other hand, Data Analysts work directly with the data, and their working methods are strongly influenced by

the structures. This is particularly relevant because a Data Analyst needs to be able to examine thousands or tens of thousands of scenarios and the associated test results. The structure of OpenSCENARIO 1.0 offers clear advantages in this respect, as it significantly simplifies data analysis. In contrast, the DSL from the OpenSCENARIO 2.0 concept does not permit such simple analysis of the data.

Outlook

ASAM has already launched two parallel successor projects in order to further develop the OpenSCENARIO standard and, over the long term, to unite the different ideas from the Transfer and Concept Projects. The "OpenSCENARIO V1.x Project" is further developing version 1.0 of the standard by tackling the issues still

outstanding. At the same time, the "OpenSCENARIO V2.0 Project" is further developing the DSL from the Concept Project into a standardized version, which is scheduled to be available from Q2/2021. There is a constant exchange between the two projects with the aim of establishing compatibility between the two versions of OpenSCENARIO.

OpenSCENARIO now provides a standard for defining the behavior of objects in simulations that can be used together with other formats such as OpenDRIVE and OpenCRG to test driver assistance systems and autonomous vehicles. OpenSCENARIO thus forms one of the cornerstones for bringing autonomous vehicles onto the market in the future.

Test process
Creation, execution and evaluation of scenarios

2 Process to create, execute and evaluate scenarios

ASAM

The Association for Standardization of Automation and Measuring Systems, ASAM, consists mainly of international automotive manufacturers, suppliers, and engineering service providers. The aim is to create a cross-company standard. All tools of a development process chain need to be compatible with each other and thus enable the seamless exchange of data. The ASAM standards define protocols, file formats, and application programming interfaces (APIs) for software development and the testing of control units.

MicroNova's hardware-in-the-loop (HiL) simulators already feature an XiL interface standardized in accordance with ASAM. This API allows NovaCarts systems to be easily and quickly integrated into ASAM-compliant test environments – virtually following the principle of "plug & play". At the same time, MicroNova has developed a link between the test automation solution EXAM, which the company provides free of charge, and the XiL interface. The Volkswagen Group uses EXAM as a standard solution for test automation across the entire group. The tool is also deployed by automotive suppliers and companies outside the automotive industry.

Further information is available at https://www.micronova.de/en/testing.html.

EXAM 4.8: Versioning and New Functions

The new version 4.8 of the test automation solution EXAM is now available from MicroNova. The free tool contains all previous features as well as numerous additional interfaces and new functions.

TEXT: Frank Waininger   PICTURES: © everything possible, Khan's Images / Shutterstock.com; © MicroNova

1 After publishing, the changes to the selected TestCase TC_CANoe_3 are also displayed in the view for productive tests (Latest Published).

The latest version EXAM 4.8 is once again available for distribution. This means that users outside the VW Group can also download the test automation solution from www.micronova.de/exam and use it free of charge. As usual, the tool is available under a freeware license, while the core libraries are available as open source. Moreover, new licensed extensions make EXAM even more versatile.

There have been a number of changes since the last distribution version 4.4: In addition to the absolute highlight, the versioning, there are new features in measurement data recording, a SOAP interface to the report database, the completely new TestSpecSynchro-

nizer (TSS), and much more. It is high time to take a closer look at the most important new features.

Versioning

Usually, there are many users working simultaneously on a central model in EXAM. This has numerous advantages but can also cause difficulties: a short-term change can paralyze entire productive test runs, the accidental deletion of a central sequence or operation makes thousands of tests unusable, and there is often no way to undo such errors without great effort. In practice, users currently get along by archiving the synchronized Python code so that they can access it in an

emergency. In the worst case even the database backup from the previous night has to be imported.

The licensable tool "EXAM Version Control" now enables safe working on the live system through model-based versioning of test cases. On the one hand, changes can be undone and even old versions of elements can be restored at any time. On the other hand, so-called model configurations allow different views of the model to be defined for each user. By default, EXAM supports one view for current development work ("latest") and another view for productive tests ("latest published"). This makes it possible to completely separate the development

version from the version being used in test execution. Changes to elements therefore no longer have any direct effect on a test run. Changes only become visible in the model configuration for production tests when the test developers "publish" them.

Baselines can also be used to archive the current status of the particular model. All that is required to view and execute it again at a later time is to create and load a corresponding model configuration. Using a separate development branch, it is even possible to develop this archived status in parallel, for example to get very old variants running again in the latest test environment.
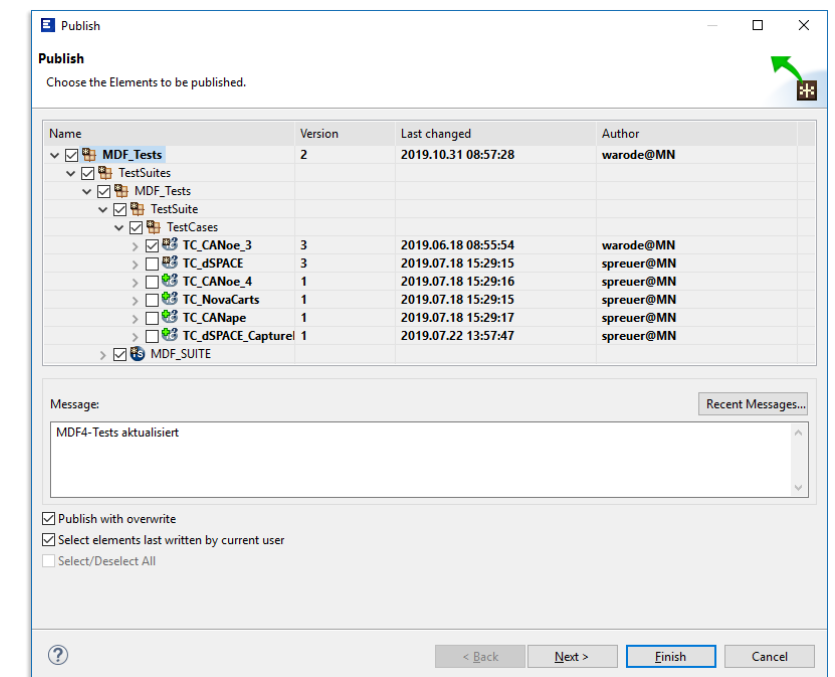
In addition, version control minimizes the effort and risk associated with changes to libraries, since all element changes remain traceable through a consistent history description. In this way, EXAM Version Control allows the associated test cases for each software version of an ECU or test object to be restored and executed again. Furthermore, model configurations can inherit from each other. This makes it easy to switch between the current EXAM core library and an older version. The same applies to user libraries if corresponding model configurations have been created.

Versioning is basically part of the distribution, but most features need to be activated through a commercial license.

TestSpecSynchronizer

For quite some time now EXAM includes the DOORS Synchronizer to synchronize test definitions in DOORS and test cases in EXAM. This creates a strong link between the test specification and the test cases that test the specification. Determined attributes, such as implementation status or test results, are also synchronized.
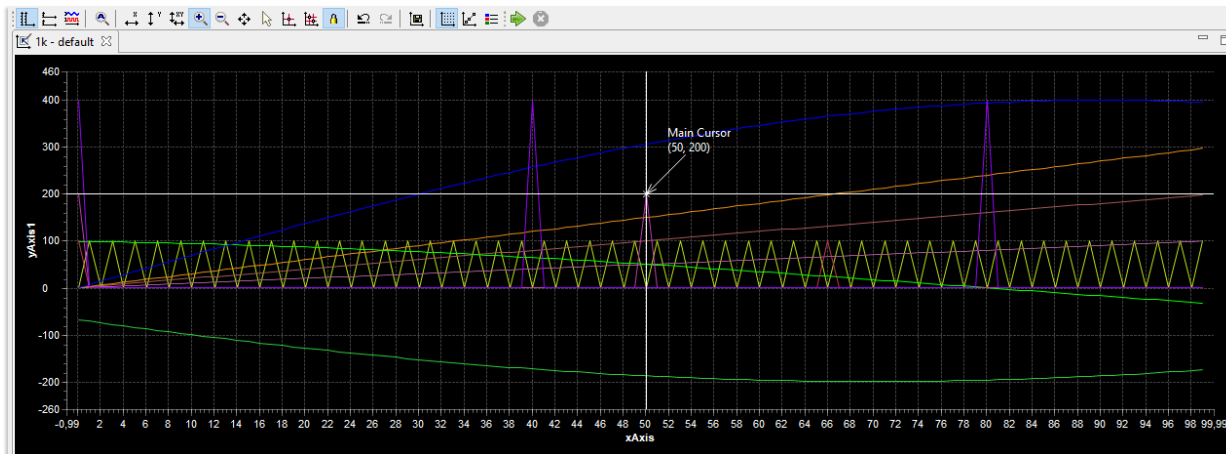
2 MDF4 measurement data records can be analyzed in the ChartViewer of the ReportManager.

The new, license-free TestSpecSynchronizer (TSS) takes this principle to a new level, as it is an adapter concept that enables any test management system to be connected to EXAM. So far, adapters are available for Xray and Zephyr from Atlassian as well as for PTC Integrity – more are to follow. Users can define a mapping between the attributes in EXAM and the connected test management system for the purpose of synchronization.

The tool serves as a type of universal adapter for test definitions from different source systems by preparing and importing them for EXAM. This means that all data sources in EXAM can be used equally and users benefit from a uniform user interface during configuration. Once centrally configured in the model, the TSS settings apply to the entire test project – making work considerably easier for users. The TestSpecSynchronizer features an interface for EXAM and all common specifica-

tion tools. The tool thus provides a high degree of flexibility for users, both in the choice of test management tool and in the mapping of attributes.

Reportmanager

The recording of measurement data is a central element of most test runs. Previously, data first had to be converted into an EXAM-specific format before they could be processed further and attached to a report. In EXAM 4.8, Report Manager now supports the MDF4 format for the first time, meaning that MDF4 measurements can now be attached directly to reports and analyzed later in Report Manager using Chart Viewer. The format is used as an ASAM standard by numerous applications, in particular the XiL API. This allows measurement data to be exchanged across tools – even beyond EXAM. Apart from easier handling, MDF4 is much more efficient and offers greater possibilities.

Another new feature in Report Manager is the Report Service. With just one click, the EXAM client supplies a SOAP web service for accessing the report database. This can serve as an interface for any other tools in order to create or read out custom reports. The web service makes the data available in such a way that reports and measurement data can be further processed in an automated manner.

Python 3 and UTF-8

The entire basis of the test automation solution was fundamentally revised and updated for EXAM 4.8. This now makes it possible to use UTF-8 and Python 3. Users can now specify in the Python editor whether the implemented code should be compliant for Python 2, Python 3, or both. EXAM highlights corresponding errors in the editor.

However, this change does not automatically mean that the library functions already available in the model are executable under Python 3. The EXAM core libraries must first be updated to the latest version and user libraries must be revised if necessary before complete changeover.

Conclusion

Many useful new features have been added to EXAM 4.8 over the last three years. Test Spec Synchronizer and Report Service offer optimum conditions for linking EXAM with existing tool landscapes. EXAM version control and support for Python 3, UTF-8 and MDF4 mean that, with EXAM 4.8 and its extended functionality, car manufacturers and suppliers are well prepared for current and future challenges.

EXAM Version Control

Further information about EXAM is available at www.micronova.de/exam. Detailed information about EXAM version control is also available there. As always, MicroNova offers extensive training and support for the latest version of EXAM.

Interview with: Professor Dr. Erich Zielinski (5G Berlin)

Professor Dr. Erich Zielinski is Chairman of the Board of 5G Berlin e. V., of which MicroNova is also a member. The editorial staff of InNOVAtion talked to him about the association's activities and test site as well as the Berlin 5G network.

TEXT: Editorial staff   PICTURES: © Suwin / Shutterstock.com; © 5G Berlin e. V.

InNOVAtion: Professor Dr. Zielinski, the 5G Berlin e. V. association was founded in September 2018. What have the association and its members – now a good one and a half years' later – been able to achieve?

Erich Zielinksi (EZ): A lot has happened, both in the acquisition of new projects as well as in the proof of concepts and networking. Among the new projects referred to above, it is worth mentioning that 5G Berlin is now an associate partner in the 'OTB-5G+' project, which is funded by the German Federal Ministry of Education and

Research. This involved the joint development of 5G infrastructure on the campus of the TU Berlin and the Heinrich Hertz Institute, which also goes by the abbreviation HHI. We are currently planning the implementation of application scenarios for the smart city. In addition, we have started an industrial project with a well-known cloud company, where 5G infrastructure has also already been set up on the campus of the Fraunhofer Institute IPK in Berlin. Specifically, one 5G macro and a number of metro stations were set up. Initial trials were concerned with the implementation of industrial application

scenarios, for example in the field of controlling automated guided vehicles (AGVs) and the use of artificial intelligence for video inspection.

InNOVAtion: These are indeed exciting projects – you also mentioned proof of concepts at the beginning?

EZ: At this juncture I can report on two proof of concepts. The first involves drone control via a 5G radio link in preparation for fire-fighting and emergency operations, with video streams transmitted using end-to-end encryption. The second aims to evalu-

ate the connectivity of emergency vehicles and the transmission of patient data over a 4G/5G infrastructure. As you can see, these are very practical approaches that quickly many people could benefit from.

InNOVAtion: And what has happened in terms of networking?

EZ: With regard to networking, 5G Berlin e. V. arranged a session for the first time as part of #Berlin5GWeek, which took place at Fraunhofer HHI on November 5, 2019. HHI hosted the workshop 'Machine Learning for 5G

and Beyond' which was organized by the 'ITU-T Focus Group on Machine Learning for Future Networks including 5G'. The session with 5G Berlin offered members the opportunity to present their own topics. One of these topics was the OpenRAN Alliance, which is committed to establishing open interfaces within a 5G network.

We were also able to conclude a cooperation agreement with the Next Generation Mobile Networks Alliance, and we are planning to participate in the NGMN Industry Conference & Exhibition 2020 in Paris in September, if it takes place. One of the things we would like to do there is to present the activities of 5G Berlin e. V. at a joint stand with the Fraunhofer Gesellschaft. In addition, we were the speakers at the 15th Tagesspiegel 'Data Debates' with the topic '5G-Laboratory Berlin: How smart will the capital be'.

As you can see, we are quite an active association, which is also reflected in the increased number of members. Especially in the 5G Core competence area, the association was able to gain new members spanning a multitude of interfaces. These approaches will also be incorporated into the aforementioned OTB-5G+ project, resulting in a flexible infrastructure.

InNOVAtion: The 5G Berlin e.V. provides a fully-fledged 5G network where new use cases can be developed and tested under real conditions. What role do you think the automated configuration and optimization of networks via software plays, and to what extent will this be supported?

EZ: 5G Berlin e. V. is building a fully-fledged 5G network in the sense that the essential network components specified in the 3GPP releases are used, thus enabling application scenarios to be implemented. We are pursuing an open approach: the radio network consists of commercial solutions sup-

plemented by an open source stack and proprietary hardware development. The optical network is made up of disaggregated optical networks and hardware that was also developed in-house. The whole thing is complemented by open source virtualization solutions such as OSM/ONAP and the software-defined transport network SDN.

Automated configuration and optimization of networks via software will play an extremely important role in the future, as this is a service-oriented architecture. A prerequisite for network slicing, for example, is the availability of stand-alone base stations. We expect solutions here in the second half of 2020.

InNOVAtion: The use cases will take a close look at "Vehicle to Everything" (V2X) with a focus on autonomous driving. Can you give us some insights into the current status quo and the next steps?

EZ: With regard to the networking of vehicles, 5G Berlin is pursuing two different application scenarios, namely automated guided vehicles (AGVs) and – potentially autonomous – vehicles in public spaces. The aforementioned AGVs are usually connected to 5G campus networks. Technical challenges are very precise positioning, safe and reliable radio connection, and service continuity when changing radio cells or roaming. The infrastructure for this application scenario is currently being procured and a first proof of concept is expected in the third quarter.

Besides the installation of appropriate slices, radio coverage naturally plays a crucial role in the secure and reliable networking of vehicles in public areas. Here, 5G macro cells will be supplemented by small radio cells, for example on street lights; these so-called small cells will operate at much higher frequencies than 'normal' mo-

Just asking…

Ingo Bauer, Head of Productmanagement Telco Solutions, MicroNova AG

„Automated configuration and optimization of networks via software will play an extremely important role in the future, as this is a service-oriented architecture."

– Prof. Dr. Erich Zielinski, Chairman of the Board, 5G Berlin e. V.

bile radio, at about 26 GHz. This will result in greater reliability and larger bandwidths. Extensions to the public infrastructure will be necessary for these application scenarios, for example in terms of the modification of street lighting masts. A proof of concept will therefore probably be available in 2021.

InNOVAtion: Security-critical applications from Industry 4.0 in particular are driving up demand for in-house network solutions, which is why the "non-public networks" or campus networks you mentioned are becoming increasingly important. How do you assess this development and how does the 5G Berlin e. V. consider possible use cases?

EZ: It has been possible to apply for frequencies for 5G campus networks from the "Bundesnetzagentur", Germany's Federal Network Agency, since the end of last year. The costs can be easily calculated and are very manageable. It is important to distinguish between a number of different operator models. The first is the acquisition of a local 5G frequency to build a dedicated infrastructure and operate a dedicated network. This option requires a deep understanding of 5G technology and network operations in order to realize the potential benefits of secure operations. This operator model is being implemented by 5G Berlin in connection with the above-mentioned use cases. The second model consists of renting a virtual slice from a public network operator, which is also responsible for network operation. And

finally, there are hybrid solutions, for example shared RAN, with the operation of a separate core network or other partitioning. All operator models have their own specific advantages.

InNOVAtion: After this detailed information, what are your plans for 2020 onwards beyond the technological aspect? Is the association intending to continue to grow? Do you plan to expand the test network?

EZ: The direction for 2020 is clear. While the focus in 2019 was mainly on conceptual work and project acquisition, in 2020 it will be on implementation and development of the infrastructure. At the same time, a number of software-based tasks are pending, such as the integration of the 5G core network, ONAP interfaces, and management interfaces. Regardless of that, 5G Berlin is of course open for further project proposals from its members. The association's working groups are very active in this respect, and we have set ourselves the goal of implementing a proof of concept every quarter. Of course, all of this is subject to some reservation regarding possible restrictions intended to deal with the effects of the coronavirus crisis. It is important to remember that mobile communications and network technology have made us less dependent on fixed locations – in this respect, the importance of our activities is evident even here.

InNOVAtion: Professor Dr. Zielinski, thank you very much for talking to us.

As 5G is rolled out, the mobile technology of the future is slowly but surely becoming a fact of everyday life. The first 5G devices and tariffs are already available, while organizations such as 5G Berlin e.V. are researching use cases and trends. How is MicroNova positioning itself in this environment?

The 5G cellular networks are being designed to facilitate service-driven solutions that can respond flexibly and efficiently to the upcoming requirements for mobile services of a variety of sectors. The core functionality that is a key prerequisite for supporting diversified 5G services is known as "dynamic E2E network slicing." This process enables the physical network infrastructure to be divided into virtual "network slices" with different quality characteristics.

The architecture involved relies upon software-defined networking (SDN) and network function virtualization (NFV). These technologies control the creation, orchestration, provision, utilization, and operation of the various slices, from the "CORE" network to the transport network (x-Haul) and the access network (RAN).

With the 16 years of experience it has built up in automated RAN configuration, MicroNova has a particular focus on the dynamic provisioning of 5G network services in a disaggregated, flexible, and virtualized radio access network, of the type used in 5G technology. The provisioning aspect here includes the delivery of network resources and the setting up and se-

curing of 5G services, as well as the release of resources after termination of the service.

With the O-RAN Alliance, MicroNova is collaborating with highstreet technologies GmbH on the standardization of the service management interface with the disaggregated RAN (the "O1" interface). The objective is to define an open, vendor-neutral interface between the control level (the SDN controller) and the network itself.

The O-RAN Alliance was founded in February 2018. Its key members consist of a group of leading, globally active network operators. They are supported by a number of participating companies from all areas of the telecommunications sector. The aim of the O-RAN Alliance is to accelerate the deployment of products that can support a common, open architecture and standardized interfaces. The Alliance is concentrating on the development of open, intelligent, virtualized, and interoperable RAN specifications.

MicroNova is also a partner of the Open SDN & NFV Lab (OSNL*) in Berlin, which, in turn, is affiliated with 5G Berlin e.V. The OSNL has access to outstanding infrastructure and a tai-

lor-made ecosystem, based on open source projects such as OpenDaylight and ONAP. It offers the perfect conditions for the development, integration, and testing of SDN/NFV applications. This enables end-to-end use cases for 5G to be fully mapped out, developed, and then demonstrated in the form of a proof of concept. In this way, the key challenges related to 5G network slicing can be tackled with the involvement of a variety of stakeholders from all areas of telecommunications, industry, and the automotive sector. Thanks to the use of open architecture, there are also plans to involve private networks – known as "campus networks" – and to integrate these within the SDN-NFV architecture. In order to implement this transformational shift to SDN-NFV architecture among public mobile network operators, the seamless integration of legacy technologies (2G, 3G, 4G, and NSA 5G) will be vital. For this reason, MicroNova is currently working on the implementation of a proof of concept for a multivendor/multitechnology mediator. The aim is to deliver an interface based on the O1 standard for integrating Ericsson, Nokia, and Huawei's legacy RAN equipment with the SDN/NFV ONAP orchestrator.

* Operator Defined Next Generation RAN Architecture and Interfaces – www.o-ran.org

Desktop Central Reduces Time Spent on Routine IT Tasks

Software Distribution and Mobile Device Management for the CARBO Group

TEXT: Editorial staff   PICTURE: © CARBO

Founded in 1910, the Bad Hönningen based CARBO Group is one of the largest German manufacturers of natural carbon dioxide, which is extracted from its own wells in the Eifel region. CARBO also distributes all common technical gases, and plans, supplies and maintains equipment for the catering and beverage industry. The company is also a leader in research and development of CO_2-based technologies and processes. In its CARVEX division, CARBO develops processes and custom equipment for disinfestation – an environmentally and product-friendly method that uses CO_2 to clean harmful insects from dry foods such as cereal, tea or even pharmaceutical ingredients.

Stand-alone applications and lack of automation

CARBO Logistics & Services GmbH & Co. KG, which provides all logistics services for the CARBO Group, has seen strong growth in recent years. A two-person IT team still looks after the continuously expanding corporate network. Issues such as digitalization tie up a lot of time and resources. Therefore, Head of IT, Christian Dreeser, started to look for solutions to automate various routine tasks in order to relieve some of the team's workload.

Until then, they used a number of stand-alone applications, including WSUS for Windows patch management, Teamviewer for remote maintenance, AirWatch for Mobile Device Management (MDM) and Group Policy Object (GPO) for software distribution. The aim was to consolidate this heterogeneous solution landscape – originally into two products: one for software distribution, one for MDM.

Christian Dreeser became aware of Desktop Central from ManageEngine through an independent vendor comparison. He was won over by the varied functions, for example for software distribution and MDM. In the end, CARBO chose to purchase just one new product: Desktop Central.

ManageEngine Desktop Central

Before deployment, Christian Dreeser tested the solution extensively. He found the fact that all ManageEngine solutions can be tested for 30 days free of charge a great plus. After three intensive days, the Head of IT had put almost all modules of the software through their paces: software and operating system distribution, patch management, service pack installation, mobile device management, and remote desktop sharing.

"The software is structured in a very intuitive way. I couldn't help but just keep going," he says. After only about 10 days, all 150 or so computers and 100 mobile devices were replicated in Desktop Central. Standard office applications, Adobe, the ERP system and many other programs have since been distributed via Desktop Central. The IT team also finds the installation guidelines suggested by the software helpful.

Another bonus is that the solution is also able to roll out patches for non-Microsoft computers. CARBO offers software required by only some employees via the self-service portal. Here, users can request special applications and install them on their own after receiving the appropriate approval – cutting down the work for the IT team.

Less workload and simpler procedures

In the past, CARBO kept Excel lists with details about hardware and software for each computer – a complex process with potential for errors. Desktop Central now automatically shows the IT team at a glance what is installed where, when warranty periods end, whether patches are required, etc. "Now we can supply all twelve locations with software and patches quickly and easily from the head office – including locations without a VPN connection – thanks to the Secure Gateway expansion," explains Christian Dreeser. The status indicator is also helpful during rollouts, as it provides information on progress and potential problems.

Desktop Central was also indispensable when the company purchased 20 new Surface tablets: Previously, the installation and configuration process would have taken around four hours per device; with Desktop Central, it took only 20 minutes – a 90 percent time saving. Setting up and managing mobile devices is also much faster with the new solution: the time required in this case was cut by around 80 percent. These figures also convinced the company's management board, when they inquired about the benefits of the investment.

"Compared to other MDM tools, token registration is very simple," adds the Head of IT. "After that, everything runs automatically." The applications approved for mobile devices can either be rolled out centrally or installed independently by employees via the MDM app. This means that even the sales team is able to securely access important company applications at any time. Desktop Central also impressed the IT team during the introduction of an IP-based telephone system: The user client was installed on all 90 computers within one hour. With the solution used before, the .exe file would have had to be installed on each computer manually.

Massive efficiency increase in IT

Above all, Desktop Central helps the IT team save time that can now be spent on other issues. "Our own support has become much faster as a result. We have more time to respond to requests. And we no longer have to travel for software distribution or patch management," says Christian Dreeser happily.

„Desktop Central has allowed us to significantly reduce the time spent on software distribution and mobile device management."

– Christian Dreeser, Head of IT, CARBO Logistics & Services GmbH & Co. KG

Customer benefits:

» Save time on routine tasks
» More time for more important issues
» Intuitive and user-friendly
» One tool for the most diverse requirements
» Excellent price-to-performance ratio

CARBO Group:

» Sector: Chemicals
» Employees: approx. 160
» Head office: Bad Hönningen, Germany
» Established: 1910

New Products

ManageEngine adds two new IT security solutions to its product portfolio. Application control and management of privileged sessions take center stage.

TEXT: Editorial staff   PICTURES: © ZOHO, © ManageEngine

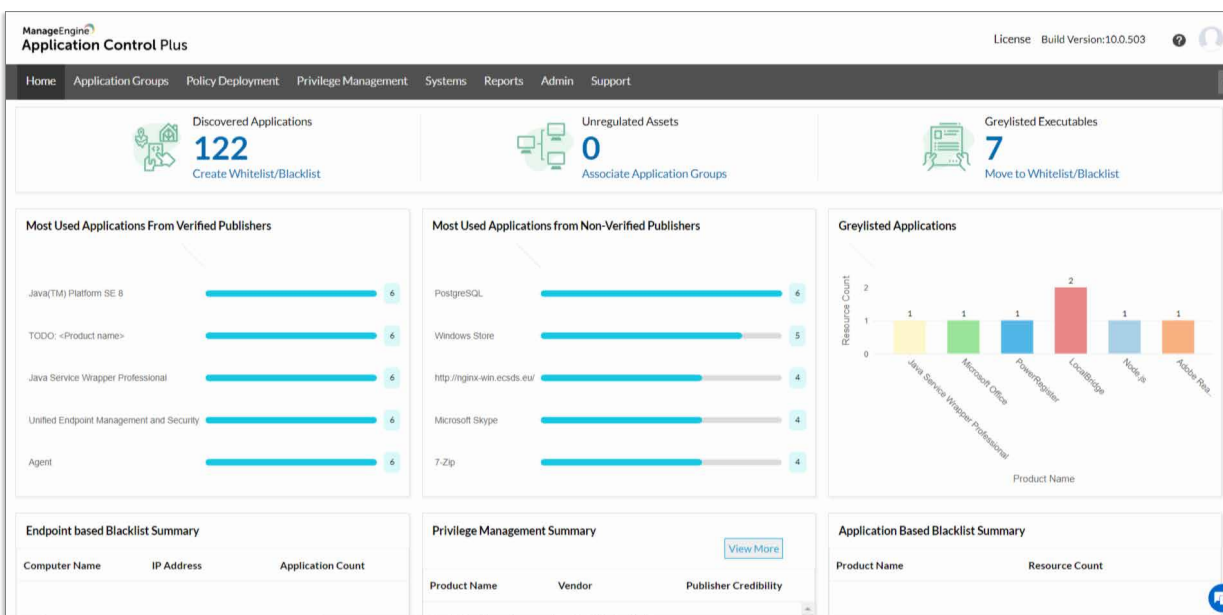## Application control and endpoint privilege management

The new ManageEngine solution "Application Control Plus" enables IT departments to manage access permissions at application level using rule-based whitlists/blacklists, thereby blocking unauthorized access, for example by malware, and minimizing entry points for hackers into the company ManageEngine relies on the zero-trust model, which initially classifies all applications, users and so on as untrustworthy.

The software also manages endpoint privileges according to the 'least privilege' principle, which assigns as few access permissions as possible: For example, IT departments can restrict rights to run business-critical applications by enabling need-based elevated access. This helps prevent attacks based on privilege elevation or through credential compromise.

The solution currently covers Windows-based environments; according to the software company an expansion to include other operating systems such as MacOS is already in the works.

Manage privileged sessions and secure connections

With "Access Manager Plus", ManageEngine provides individual features of the tried-and-tested Password Manager Pro as a separate product. IT departments can quickly and easily establish secure connections to remote systems with the web-based solution. Authentication is automatic thanks to jump-box support for Windows and Linux platforms. In addition, organizations can create remote sessions to remote hosts and give their users seamless access to certain Windows-based remote applications from local desktops.
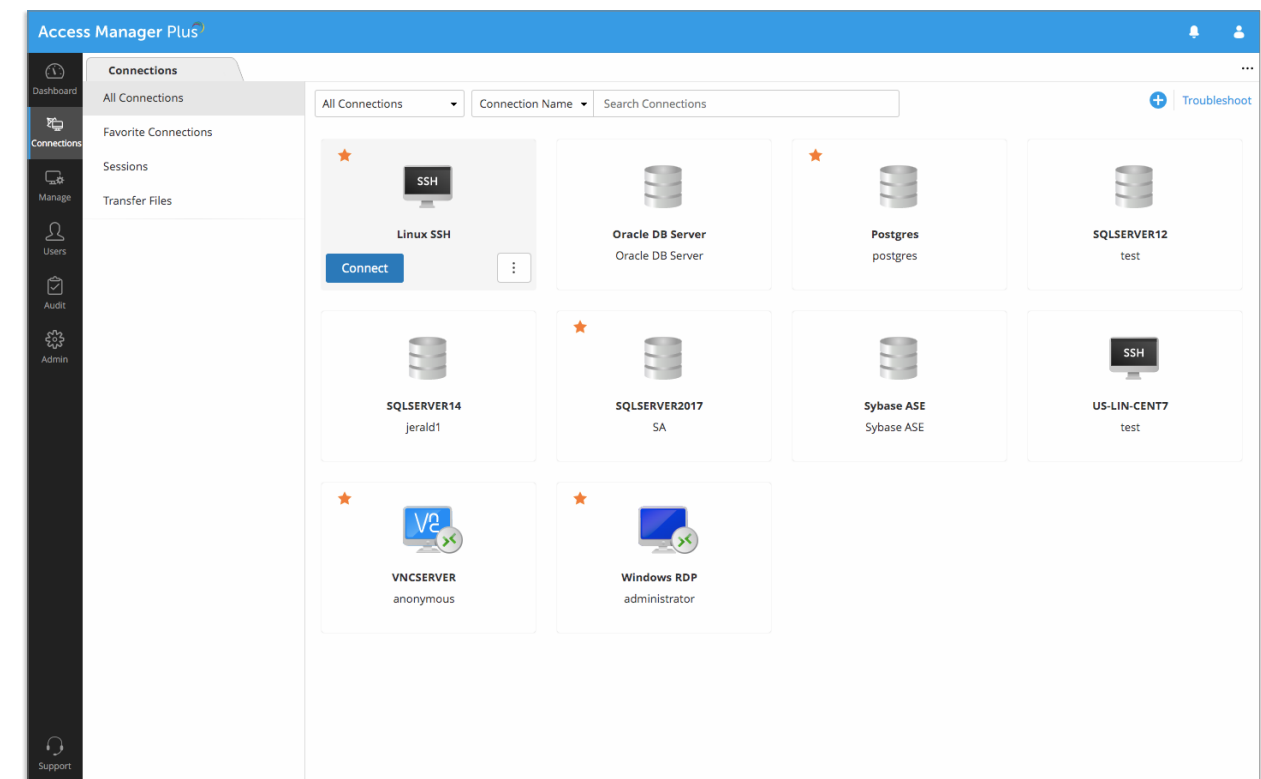
The solution also offers extensive functions to maintain an overview of all access by privileged users and to prevent the misuse of rights. Privileged sessions can, for example, be recorded and archived as a video file or monitored in real time via the shadowing function.

Access Manager Plus also enables bidirectional transfer of files between a remote system and the local host or between two remote systems. The software can also be used to easily configure and customize workflows for access control.

Free trial versions

Further information on the products presented here and free 30-day test versions are available on the software publisher's English website and from the following links:

» **Application Control Plus:**
https://www.manageengine.com/application-control/
» **Access Manager Plus:**
https://www.manageengine.com/privileged-session-management/

1 The dashboard of Application Control Plus shows IT administrators at a glance which applications are most commonly used in the company.

2 IT departments can quickly and easily establish a secure connection to remote systems using the "Connections" option in Access Manager Plus.

# Safetica DLP protects against data loss

Extremely user-friendly with a great price/performance ratio: The Safetica DLP data loss prevention software reliably protects companies against data loss. The solution is now available from distribution partner MicroNova.

TEXT: Editorial staff   **PICTURES:** © Andrey Tolkachev / Shutterstock.com; © Safetica Technologies

Whether hacking attack, deficient security, or a breach of due diligence: Data leaks can have a variety of causes and are becoming more and more common in an increasingly digitalized world, a fact confirmed by a survey conducted by the German industry association Bitkom in 2019: 75 percent of the companies surveyed stated that they had been affected by data theft, industrial espionage, or sabotage in the past two years. By way of comparison, in 2017 it was 'only' 52 percent.

In light of these figures, it is no surprise that the topic of data loss prevention is becoming increasingly important for small and medium-sized companies, too. Unlike large global players, these usually do not have big budgets and/or well-equipped in-house IT departments to effectively protect their data.

The Czech company Safetica Technologies has developed 'Safetica DLP', a data loss prevention solution aimed at medium-sized companies (up to approx. 4,000 employees). The security experts paid particular attention to ensuring a high degree of user-friendliness and a good price/performance ratio. The result is a solution that reliably protects against intentional or unintentional data loss, without requiring any additional hardware. In addition, IT departments can install and configure the software themselves within a few hours, without interrupting company operations.
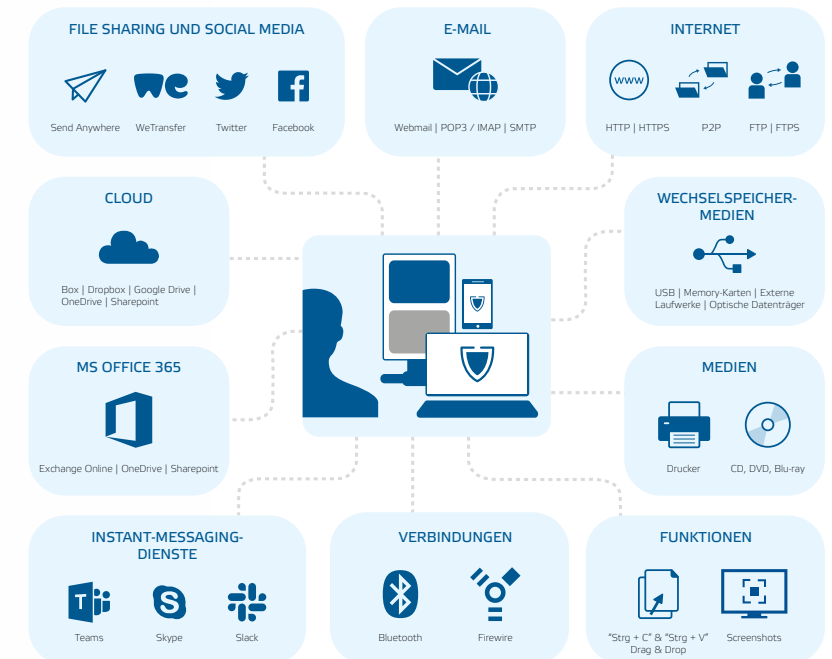
1 There are many different ways in which confidential information can leave a company. Safetica DLP covers all standard channels and platforms.

Safetica DLP protects sensitive data regardless of its format and the application it is used with. This helps to avoid intentional data breaches or breaches caused by errors, and makes it easier to comply with data protection regulations. The software covers all standard channels and platforms through which data can leave a company – from email, removable storage media and data carriers, file-sharing and other Internet services, social networks, and mobile devices to traditional printing. IT staff can quickly create basic security policies for each channel and apply them to the various endpoints without requiring any special knowledge. The DLP solution also identifies potential security risks and helps IT departments make users more aware of risks.

What data does Safetica DLP protect? Who is the solution suitable for?

Safetica DLP protects all types of data – from personal data, contracts, sales or customer databases, to strategic plans and technical designs. The solution is suitable for medium-sized companies from various sectors and industries.

Integrationen (SIEM, Fortinet..) Klassifikationen von Drittanbietern

Richtlinien

Benachrichtigungen

Safetica Management Console & Server

Unternehmens-Endpoints mit Safetica Client

Überwachen Benachrichtigen Blockieren

2 The Safetica Management Console is the control center for the DLP solution: IT administrators can set and roll out centralized policies for endpoints, analyze security risks, and view reports.

Benefits of Safetica DLP

» **Great price-to-performance ratio:** no additional hardware or external personnel required
» **Extremely user-friendly:** Basic security policies can easily be set up and rolled out in minutes.
» **Rapid implementation and installation:** The solution can be installed and set up within a few hours – without interrupting company operations.
» **Secure:** GDPR-compliant, ISO / IEC-27001 certified company

How does Safetica DLP work?

In order to ensure comprehensive data protection, Safetica Technologies uses an architecture consisting of three different components: an on-premise or cloud server with database, the Safetica Management Console, and the corporate endpoints on which the Safetica client is installed. During the initial setup, the IT department first creates a central database on a server, which records all client activities. The same also applies to processes carried out when there is no Internet connection: As soon as a client connects to the network, any data stored offline is automatically transferred to the server.

The Safetica Management Console is the actual control center for the solution. The dashboard provides administrators an overview of detected security risks, the collected data, and reports. The Console can also be used to configure security policies, which can then be applied to all endpoints (e.g. PCs and laptops) with Safetica Client. The client enforces the security policies and documents any file activities.

Additional Features:
» **Configuration of security policies for all data transmission channels:** Group-based or individual rules can be defined depending on requirements. Various workflows are available on a scale from "Allow" to "Log only", "Notify" to "Deny".

» **Device control:** The use of portable devices can be restricted. It is also possible to prohibit unauthorized media connections. The solution also offers control options for mobile devices and provides an overview of all data leaving the Office 365 cloud.

» **Security for employees working with confidential data:** If desired, the solution displays a message when a user is about to violate a policy. In addition, administrators can enforce their own processes or a special procedure for processing particularly sensitive data.

» **Offline protection:** Safetica DLP remains fully active whether or not there is an active Internet connection and even when endpoints are offline. All security incidents are synchronized as soon as the connection is restored.

» **Real-time notifications and reports:** The solution automatically sends an alert by email or SIEM solution whenever suspicious behavior occurs. Reports can be exported as XLS or PDF files for further analysis.

Compliance and technology partnerships

Safetica DLP meets the requirements of the EU General Data Protection Regulation (GDPR), and the requirements of PCI-DSS, HIPAA, and SOX, among others. Safetica Technologies is also ISO / IEC-27001 certified and works with various IT security experts such as ESET, Microsoft and Fortinet to con-

tinuously improve the quality and security of its solution. The Czech company currently has sales partners in more than 110 countries. MicroNova has been partner for distribution in Germany, Austria, Luxembourg and Switzerland since the beginning of the year. The software and systems vendor works together with various implementation partners.

Conclusion

Safetica DLP is a user-friendly and cost-effective solution that helps companies reliably protect their data and ensure compliance with government regulations and industry standards. The software allows IT departments to find out what data has left their company without permission, who has access to confidential data, and who has changed this data without authorization. In addition to traditional data leak prevention, the software also offers various security audits that deliver information on compliance violations, as well as features for managing endpoints. In addition, Safetica DLP means IT departments can test their internal processes for security risks and analyze the usage of software licenses and printers.

„Safetica DLP gives companies back control over their data. It provides them with an overview of when and how their sensitive data is moved and processed. So they can better protect data from unauthorized access."

– Alexander Fillips, Head of Enterprise Management, MicroNova

Further information and webinars:

For further information about Safetica DLP please visit www.micronova.de/safetica.

MicroNova also offers German webinars that provide an overview of the software's functions and possible applications. You can find dates and information about the webinars at www.micronova.de/safetica-webinars. Our team is at your disposal for matters relating to registering for webinars and for questions regarding use or prices. They can be contacted by email at safetica@micronova.de or by telephone on +49 8139 9300 456.

MicroNova Receives Group-Wide ISO Certification

The products and services offered by MicroNova AG have been TÜV-certified as a matter of course for years. For the first time, however, this certification has now been extended to all three companies in the group.

TEXT: Marcus Stiens

Improving process quality and performance levels, while thereby enhancing both products and customer satisfaction, is the key aim of quality management (QM). In line with this principle, QM incorporates all organizational activities involved in achieving those goals. Every single process should therefore be transparent and properly structured. QM also involves setting clear responsibilities; only when these are in place work can be carried out in an efficient and customer-centric way. Throughout its history, MicroNova has attached great value to a quality-based approach. Its first TÜV ISO certification, in fact, dates back to when the business was trading under the name MicroNova electronic GmbH. Now, however, the German Association for Technical Inspection (TÜV) has for the first time certified such working processes at all of the group companies collectively.

To enable this, in early March 2020, auditors from TÜV Süd visited Micro-Nova AG and also ks.MicroNova GmbH as well as cz.MicroNova s.r.o. for the purpose of verifying the companies' organization and quality management systems for (re)certification under the ISO 9001-2015 standard.

The associated audits took place on March 4 and 5 at the German sites, before the auditors made their way to Jablonec (Czech Republic) to inspect cz.MicroNova s.r.o. on March 11. Even though the Covid-19 crisis was already casting its shadow by then, all of those involved succeeded admirably in completing the planned on-site audit before the borders were closed.

At all three companies, the audits proceeded very well, enabling Micro-Nova to impress the auditors with its processes and both its planned and already achieved improvement measures. The outcome can be seen in the headline above: for the first time in the group's history, MicroNova can now demonstrate collective certification to ISO 9001:2015 standards. This took effect on April 27, 2020 and, as is customary, will remain valid for three years. Over the coming two years, an annual review audit will take place, before the full audit is repeated in 2023. Against this background, we promise our customers that we will do everything in our power to uphold or even improve upon the high standards certified by the auditors and to implement the improvements with vigor.

The sails are set

Dear Reader,

In issue 1/19 of InNOVAtion I commented briefly on the deteriorating economic outlook. Many people would currently like to have the same prospects as back then. It will probably take some time before the true dimensions of the coronavirus crisis are fully understood, let alone overcome. The overall situation is therefore more difficult to assess and plan for than ever before …

This of course applies to MicroNova, too. We are also trying to prepare as well as possible for all eventualities. I would like to extend my thanks to our board members Orazio Ragonesi and Dr. Klaus Eder: the fact that they geared the company towards digitalized processes, home office, etc. is now being bearing fruit in the coronavirus crisis. Our customers as well as our teams are benefiting from the fact that operations at MicroNova could basically continue without a hitch. I would therefore also like to thank all our employees, who are doing a great job at home or are holding the fort in the office.

Of course, our company management has "handled" a great deal more with success. Establishing our Czech subsidiary, for example, was already primarily at their initiative. The Management Board was also very supportive of our construction project for our new office building, as well as in settling the issue of company succession. Many operational projects have been successfully addressed, new customers have been acquired, etc.

Special mention should be made of the interaction between the Management and Supervisory Boards: "Together" instead of "against each other" is very important to me personally and a very important prerequisite for success. Given this record, it was very easy for me and the entire Supervisory Board to conclude that both of them should continue along their successful path – and both have already gladly accepted, for which I would like to express my thanks on behalf of the entire board and wish them every success: Orazio Ragonesi and Klaus Eder were appointed to the Management Board for a further five years as dual chairmen in their proven role sharing at the end of the maximum legally permitted term of office.

There are many exciting tasks. The increased focus of the Testing Solutions division on artificial intelligence is one of them – a topic that is also "burning hot" at Telco Solutions, as is the further strategic planning for a mobile communications market that is evolving with 5G. The IT Management division has developed very well in recent years and we will continue this – including the search for further suitable partners. The Supervisory Board has also specified that a clear lookout needs to be maintained for new areas of interest. All this will happen in an increasingly global world – crisis or no crisis; the international orientation of MicroNova is therefore also an issue. Looking back, I am very confident that both will perform these tasks well. The sails are set.

I am delighted that we are continuing to get involved and contribute beyond the operational side of the business. The most recent proof of this is our successful participation in the "Blühpakt" (Bavarian Flowering Pact), which underlines the natural arrangement of open spaces. We have also set up nesting boxes for starlings at the Vierkirchen site and planted further insect-friendly shrubs for our "company bees".

In conclusion, one more word about the coronavirus: the certainty that MicroNova is in good hands and will continue to work hard on customer projects as well as on social issues helped me overcome a Covid-19 infection very well myself. I contracted the disease in mid-March and fortunately I came through everything well. This is why it is all the more important for me to wish you not only all the best, but explicitly also the very best of health.

With warmest regards
Ihr Josef W. Karl

Founder and Chairman of
the Supervisory Board
Josef W. Karl