

AUTOMOTIVE NEWS

EDITION 2020



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DEAR READERS

It is no secret that the industry is in upheaval. For us as a service provider this means that we, like our customers, have to invest in several areas: The tried and tested procedure – diagnostics on the vehicle with a number of electronic control units – is in use and will no doubt be used in this form for many years to come. At the same time, new E/E architectures and the strong call for remote access are demanding completely new approaches.

An opportunity but at the same time a risk – these new approaches give us the opportunity to create new equipment for new test fields on customers' premises. We then create HiL assemblies in a small series and not, as is the case today, as an individual piece, a challenge we are happy to face.

As usual, in our newsletter we want to provide you with an overview of the diagnostic and test solutions we can now offer on the listed topics. Find out about the software solutions Softing DTS, Softing TDX as well as Softing SDE, which takes the idea of a diagnostic runtime system considerably further, and our hardware solutions for test fields and our VCLs.

We are hoping for a successful 2020 which we are looking forward to shaping with you.



Markus Steffelbauer
Head of Product Management

DATES

Mar. 23-24, 2020 | Munich, Germany
CTI Conference Automotive Diagnostics

Mar. 24-26, 2020 | Dublin, Ireland
SAE OBD Symposium Europe

May 26-27, 2020 | Dresden, Germany
Diagnostics in Mechatronic Vehicle Systems

June 16-18, 2020 | Stuttgart, Germany
Automotive Testing Expo Europe

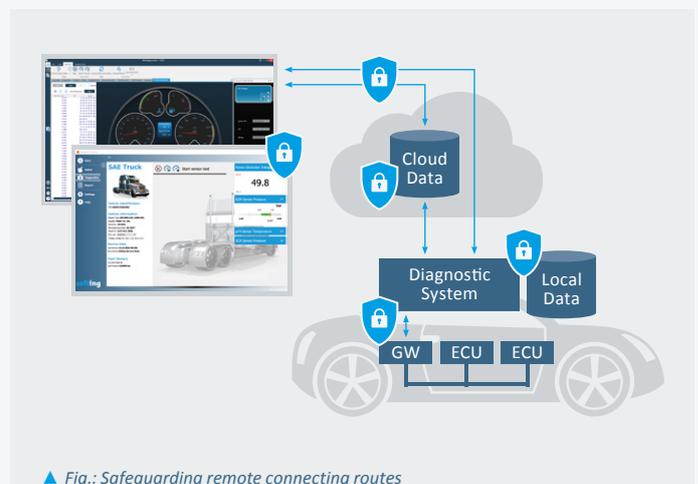
Sept. 15-17, 2020 | Rosemont, IL, USA
SAE COMVEC

Sept. 22-24, 2020 | Indianapolis, IN, USA
SAE OBD Symposium USA

Oct. 27-29, 2020 | Novi, MI, USA
Automotive Testing Expo USA

BRAVE NEW WORLD... REMOTE DIAGNOSTICS & SECURITY

The need for solutions which can be used to access vehicles and test benches decentrally continues to increase. At the same time, however, the demand for safeguarding these solutions is also growing because both unauthorized access to the available information and its manipulation hold enormous potential for damage. This is why Softing solutions have always protected data – our customers' intellectual property – with strong encryption. For this purpose, we implement individual algorithms if customers so desire and secure these with a license. Simultaneously, we offer solutions for safeguarding remote connecting routes and thus guarantee safe communication on the basis of standard mechanisms tried and tested the world over. Furthermore, we work together with one of the market leaders for the licensing and protection of applications, thus ensuring the best possible protection for our customers.



▲ Fig.: Safeguarding remote connecting routes



For more information:
automotive.softing.com/en/diagnostics-and-security



SOFTING DTS 9 USER INTERFACES – INTERACTIVE SHAPING TO SUIT INDIVIDUAL REQUIREMENTS

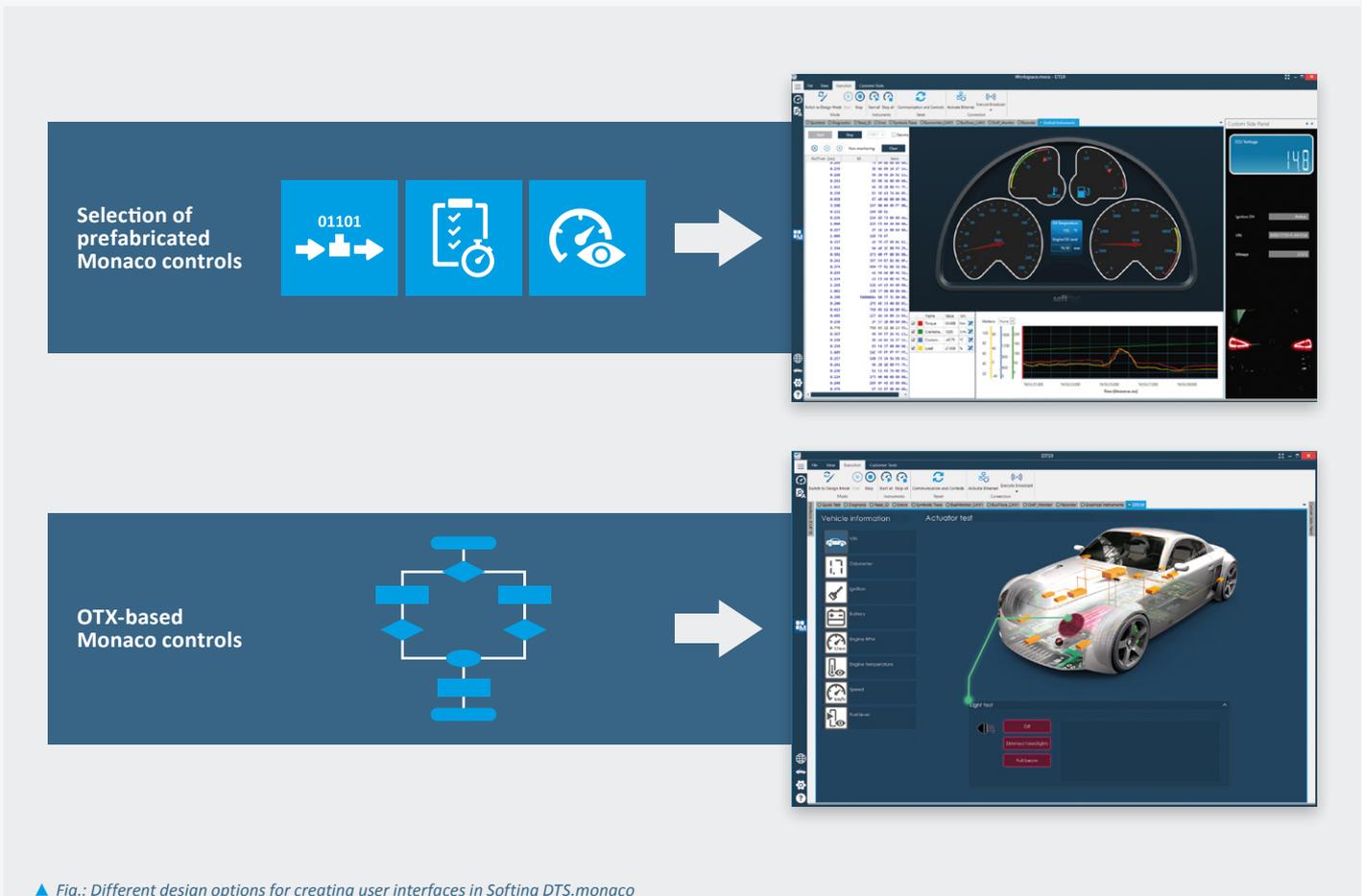
The concept of the Monaco user interfaces in the Diagnostic Tool Set (DTS) has proved itself in customer use for years now: The user adapts user interface elements optimized for a particular task to his ECU and can basically get started right away. The “sd controls” in Softing DTS 9 go even one step further and enable completely new functions – particularly in measurement data acquisition and actuator diagnostics.

With the second release of DTS 9, the integration of OTX sequences in the Monaco workspaces now makes it possible for entire release sequences, continuous operation controls as well as certifications to be safely integrated into the working environment to prevent operating errors. OTX allows you to freely define both the user interfaces and the stored diagnostic sequence, whether as an interactive test or (partially) automated. The test documentation can also be generated directly in a customized form in the procedure. We thus offer customers who, due to insufficient resources cannot invest large amounts of time in diagnostic development, a continuous chain of user interfaces. In combination with our service tester Softing TDX, it is possible to realize interdisciplinary, efficient working in the areas engineering tests, manufacturing and after-sales. ECU function developers can thus better understand the challenges of after-sales and manufacturing, and continuously improve vehicle diagnostics. For this purpose, they directly use the interfaces and sequences required there. This further

development represents great support in the area of new vehicle IT security and complex authentication mechanisms on the ECU.

Clear, user-friendly and error-proof user interfaces are one thing. But with OTX, another advantage comes to the fore: As a standardized script language for diagnostic and test sequences, OTX makes it possible to integrate external interfaces. This means external libraries can be integrated, for example, which, among other things, are necessary for the security authentication on ECUs and vehicles. Interactions with shares and networks are also possible to automatically store the results in a file system or the cloud. Softing itself already has extensive experience in creating these scripts and user interfaces. We would therefore be glad to accompany you during your initial steps or, alternatively, can develop such sequences at your request.

We will be presenting the new functionality in our engineering tester Softing DTS.monaco from July 2020.



▲ Fig.: Different design options for creating user interfaces in Softing DTS.monaco



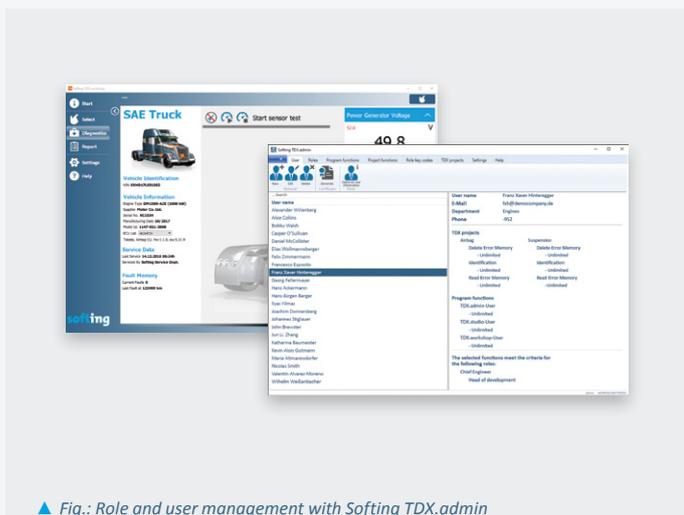
For more information:
automotive.softing.com/en/dts-monaco



SOFTING TDX.ADMIN CONFIGURATION TOOL FOR CENTRAL ROLE AND USER MANAGEMENT FROM THE SOFTING TDX TOOLKIT

Softing TDX is a universal multifunctional tool and provides a framework for the diagnosis and parameterization of vehicles and their components in cars, trucks as well as in the off-road area (e.g. construction vehicles). Its modular structure and scalability make Softing TDX the ideal tool for use in repair shops and in road tests. The use of international standards, such as for example the OTX standard ISO 13209 for diagnostic sequences or the ODX standard ISO 22901 for ECU communication and data interpretation makes it possible to continue to use and reuse OTX and ODX data already generated from various phases in the life cycle of a vehicle.

The large number of diagnostic tester installations (Softing TDX.workshop) all over the world makes the efficient management of role and user authorizations particularly important. In addition, ensuring consistent, automated and centrally controlled updates of software and its diagnostic content, such as repair instructions and diagnostic trees, is of particular importance for the use of the diagnostic tester in the repair shop area. We meet these challenges with Softing TDX.admin, a back-end administrator tool from the Softing TDX toolkit.



▲ Fig.: Role and user management with Softing TDX.admin

The intuitively operable user interface of Softing TDX.admin allows system administrators to create and manage roles and users. In the latest version, improved tool tips facilitate navigation in the tool and support the administrator in the creation, assignment and management of user roles. Traceability has also been improved by the administrator being automatically notified of newly registered users.

The Softing TDX.admin package also includes instructions on how to use the most common database technologies to create a role and user database (RUDB) based on the SQL standard. This means that users can already use our tools efficiently even if they do not yet have access to a company-wide database. The integration of existing database infrastructures is thus also very simple. The RUDB is linked via web services and thus independent of interfaces of the underlying open source database. The diagnostic tester thus abstractly accesses the content of the database.

Highlights of Softing TDX v 2.3

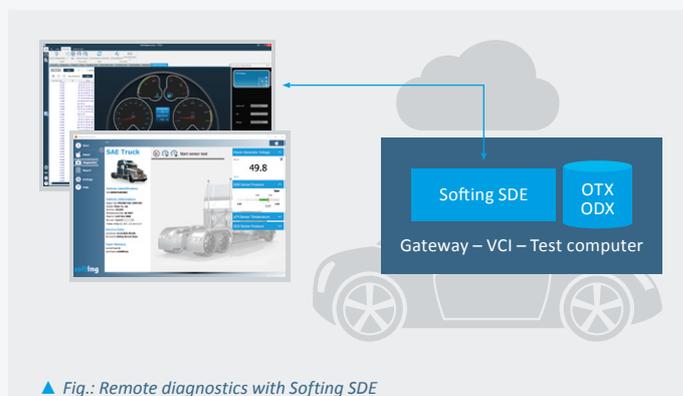
- Database-based efficient working with role and user models
- Consistent release of software versions and diagnostic content
- Fast, global and centralized software updates with automated version checking
- Dynamic loading of diagnostic content
- Improved tool tips and thus more intuitive use of the Softing TDX toolkit
- Use of Qt/QML for completely customizable user interface at the highest level



For more information:
automotive.softing.com/en/tdx

SOFTING SDE REMOTE. SECURE. SOFTING SDE.

Depending on the particular application, running remote diagnostics requires short latency times or high bandwidths. Short latency times, for example, are a requirement for measurement data acquisition, while high bandwidths are a prerequisite for ECU programming. Furthermore, remote diagnostics requires a sufficiently stable connection, a requirement that unfortunately often cannot be guaranteed. This is why Softing has combined its long-term know-how with ODX and OTX sequence systems and, in the Smart Diagnostic Engine (Softing SDE), created a diagnostic runtime system which provides an application interface (API) with a service-oriented approach and is fully remote-capable. In this way, the diagnostic task can always be processed reliably in all use cases, regardless of the available connection quality, either in the vehicle itself, in a VCI or on an integrated test computer.



▲ Fig.: Remote diagnostics with Softing SDE



For more information:
automotive.softing.com/en/sde



HV ADAPTIONS WORKING SAFELY WITH HIGH-VOLTAGE COMPONENTS IN THE LAB, ON THE TEST BENCH AND ON THE VEHICLE

When developing vehicle components and integrating them into the entire vehicle, a large number of electronic testing and verification systems are required. The development of e-vehicles is making particularly high and diverse demands. In addition to highly reliable test systems, safe measurement, testing, inspection and application in the high-voltage range also require simulations that match the complex

control units – especially the simulation of real battery cells. For applications in the HV area with voltages of up to 1000 VDC and currents of up to 1000 ADC, we plan and develop customized adapters, supply systems as well as measurement and simulation technology for safe handling in the lab, on the test bench and in the vehicle.

Measuring Adapters and Breakout Boxes for the High-Voltage Range

HV measuring adapters and breakout boxes are used to safely and reliably perform measurements on electric and hybrid vehicles. Measuring adapters provide interfaces for tapping individual I/O signals as well as for accessing the power supply. I/O signals and supply lines can be manipulated using breakout boxes and switchable jumpers. Equipped with the original vehicle plug connections, signals at the control unit plug can be measured or influenced by interruption, short-circuit or connection of a bleeder and transfer resistor. Our high-voltage measuring adapters and breakout boxes are typically used in engineering and development, on test benches and in the service area by OEMs, system, module and component suppliers, as well as test companies.



▲ Fig.: Example of an HV measuring adapter

HV Supply Systems with Energy Recovery

Testing battery management systems as well as high-voltage components requires the reliable supply of sufficient electrical power to the systems. Currents and voltages must be applied to the device under test in compliance with the highest safety measures, and precisely measured and controlled during operation. In order not to uselessly convert many kilowatts of electrical power into heat loss, the energy from loaded systems must be fed back into the supply network. Softing plans and develops individual high-voltage supply systems with integrated energy recovery up to 1000 VDC and up to 1000 ADC. Our systems are used in functional and HiL testers, on test benches as well as in the lab by OEMs, system, module and component suppliers, as well as test companies.



▲ Fig.: Example of an HV supply system

Charge Changeover Switches and Liquid-Cooled Components for High Power Charging

High Power Charging (HPC) enables fast charging with charging performances of up to 400 kW. HPC makes it possible to quickly charge electric vehicles with power for distances of up to 600 kilometers – and that's during the coffee break! But fast power charging is not totally unproblematic. Charging voltages of up to 1000 V and charging currents of up to 400 A continuous current generate a lot of power loss and thus heat. In order to reduce the thermal load on the affected components, the energy transfer systems must be cooled efficiently. It also makes sense to equip HPC fast charging stations with interfaces for what is referred to as the Combined Charging System, so that the charging stations remain compatible with older electric vehicles (downward compatibility).

Softing has planned and developed technically sophisticated HV charge changeover switches for DC fast charging systems. Charging cable and charging plug are cooled with a special liquid. There are two versions of the cooling unit integrated in the charge changeover switch: as an air cooling system or with a connection to an existing house cooling system. It is also possible to switch between the charging plug variants CCS1 (COMBO 1) and CCS2 (COMBO 2). The high power chargers with charge changeover switches and liquid-cooled components are used in the vehicle, on test benches and in the lab, as well as in environmental simulations, e.g. in a wind tunnel.



▲ Fig.: Example of a charge changeover switch with liquid-cooled components



For more information:
automotive.softing.com/en/hv-adaptions



VIN|ING 3000 AND VIN|ING 6000 ON-BOARD COMMUNICATION AND DIAGNOSTICS WITH A SINGLE VCI

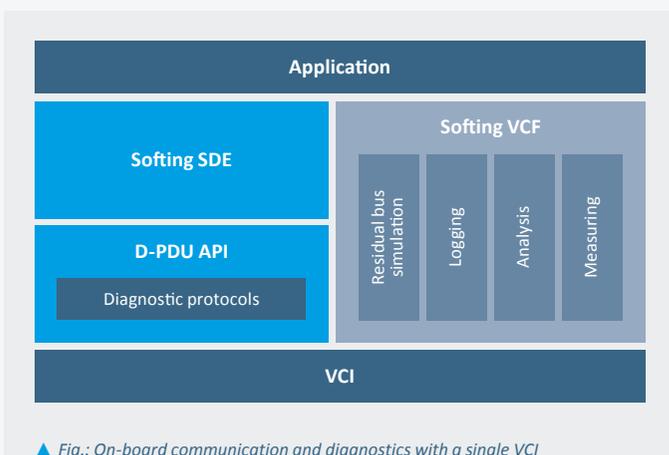
Following the successful launch with pilot customers, the product-related use of VINING 3000 and VINING 6000 is now imminent. The two interfaces have been designed for use in the engineering and development of vehicles and ECUs as well as related test and production environments. One and the same device can be used simultaneously for a combination of all kinds of diagnostic and communication tasks. The modular system supports the adaptation of the device configuration to the respective application, thus offering maximum flexibility.

The appropriate interface boards for CAN/FD, Automotive Ethernet and serial interfaces such as K-Line, LIN or SENT are simply integrated for this purpose.

With Softing VCF (Vehicle Communication Framework), solutions for cross-platform, parallel and distributed communication tasks can be mapped. Softing VCF is middleware for all application cases in vehicle and ECU communication and forms the basis of the fulfillment of diverse measurement tasks, bus analysis, data logging and residual bus

simulation. A further core task of the new VCIs is the reliable and high-performance diagnostic communication with the ECUs of a vehicle. This typically takes place using standardized diagnostic protocols with D-PDU API or Pass Thru API (SAE J2534). In combination with Softing SDE as a high-performance runtime system, complex diagnostic sequences can also be realized over a function-oriented API. Softing VCF and Softing SDE can either work with the VCI over a control system or execute their tasks directly on the VCI in stand-alone operation.

Typical use cases of VINING 3000 and VINING 6000 include the development of ECUs and complete mechatronic systems as well as the execution of related test tasks. Furthermore, the most diverse constellations of test benches are addressed, both in testing and in manufacturing. The VCIs are used equally in the validation of ECU functions and in the testing of the overall function of a mechatronic system. In all applications, the focus is on fulfilling measurement tasks on the basis of the variables sent by the ECU and mapping the communication behavior of ECUs that are missing in the test setup (residual bus simulation). For this purpose, description data of standard data formats, such as CANdb, FIBEX, LDF and Autosar System XML, is used. In terms of the simultaneous implementation of diagnostic tasks in one device, VINING 3000 and VINING 6000 are the ideal platform and represent genuine added value for users, both in terms of function and cost.



▲ Fig.: On-board communication and diagnostics with a single VCI



For more information:
automotive.softing.com/en/vining-3000-6000

automotive.softing.com/en/vcf



▲ Fig.: Universal VCI for engineering, the test environment and manufacturing



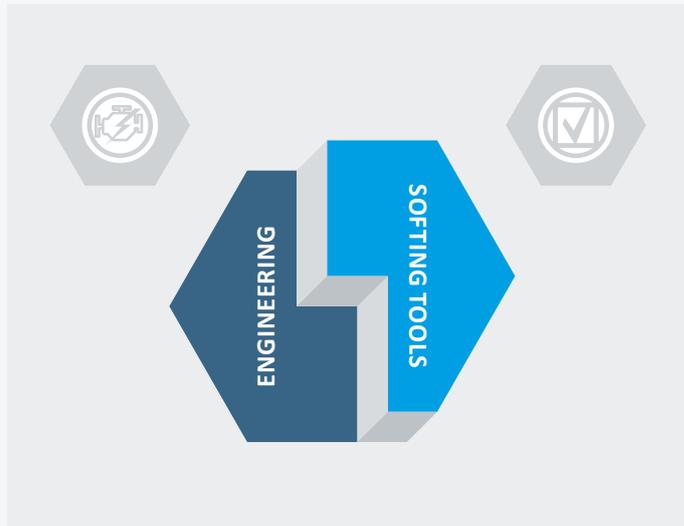
ENGINEERING

INDIVIDUAL CONCEPTS AND TOOLS FOR VEHICLE ELECTRONICS – REALIZED QUICKLY AND EFFICIENTLY WITH STANDARD DIAGNOSTIC TECHNOLOGIES

Today modern diagnostic architectures use well-established and standardized technologies – in the vehicle as well as in the systems and testers outside. It therefore makes sense to also use available components and flexible modular systems when realizing individually tailored tools. This is exactly the procedure we use at Softing Engineering & Solutions to quickly realize complex individual solutions for all kinds of tasks in engineering, manufacturing and after-sales service.

Our solution toolkit based on the MVCI server has all the necessary components for smooth data exchange with ECUs. The realization of functional sequences with our tool suite Softing OTX.studio makes it possible for us to implement a range of different functionalities quickly and reliably – with customized user interfaces where desired.

We develop solutions for use in ECU development, component and vehicle testing as well as for manufacturing and service systems. From the concept to the system integration – whether as an independent diagnostic solution or as a component integrated in other systems – the range of realizable solutions we provide is immense. This is something we have successfully put to the test in numerous projects.



For more information:
automotive.softing.com/en/projects

EXPERTISE WITH TRAINING SESSIONS

You quickly want to learn all about vehicle diagnostics, flash programming, the OTX and ODX standards and ECU communication – without having to spend too much time studying dry standards on vehicle protocols? Our training team will provide you with the necessary knowledge and bring you up to date with all the latest technological details.

We have put our knowledge and long years of experience into a compact and modular training program for you. This comprises practice-oriented user workshops as well as in-depth theoretical seminars which we offer in both English and German. We would be happy to tailor the content of our training sessions to suit your individual requirements.



For more information:
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