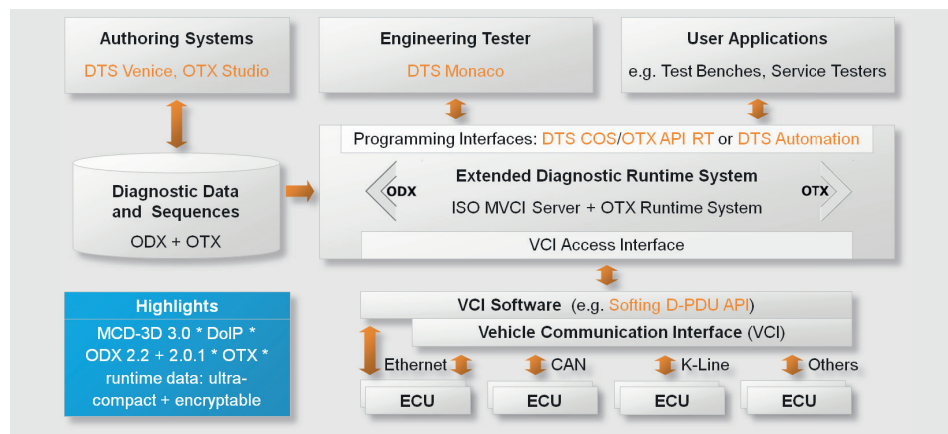


# Diagnostic Tool Set 8

## System Overview

optimize!  
**softing**

Enables you to create, execute and test diagnostic data and sequences based on the latest international automotive standards. Helps you to ensure that the diagnostic communication as well as the actual vehicle diagnostics work reliably in engineering, manufacturing and service.



### Internationally standardized

All the major vehicle manufacturers worldwide, together with their suppliers, worked on specifying and implementing a range of international standards. A standardized diagnostic runtime system is a central element in vehicle diagnostics. This ISO MVCI server makes it possible to use vehicle interfaces (VCIs) from different manufacturers and exchange them at will. The standardized data format for specifying and exchanging diagnostic data is ODX. It is independent of the bus protocols used and comprises not only the vehicle- and ECU-specific diagnostic functions ("services") but also configuration and flash data. All ECU variants, based on a standard variant, are included. Redundancies are avoided with the use of libraries, inheritance and references. The actual applications use the methods made available at the application interface. This means that they can be created without there being any need for users to have special knowledge of communication protocols or services

and that they are independent of VCI and the protocols used. ECU and vehicle information is accessed using the conversion methods, service and data type descriptions contained in the ODX database. It is also possible to address a request to all ECUs of a functional group with comprehensive functionality, such as for example OBD.

### Extended Diagnostic Runtime System

But in vehicle diagnostics, not only individual services but also a large number of diagnostic and test sequences are required over and over again throughout the entire life cycle. These more complex sequences including possible user interaction cannot be described using ODX. This gap in vehicle diagnostics was closed by OTX, another standardized data format which can be run directly over an additional OTX runtime directly based on the diagnostic runtime system. The Diagnostic Tool Set comprehensively covers the vehicle diagnostics by merging ODX with OTX

### Areas of Application

- All possible applications of diagnostics in Engineering, Testing, Manufacturing and Service
- For manufacturers of cars, trucks, buses, motorcycles and non-road mobile machinery as well as tier 1 system suppliers and ECU suppliers

### Benefits

- Significant cost reduction in comparison to proprietary developments
- Highly effective because diagnostics only has to be implemented once in the entire value chain
- Future-proof as based on current international standards
- Top quality thanks to data verification as well as early detection and remedy of communication problems and function errors

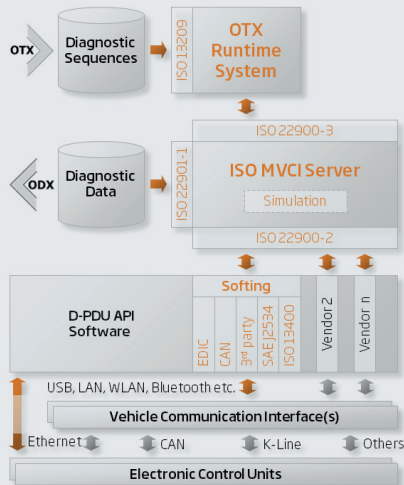
### Standards

- Communication server: ISO MVCI-Server/ASAM MCD runtime system (COS)
- ODX data interface: ISO 22901-1/ASAM MCD-2D
- Programming interface: ISO 22900-3/ASAM MCD-3D
- VCI access interface: ISO 22900-2 (D-PDU API) via CAN, K-line, Ethernet
- Please find others at the last page



**AUTOMOTIVE**  
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# BASE SYSTEM



## Base System for the DTS Product Family

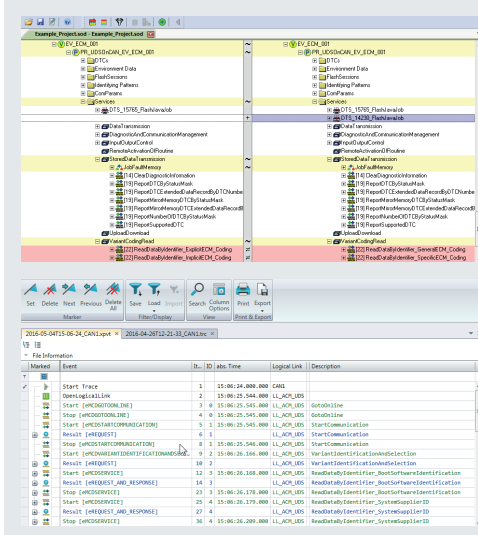
All products are based on Softing's diagnostic runtime system, which implements the ISO MCVI Server for vehicle diagnostics. In addition, a "simulated" interface enables you to test the diagnostic functions even without VCI and ECUs. Three runtime data formats with optional en-cryption optimally cover the various requirements of engineering, manufacturing and service. As an extension the OTX Runtime System enables you to execute complex diagnostic sequences. Softing's optional D-PDU API software supports selected CAN and SAE J2534/ PassThru VCIs

as well as ISO 13400/DoIP without VCI. You can use EDIC VCIs immediately without having to install additional drivers.

### Areas of Application

- Vehicle Diagnostics in the entire automotive value chain: engineering, manufacturing and service
- Available for several platforms and operating systems
- Smartphone and tablet apps

# DELIVERY SCOPE



## Delivery Scope and Packages

Using the System Configurator you can centrally manage system and project settings as well as central libraries, create new projects and import data. With the Database Differ you can compare diagnostic data in the runtime formats in detail. You can use the Analyzer to analyze communication traces "offline". There are two alternative delivery packages, for the 1st the Full Package and for the 2nd the Production and Aftersales Package. The latter is notably more compact and aimed at experts, who want to select or unselect in detail the required software components for test benches, service testers etc. during

the setup. The delivery scope is limited to DTS COS and DTS Automation incl. the OTX runtime system.

### Areas of Application

- Microsoft Windows based systems

# API ACCESS

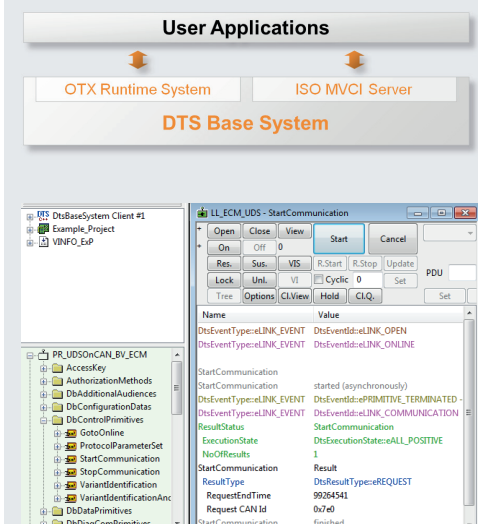
## Programming Interface of the ISO MVCI Server and the OTX Runtime System

DTS COS enables user applications to access the API of the MVCI server, either as stand-alone MVCI server or as an optional extension for DTS Automation, DTS Monaco or OTX Studio. Together with a diagnostic runtime system or as an optional extension for OTX Studio, DTS COS, Automation or Monaco, OTX API RT enables to access the API of the des OTX runtime system as well as to execute scripts via the command prompt. The respective API Developer Kits comprises extensive documentations and programming examples. For the MVCI server there is special Test Application which enables you to establish communi-

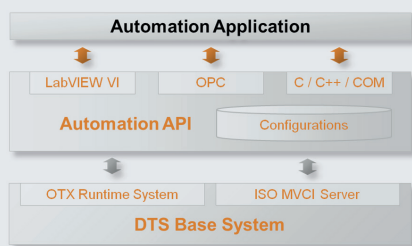
cation to the ECUs or the vehicle immediately, i.e. without previous application development.

### Areas of Application

- Engineering & Test: release of ECUs, creation and validation of test sequences, HiL systems
- Manufacturing: end-of-line test systems, test benches, programming stations
- Service: diagnostic runtime system for ser-vice testers



## DTS AUTOMATION



### Manufacturing and Test Bench Applications

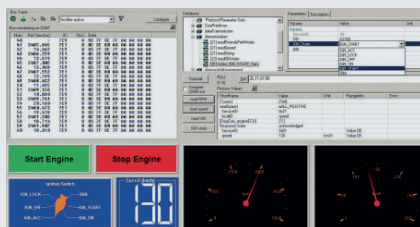
Starting from the DTS Base System the Automation API offers user applications to access particularly simple the vehicle diagnostics via standard interfaces widely used in industrial automation. Standard tasks, such as connecting and disconnecting, can thus be managed with considerably fewer and simpler steps than in direct access to

the MCD-3D API. Configurations can be saved, resulting in short changeover times.

#### Areas of Application

- Flash stations in Manufacturing
- HiL systems
- Test benches
- End-of-line test systems

## DTS MONACO



### All-in-one Engineering Tester

Starting from the DTS Base System, DTS Monaco enables you to comprehensively test diagnostic communication, diagnostic data and diagnostic sequences in the areas of engineering, testing and preparation of manufacturing tests.

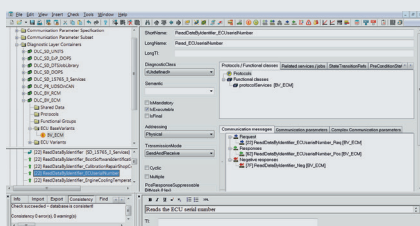
Functions at a glance: testing communication, analyzing data on bus, examining ODX data vs. ECU, reading/deleting error memory, programming flash memory, displaying measuring values, parameterizing ECUs, coding variants, executing ECU routines, testing OBD functions, creating/

executing test sequences as well as identifying built-in ECUs.

#### Areas of Application

- Development of diagnostic and control functions for ECUs
- Function test and validation
- Integration and system test
- Preparation of test sequences for Manufacturing and Service
- Analysis of returns and Quality Assurance

## DTS VENICE



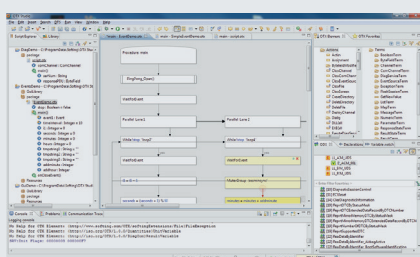
### ODX Authoring System

DTS Venice is an ODX 2.2 plus 2.0.1 editor for the convenient creation, testing, management and maintenance of diagnostic data. In the Expert View you can process the entire vehicle respective the ODX data model. The ECU View provides a simplified view of an individual ECU and its variants. Diagnostic description inheritance is visualized graphically. Assistants support you to enter data.

#### Areas of Application

- Description and validation of diagnostic functions and ECU communication
- Data interoperability test
- Provision of test data for integration and system test
- Data adaptation in production preparation and for use in repair shop testers

## OTX STUDIO



### OTX Development Environment

Starting from the DTS Base System, OTX Studio is an integrated development environment for complex diagnostic sequences according to ISO 13209. You can create scripts either as structured text or flowchart. With a special GUI editor, it is easy to generate user interfaces and link them to the sequences created.

#### Areas of Application

- Specification of complex diagnostic sequences
- Creation of test sequences during the ECU development
- User interfaces and test sequences for EOL testers in the production
- Guided troubleshooting for repair shop testers

## Technical Data of the DTS Base System

<b>Technical Data of the DTS Base System</b>	ISO 22901-1/ASAM MCD-2D, ODX V2.2.0 and 2.0.1 (Open Diagnostic Data Exchange), ISO 22900-3/ASAM MCD-3D V3.0.0 programming interface, ISO 22900-2/D-PDU API via CAN, K-line and Ethernet (ISO 13400 DoIP/Tester - Gateway), ISO 13209/OTX V1.0.0 (Open Test Sequence Exchange), ISO 14229 (UDS), ISO 14230 (KWP2000), ISO 15031 (OBD), ISO 27145 (WWH-OBD), SAE J2534, SAE J1939
<b>VCI support</b>	All VCIs according to the corresponding revision of the data sheet Softing D-PDU API, Other VCIs: All with ISO standard compliant D-PDU API software (release test required possibly), Parallel communication: depending on type and combination ≤ 4 diagnostic interfaces (more on request)
<b>Simulated Interface</b>	Enables the diagnostic functions to be tested even without an ECU
<b>Protocol templates within scope of delivery</b>	Communication parameter for the diagnostic protocol stack in accordance with ISO 22900-2/D-PDU API: J1939_73_on_CAN (SAE_J1939_73_on_SAE_J1939_21), KWP2000_on_CAN (ISO_14230_3_on_ISO_15765_2), KWP2000_on_Kline (ISO_14230_3_on_ISO_14230_2), OBD for K-Line and CAN (ISO_OBD_on_ISO_15765_4 and ISO_OBD_on_ISO_14230_2), UDS_on_CAN (ISO_14229_3_on_ISO_15765_2, UDS_on_CAN (ISO_15765_3_on_ISO_15765_2, UDS_on_DoIP (ISO_14229_5_on_ISO_13400_2), WWHOBD_on_CAN (ISO_27145_3_on_ISO_15765_2)
<b>Databases within scope of delivery</b>	OBD database in accordance with ISO 15031-5/SAE J1979:2014-07 for gasoline/diesel vehicles, J1939 database in accordance with SAE J1939, Sample database with three ECU and detailed documentation as well as tutorial
<b>Runtime data formats</b>	SOD: editable runtime format, which can be exported back to ODX SRD: „monolithic“ ultra-compact runtime format with closed database as with ODX/SOD, SMR: Modular* ultra-compact runtime format (* .. for ODX categories/single ECU), Ultra-compact runtime formats: Vehicle and flash data are 60 to 180 times more compact in comparison to ODX data (depending on OEM/data structure); optional OEM specific encryption
<b>Operating systems</b>	Windows 7 SP 1, 8.1 and 10 (all 32+64 Bit)
<b>General PC requirements</b>	Processor: type and clock (≥ 1.5 GHz) depending on the system configuration and complexity of ODX data, RAM: ≥ 2 GB– depending on ODX data, For hardware interfaces: USB-/LAN port, wireless LAN or Bluetooth for HW interface, For optional USB Dongle: USB port, Screen resolution: see detailed data sheets on the relevant products

## Major Products of the Product Family

<b>DTS 8 COS</b>	ISO MVCI server incl. API access – see data sheet DTS 8 COS
<b>DTS 8 Automation</b>	Automation API access for manufacturing & test bench applications - see data sheet DTS 8 Automation
<b>DTS 8 Monaco</b>	All-in-one engineering tester - see data sheet DTS 8 Monaco
<b>DTS 8 Venice</b>	Authoring system for ODX 2.2 and 2.0.1 – see data sheet DTS 8 Venice
<b>OTX Studio</b>	Development environment for OTX– see data sheet OTX Studio
<b>OTX RT</b>	OTX runtime system incl. API access – see data sheet OTX Runtime System

## Supplementary Products and Services

<b>S-DONGLE</b>	Micro USB license dongle, as an alternative to licensing on a hardware interface
<b>PDUAPI-LIC</b>	Softing's ISO 22900-2/D-PDU API compliant VCI software for selected CAN and SAE J2534/PassThru VCI as well as ISO 13400/DoIP without VCI – see data sheet D-PDU API
<b>DTS8L-COS-MULTI-HW</b>	Parallel use of more than four VCIs (evaluation and approval required for the actually used VCI types and their combination)
<b>DTS8L-COS-SMR</b>	Optional extension for DTS COS, Automation, Monaco, Venice or OTX Studio: Generating the modular ultra-compact runtime data format SMR (requires one-time DTS8S-SMR-SETUP)
<b>DTS8S-COS-SMR-SETUP</b>	Initial process consulting regarding the usage of the modular, ultra-compact runtime data format SMR and its creation
<b>DTS8L-CRYPT-[OEM]</b>	Reading and writing of OEM-specific encrypted, ultra-compact runtime data (requires one-time DTS8S-CRYPT-SETUP)
<b>DTS8S-CRYPT-SETUP</b>	Initial setup for OEM-specific encryption of ultra-compact runtime data (one-off costs per OEM)