



CANape

Version History

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1 Introduction

The introduction of the CAN bus in 1987 brought with it entirely new possibilities for using electronics in automobiles: within a few years electronics had influenced the efficiency, performance, and durability of the drives, supported active and passive vehicle safety, and provided convenience features.

As early as 1991 Vector had developed the MDF format (Measurement Data Format) for Robert Bosch GmbH as a binary file format for measurement data. After the MDF had quickly become the de facto standard in the automobile industry, the revised version 4.0 was finally published in 2009 as official ASAM standard.

Vector incorporated extensive know-how into the specification of the A2AP2 description files for ECU-internal values (also called an A2L file). After the specification of the „CAN Calibration Protocol“ (CCP) in the mid 1990s, Vector quickly developed the first measurement and calibration tool. Since November 1996, ECU calibration engineers have used CANape (CAN application environment) in order to adapt controller behavior to various vehicle models by changing only the parameterization, not the program code.

In the course of more than 20 years, thousands of new functions and user requests have been incorporated into the tool. Used worldwide by all vehicle manufacturers and ECU suppliers, CANape covers all application areas of ECU calibration: from measurement of very large data volumes and calibration of thousands of parameters, to integration into model-based development, to a complete solution for ADAS ECUs and bypassing.

Supplemented with many extensions and products such as the VX1000 measurement & calibration system and the integration of client/server solutions and cloud offerings, Vector offers a powerful and proven solution in order to significantly accelerate ECU calibration and master complexity.

The following is a list of all CANape versions and service packs.

Further information on the history of CANape from the first release in 1996 can be found on website https://vector.com/vi_canape_20y_en.html

2 CANape 16.0

User Operation and Display

- > Option Thermodynamic State Chart: During development and testing of air conditioning and cooling systems, you can display thermodynamic state charts for online and offline analysis.

Measurement Data Acquisition

- > Precise time synchronization (PTP/IEEE 802.1AS) during measurements together with UTC time stamps and GPS-based master clock.

Datenbase

- > ASAP2 Studio is integrated as the successor to the ASAP2 Editor. The redesigned graphical user interface is sorted by areas of application and permits fast, intuitive operation.

Calibration Data Management (Parameter Sets & vCDMstudio)

- > Option vCDM: Full coverage of vCDM calibrator use cases integrated in CANape.

Diagnostics

- > For diagnostic testing, CANape now supports DoIP (Diagnostics over Internet Protocol).

Bypassing

- > VTP (WEC) support for VN89-based bypassing.

Driver Assistance

- > Integration of LIDAR systems (Velodyne, Ibeo and Quanergy) and visualization of the point clouds in the new „Scene View“ window.

Working with Measurement Files

- > Measurement files recorded together are displayed as a contiguous measurement.
- > Direct working on measurement data in Excel format without conversion to MDF format.
- > Simple comparison of several triggered measurement results in a single display.
- > Measurement and calibration windows now display the current values of the global measurement cursor.

2.1 CANape 16.0 SP1

With Service Pack 1 (version 16.0.10), the following changes become effective:

User Operation and Display

- > Simple, fast exchange of projects through storage of configuration files in containers.

Functions and Scripts

- > The macros PAGE and PAGE_COUNT return the correct page numbers again

Working with Measurement Files

- > The half precision float data type is supported for measurement signals, value blocks and during offline evaluation.

2.2 CANape 16.0 SP2

With Service Pack 2 (versions 16.0.20 and 16.0.21), the following changes become effective:

User Operation and Display

- > Project Manager: Improved stability when working with several configurations.
- > All customized key combinations are considered after closing and reloading the project.

- > The behavior upon deactivation or deletion of a partial configuration can be influenced with a new flag in the Options dialog. By default, the signals attributed to the partial configuration now are removed from the measurement list again.
- > Project Manager: Project files can now be exported to a ZIP archive.
- > An issue, which led to valid licenses on keyman dongles not being recognized properly, was fixed.

Communication Protocols

- > CAN and FlexRay support for ETAS ES591/ES592 devices via BOA.
- > XCP 1.3: ECU-Clock to XCP-Slave-Clock synchronization - Multicast and independent events are supported.
- > The XCP command GET_DAQ_CLOCK will not be sent anymore when the ECU is offline.

Measurement Data Acquisition

- > For DHPR, ODT entries were adapted in case of XCP devices.
- > A new option in the device setup for CAN-based devices allows to ignore the source information (logical CAN channel number and CAN message name) in the configuration. When activated, assignment is based on signal names only.
- > With a new project setting, signals measured once can be saved several times in all further MDF recorders.

Database

- > Fixed an error that occurred while importing conversion rules from Ethernet Autosar ARXML files. Signals using the affected conversion rules can now be measured.
- > When the feature for automatic detection of database is used, the new database is loaded automatically when a change is detected.
- > Differences between the conversion rules of ARXML 3.2.2 and 4.2.2 databases have been eliminated.

Calibration Data Management (Parameter Sets & vCDMstudio)

- > vCDMstudio: More robust behavior when copying maps/curves that contain a monotony violation.
- > Changed behavior for datasets with parameters violating the standard ranges: Flashing and activating is possible now.
- > New option in the settings for HEX post-processing in vCDMstudio: If the new mode is activated, the dialog to select a configuration file is suppressed. The configuration file defined in the options will be used.
- > Improved treatment of corrupt datasets. In case of illegal values, the corresponding dataset is set to invalid.

Automation

- > COM API 64 bit: Improved stability in conjunction with DIAdem.
- > The return value of the ASAP3 function Asap3GetDatabaseObjectsByType does not contain a leading dot anymore.
- > API: A new function to get the working directory that is currently being used by the current CANape session was added.

Calibration

- > AUTOSAR: For Pool-RAM addresses, the alignment defined in the A2L is considered correctly again.
- > Monotony violations now are also considered when loading parameter sets. The current option settings are applied.

Multimedia

- > A video signal saved into multiple files is replayed concatenated if the corresponding measurement files are displayed as single measurement.
- > The timestamps have been optimized in the Multimedia window for image files.

Bypassing

- > FlexRay Spy mode support for model inputs.

Functions and Scripts

- > A new set of CASL functions allow reading from and writing into loaded Excel files.

- > The macros PAGE and PAGE_COUNT return the correct page numbers again.
- > Algorithm Designer: Improved usability and update mechanisms.

Measurement Data Visualization and Manual Analysis

- > In case of using the Event Compare feature, the user can activate or deactivate events and hits in the Symbol Explorer.
- > Improved stability of the Graphic window during signal selection and scaling.
- > Numeric conversion tables of floating point signals are interpreted as defined in the MDF4 standard.

Working with Measurement Files

- > The measurement export into MATLAB format can optionally create a single time channel for all signals.
- > The Measurement File Manager was removed and the functionality is integrated in the Symbol Explorer.
- > Measurement files with signals of datatype „half precision float“ can be exported into other file formats.

2.3 CANape 16.0 SP3

With Service Pack 3 (versions 16.0.31 and 16.0.32), the following changes become effective:

User Operation and Display

- > An error that occurred when no application channels were assigned to CANape in the Vector Hardware Configuration was mitigated.
- > When using a base directory, relative paths are saved correctly again.
- > Dialog-based search for database variables does support searching for structures, too.
- > Measurement signals are saved in the display buffer even if another device is working in DHPR mode.
- > It is now possible to add several configurations at once in the configuration manager.
- > The compression and decompression of projects use an internal implementation now. In conjunction with this change, the programs zip.exe and unzip.exe have been removed from the program installation.
- > A problem regarding license recognition after waking Windows from hibernation mode has been fixed.
- > If a new signal is added to the measurement list via the measurement configuration and assigned to the default recorder, the link of that signal to the recorder is saved correctly in the CNA.
- > It is possible again to use a global variable to change the activated tab of a TabControl in a Panel window.

Communication Protocols

- > The MAX_ODT_ENTRY settings are now considered during XCP DAQ measurements.
- > XCP on FlexRay: Fixed an issue that occurred during reestablishment of the connection after spy mode was deactivated.
- > CAN monitor supports the J1939 AUTOSAR System Description format.

Measurement Data Acquisition

- > XCP DAQ measurement: The setting GRANULARITY_ODT_ENTRY_SIZE for values > 1 are taken into account when configuring DAQ.
- > CANape recorders now support writing PCAP files.
- > Reduction of memory consumption of the display buffer for arrays measured with a high data rate by reducing the saved sample rate.
- > Improved AVI time synchronization in case of dropped frames and file splitting.
- > In case of splitting the measurement file during measurement, single CAN and Ethernet messages will be saved complete into the current file.

Database

- > The included ASAP2 Studio was upgraded to version 1.4.
- > Syntactic support of version 1.71 of the ASAP2 standard

Calibration Data Management (Parameter Sets & vCDMstudio)

- > Improved robustness during importing of corrupt dataset management files (*.chfx)
- > When a combo box is opened and active in the list window when vCDMStudio is closed, the transaction is finalized correctly before closing vCDMStudio.
- > Changing parameters of type ASCII now is supported properly.
- > The CASL functions for loading parameter set files (DEVICE.LoadParamemeterset() and DEVICE.AttachParametersetForLoad()) now provide more precise error messages.
- > Improved behavior when saving a parameter set file from a calibration window: The check whether a window contains parameters from several devices, which would limit the possible file formats, now ignores all inactive devices.
- > When creating a device with activated dataset management, the specified A2L file is referenced correctly.
- > Improved handling of DCM files containing many maps or curves with texts as values
- > Fixed handling for parameters with verbal conversion rules: texts beginning with a digit are copied correctly now
- > When exporting a dataset into a HEX file, the dataset name will be used as a default for the file name

Automation

- > The iLinkRT command GET_DAQ_RESOLUTION_INFO now sends the correct time resolution again.
- > When going online using the COM API, the parameters defining whether an upload or download shall occur are considered correctly.
- > COM API: The creation of devices with a specified transport layer is now possible

Diagnostics

- > When flashing the ECU, unwarranted timeouts while the ECU is sending „response pending“ are prevented.

Extended MATLAB/Simulink Support

- > Improved automatic linkage of ML/SL inputs in case of DAIO signals

VX PlugIn

- > VxTools 3.7 Integration are integrated.

Driver Assistance

- > Language based interpretation of float values in GFX files adapted.

Measurement Data Visualization and Manual Analysis

- > Zooming by mouse wheel is possible in inactive subwindows of a Graphic window.
- > Multiple loaded measurement files with UTC-based timestamps can be displayed time-synchronized.
- > Trace window: The J1939 sender node will now be displayed and refreshed.
- > The performance of displaying measurement file signals with a large data size was improved.
- > Support for AUTOSAR PDUs for offline analysis of logged CAN FD bus messages
- > Support for AUTOSAR PDUs for offline analysis of logged CAN bus messages

Working with Measurement Files

- > The measurement data export into MATLAB format ignores the configuration of a time grid when the option „Only one time channel“ is used.
- > The import of bus messages will show a warning if the description of a message is not contained in the database files.

- > The measurement data export converters report an error if the target file could not be written due to missing access rights.
- > The main application will not be blocked in case of an error message of a measurement data export converter.
- > Measurement data files with TDMS format from National Instruments can be imported now.
- > The MATLAB export converter does ignore unselected strings if signals are exported with a fixed time grid.
- > Bus logging files in PCAP format are now written correctly.

2.4 CANape 16.0 SP4

With Service Pack 4 (version 16.0.40), the following changes become effective:

User Operation and Display

- > It is now possible to create a label list from the signals selected in a Graphic window.
- > Added support for licensing with keyman dongles for Windows 10.
- > The „Administration Installation Manual“ has been updated for CANape 16.

Communication Protocols

- > Corrected an erroneous behavior: Devices can now be set to offline via the ribbon/quick access bar if a bus monitor has been removed from the device list before.
- > Added support for the CAN channels of ETAS ES592 hardware.
- > XCP on CAN devices: The bus load regards the parameter MAX_BUS_LOAD from the ASAP2 database.
- > The script function CreateDevice() now also works with ARXML files (CAN/J1939).
- > XCP event list: If any required XCP command is not implemented, the automatic detection is suppressed.
- > XCP 1.4 AML: The missing entry OPTIMISATION_TYPE_ODT_STRICT was added.
- > Added support for XCP 1.4 DAQ packed mode.
- > FlexRay: An error with bus synchronization for databases with missing communication parameters has been fixed.
- > XCP 1.4: Added support of the command GET_VERSION.
- > XCP 1.4: Added support of the command GET_SLAVE_ID_EXTENDED for checking communication settings.

Measurement Data Acquisition

- > The address extension of ECU symbols is saved in anonymous measurement configurations, too.
- > An error that prevented the creation of CSM CAN modules was mitigated.
- > The check for signal events is optimized for signals with a sample rate of 1 MHz: Downsampling can be used to reduce processor load in this case.

Ethernet logging: Object decoder plugin for custom protocols.

- > During completion of anonymous measurement files only the name of the A2L file will be checked, the path can be different.

Calibration Data Management (Parameter Sets & vCDMstudio)

- > Improvement for „Save As“ in vCDMstudio: If the user selects the current file as target and confirms this, the file will be saved directly.
- > The action „Go to Function/Group“ in vCDMstudio can now also be executed on the first column.
- > Added support of dependent parameters that also are variant-coded. Both, the input parameter and the dependent parameter have to be assigned to the same variant criteria.

Automation

- > COM/API: An error that occurred when a script should be run before measurement start has been fixed.

- > COM/API interface: The recorder state is returned correctly when the recorder is preconfigured to start in pause mode.
- > COM/API interface: The functions `Asap3GetMeasurementListEntries()` and `Asap3GetDatabaseObjects()` now use the same syntax for object names.

Extended MATLAB/Simulink Support

- > Improved search function for user-defined parameters in the Model Explorer.

Diagnostics

- > Diagnostics over IP: The Tester Present timeout from the CDD is considered.
- > Diagnostic devices: The values of a table of variant-coded strings are displayed correctly again.

Multimedia

- > Use of MIME type information to display raw data images in the Multimedia window.

Bypassing

- > Improved FlexRay signal handling for MATLAB/Simulink models running on VN8900.
- > Support of FlexRay spy mode in standalone bypass/fullpass execution.

Functions and Scripts

- > The interpolation modifier does work for curves and maps passed to functions as function argument.
- > The usage of signal source names with illegal characters in CASL code is possible if the name is enclosed in apostrophes.

Measurement Data Visualization and Manual Analysis

- > Virtual algebraic signals can access other virtual signals, too.
- > The thermodynamic StateChart Window does work with constant values, too.
- > The count of values will be displayed for signals from Excel or MATLAB (HDF5) measurement files.
- > Floating Graphic windows consider changes of the time axis in case of activated „Global Synchronized Time Axis“.

Working with Measurement Files

- > Support for AUTOSAR PDUs for offline analysis of logged Ethernet bus messages.
- > If there are multiple import converters available for a measurement file extension, the user can select the desired converter after dropping the file on the application.
- > Speed up displaying signals from MDF4 files with a lot of signals in a channel group and with compressed storage.
- > There is a new command line tool `Add2MF4` to embed a series of picture or audio files into an MDF4 file.

2.5 CANape 16.0 SP5

With Service Pack 5 (version 16.0.50), the following changes become effective:

User Operation and Display

- > Creating project containers is also possible in case of user-defined project file names.
- > Automation of CANape or remote access to CANape according to the license agreement does not require a manual change to the `vector.ini` anymore.

Communication Protocols

- > Added support of VX0312 for the bus analysis use case.
- > Added support of VN5640 for CSM EtherCAT devices.

Measurement Data Acquisition

- > The option to repeat signal values measured at start of measurement in all split files of the measurement does work for large measurement files, too.
- > The ADAS object decoder now also supports bitmasks.

- > Fixed error when writing the MDF when a PDU is sent by two nodes.
- > New CSMconfig version 8.9.1

Database

- > The automatic detection of database changes has been improved.

Calibration Data Management (Parameter Sets & vCDMstudio)

- > When creating an empty PaCo file in vCDMstudio and entering data (by copying from other files and manually changing values), the curves and maps will always be saved according to the format specification. This will also be the case when the file is saved in between the individual changes.
- > Improved display of address information in vCDMstudio: If an address mapping is available in the A2L, the computed addresses (e.g. FLASH addresses) are calculated correctly and displayed.
- > More robust treatment of devices with a corrupted dataset project. The selection of the dataset directory has been improved.
- > Fixed crashes during application start if using software-based licenses via FlexNet.
- > More robust treatment of devices with a corrupted dataset project. Actions like „Display Datasets“ are disabled.
- > Parameters containing a verbal conversion table with more than 250 entries are displayed correctly in vCDMstudio.
- > The format selected during the last usage of „Save Parameter Set As“ will be saved for the next call.
- > Improved error handling when activating a dataset which was created by duplicating an existing one.

Automation

- > COM/API: The function Asap3ReadByAddress is also usable in the 64-bit API.
- > COM/API: Improved behavior when calibrating objects with address extension.
- > COM/API: Improved behavior when activating logging to file via the API.
- > COM/API: Improved behavior in case of repeated attempts to start measurement of an offline device.
- > COM/API: Fixed an error that occurred when using CDD databases with CAN FD network information.
- > COM/API: Added the possibility to configure security for diagnostic devices.
- > COM/API: An error in the method Asap3GetDBObjectInfo(): Map objects were erroneously interpreted as a curve.

Calibration

- > The maximum values of signals from AUTOSAR 3.x databases are imported correctly.

Multimedia

- > Vector driver for Axis cameras with H.264 compression
- > Command line tool to convert video raw data into AVI

Data Mining

- > Calling subfunctions from functions is supported in Data Mining, too.
- > A problem that occurred when processing video signals in Data Mining was solved.

Driver Assistance

- > Data objects, provided from a device via Object Decoder plug-in, are saved with mime-type „application/protobuf“ and the protobuf file is attached to the MDF.

Measurement Data Visualization and Manual Analysis

- > When using Distributed High Performance Recording, the live display in CANape now also works correctly for arrays of all data types.
- > Significant reduction of the loading- and updating times when working with MDF files.
- > New signal value comments can be edited afterwards.

- > Using macros, signal values can be inserted into measurement file comments if they are part of measured structures.
- > Better support of reading MDF4 bus logging files from third party companies, for example CAETEC.
- > Improved performance during loading MDF4 measurement files with huge count of signals (> 100 000)

Working with Measurement Files

- > Reading MDF4 measurement files with greater data block size then required for the data can be read without error message.
- > Status text tables with up to 20 000 entries can be read from MDF4 measurement files.
- > MDF4 measurement files with corrupted data will never be sorted to keep the original file.

3 CANape 15.0

User Operation and Display

- > Modern interface with intuitive menu ribbon organized by tool feature sets to permit fast operation of CANape.

Measurement Data Acquisition

- > Scalable decentralized recorder solution for very high data rates in ADAS environment (> 1 GByte/s) for raw radar data.
- > Algebraic expressions for calculated online measurement signals.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Convenient collaboration on parameter sets and values within a team.
- > Intel Hex and Motorola S post-processing.

Functions and Scripts

- > Graphical user interface for the administration and linkage of functions and Simulink DLLs.

Driver Assistance

- > Automated calibration of cameras including support for fisheye and wide-angle lenses.
- > Visualization of sensor data by object overlay in video and GPS window with new „Occupancy Grid“ objects.

Working with Measurement Files

- > Reading and exporting MATLAB measurement data format MAT 7.3 based on HDF5.

3.1 CANape 15.0 SP1

With Service Pack 1 (versions 15.0.10 and 15.0.11), the following changes become effective:

User Operation and Display

- > The possibility to open and close the Symbol Explorer via the keyboard shortcut + has been restored.
- > Several fixes to improve overall program stability.
- > Uninstalling CANape will not uninstall the Vector component for reading network description files, allowing other Vector Tools to keep using it.
- > Proper treatment of filepaths that match certain criteria during parsing of A2Ls.
- > Updates of MAP files that are located outside the CANape project directory are recognized correctly.
- > An issue which caused CNA file paths to be stored absolute in the project file was fixed.
- > A stability issue which affected deletion or insertion of partial configurations has been fixed.
- > Software based licenses are considered again.
- > The Close control of display page tabs has been removed to prevent unintended closing.
- > Japanese Localization.

Measurement Data Acquisition

- > The initial filename of recorders in new projects and configurations now contains macros to ensure unique measurement filenames.
- > It is now possible to save bus logging data from the measurement buffer to MDF files.
- > Measurement objects that belong to a partial configuration, but are assigned to a recorder belonging to a different configuration, do not lose their recorder link even after the project has been saved and reloaded.
- > The Ethernet/CAN Interface VN5610 is now regarded for hardware time synchronization.
- > CCP/XCP: An issue which lead to an automatic restart of measurement in case of a communication failure has been fixed.

Calibration

- > Reading axis values of curves and maps from a parameter file in PAR format has been corrected.
- > Flashing parameter sets supports configurations generated from vFlash 3.1.
- > The command to create a parameter set from a measurement file is accessible via „Calibration|Parameters|Save“.

Bypassing

- > Algorithm display in Symbol Explorer.

Functions and Scripts

- > The scripting language supports the modifier „invalid“ for algebraic expressions.
- > The CASL function „GetDatabaseName()“ returns only the filename of the database, not the full qualified path.
- > Algorithm Designer: Support of multiple instances of a function.

Data Mining

- > Global variables can now be used in Data Mining functions with or without the qualifier „environment“.

Measurement Data Visualization and Manual Analysis

- > Improved graphical display of signals with widely varying sampling rates.
- > The number of significant digits for the display of integer signals with conversion rules has been increased, if the option „Always optimal display“ is used.

3.2 CANape 15.0 SP2

With Service Pack 2 (version 15.0.20), the following changes become effective:

User Operation and Display

- > In addition to the information in the Write window, a note appears in the status bar when a device reports a different database name while going online.
- > CANape Offline licenses are detected properly again.
- > Windows and dialogs that do not open in the visible area of the monitor are moved more clearly to the visible area.
- > The included vFlash component has been updated to version 3.1 SP2.
- > In the Graphic window the description text of common y-axes is displayed at the axis.
- > Use the left mouse button to select a signal curve as well as to set the measurement cursor.

Communication Protocols

- > CCP ECUs with separate CAN IDs for DAQ are now supported.
- > Support of the new device VN5640.
- > XCPonETH: Improvements of reconnect of the ECU during a measurement.

Measurement Data Acquisition

- > Support of triggered measurement and MDF split feature in case of high performance mode.
- > Raw data device is always installed.
- > Improved block measurement mode in case of XCP device in High Performance mode.
- > Bus monitoring of multiple FlexRay bus systems using the same database is possible now.

Database

- > Improved support of ASAP2 database description (AML) of XCP 1.3.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Improved comparison of the parameter's unit. If a parameter is not included in a parameter set, and therefore does not have a unit, this is handled correctly.
- > The recalculation of the comparison result in the CDM Studio is correctly triggered when a parameter value is changed. Even if you change it from the numeric detail window, it is now correct.
- > Optimized memory usage within the dataset management.
- > Improved handling of mouse interactions in the Options dialog of the HTML report.
- > Improved support when changing parameters of type ASCII. Changes to the length can now also be made if no A2L is loaded.
- > Improved creating a dataset from HEX and A2L file. The new dataset is assigned to the correct device in the CANape project.
- > Improved saving a parameter set. It is also saved correctly if the value of a parameter set is reset to its original value.

Automation

- > MC3 MATLAB Interface: Fixed calibration of non-scalar objects via function ml_CANapeWriteCalibrationObject.

Calibration

- > Support address extension for calibration memory synchronization.
- > Dataset management for pointer based calibration methods is now possible.

Diagnostics

- > Access to parameters with script function DiagSetCommParameter has been fixed.

Multimedia

- > The sectional saving of videos and MDF files is time-synchronized.

Bypassing

- > Support of negative I/O values on the VN8900.
- > Temporary project files on the VN8900 will be deleted on closing the project.

Functions and Scripts

- > Improved handling of algorithms inside the measurement configuration.
- > Check of cyclic dependencies between functions and models.

Data Mining

- > In addition to functions with file signals, also functions with assigned measurement signals can be used for a Data Mining analysis.

Driver Assistance

- > Triangle object can be displayed with horizontal line.

Measurement Data Visualization and Manual Analysis

- > The „Acquisition“ column of file signals shows the measurement grid with which the signal has been captured.

Working with Measurement Files

- > Merging of MDF files is also possible if names or comments of the conversion rules of same signals are different.
- > The progress indicator of the measurement-data export to MATLAB displays the exports overall progress.
- > Measurement signals from Excel files (* .xls and * .xlsx) can be displayed and evaluated directly without importing.
- > Improved display of file attributes and preview for MDF and BLF files in Windows Explorer with the Vector Shell Extensions.
- > You can add or remove attachments from MDF4 files via the Symbol Explorer.

3.3 CANape 15.0 SP3

With Service Pack 3 (versions 15.0.30 and 15.0.31), the following changes become effective:

User Operation and Display

- > The new customization dialog allows the definition of custom key combinations and the creation of customized ribbons.
- > If a display window is visible on multiple pages and is deleted on one page, its signals stay visible on the other pages.
- > Improved device-name check during device creation
- > When a configuration is loaded partially, structures in windows are loaded as well.
- > Improved the automatic loading of the database from the ECU.
- > Panels always show the actual value of global variables.
- > The automated linking of function arguments with virtual MDF signals is possible now.
- > The database of devices in read-only mode is loaded memory-optimized.
- > The colors of display page tabs are displayed with full saturation again.
- > When the language is set to japanese and <ALT> is pressed, latin characters will be shown as keyboard shortcuts in the ribbon.
- > The memory consumption after an automatic address update using a linker map file was reduced.

Communication Protocols

- > Sending of messages over a CAN FD network has been improved.
- > Seed & Key functionality for diagnostic devices has been improved.
- > The FlexRay Spy mode can now also be used with files in ARXML v4.1.1 format.
- > Support of Autosar PDUs on CAN
- > CAN Monitor now supports FIBEX description files.
- > Added full support for VX1135 FlexRay
- > Support of Autosar PDUs on FlexRay
- > CCP devices: The WRITE_DAQ command only sends 1, 2 or 4 bytes as parameter.
- > Improved support of XCPonFLX protocol v1.2
- > Added support of the VN7640
- > CCP/XCP: Adjustment of DAQ_SIGNAL_SORT_MODE in case of SortByAddress.
- > An ARXML file can be used as the database file for a CAN and a FlexRay device simultaneously.
- > Support of CAN FD/CAN mixed mode
- > Bus logging: CAN FD Frames are recorded properly.
- > It is now possible to activate/deactivate the counter presence while using iLinkRT for communication between CANape and Puma.

Measurement Data Acquisition

- > Address extensions are considered for structures.
- > Variant coded parameters will be measured for the variant which is selected at start of measurement.
- > Logger configuration: Negative keys of text table entries are written in the correct format for signed signals.
- > XCPonRamscope: Improved support for measuring non-scalar objects.
- > If MDF 3.x is used, Motorola signals are saved in the measurement file again. Block mode will not be used anymore.

- > Trigger events are displayed in the status bar again.
- > The ETH network interface VN5640 is supported.

Database

- > The Linker MAP Reader now supports reading 64-bit ELF files.

Calibration Data Management (Parameter Sets & CDM Studio)

- > When creating a new dataset (HEX file) in the Symbol Explorer, the new dataset will always be added beneath the correct A2L node.
- > When creating a new dataset via the ribbon, it is now possible to enter a new name for the dataset.
- > Improved support of parameter files in CVX/CSV format. It is now possible to import files that have been edited using Excel.
- > When starting CDM Studio from CANape, the A2L selection in the database selection dialog has been improved. The A2L of the selected device will be preselected.

Automation

- > Improvement of the COM interface: In some cases, signals had been removed from display windows upon start of measurement.
- > Improvement of the COM interface: In some cases, the detection of the axis points of a curve was erroneous.
- > Improvement of the COM interface: Values of bus signals can be determined at their first occurrence.
- > Merging of a parameter set to a binary file has been improved.
- > The COM interface can be used in 64-bit applications.
- > Fix at the COM/API interface: Measurement restart did not work if an error occurred before.
- > CAN FD channels can now be assigned and used over the COM interface.
- > The COM interface now supports more than ten devices.

Calibration

- > The stepsize parameter of record layouts is now correctly used again.
- > When changing the axis point values of a global variable, the limits of the datatype are used.

Bypassing

- > Extended Real Time (ERT) support for bypassing based on Vector Tool Platform (VTP).

Functions and Scripts

- > The execution platform is switched for each algorithm within a chain.
- > Scripts and functions can be used to access raw data bytes of MDF signals with variable length.
- > Conversion rules are taken into account if algorithms are connected in a chain.
- > CASL supports using variable references for virtual MDF signals to walk through the signal values.
- > The calculation of virtual measurement file signals is started when the signals are stored by script into a new measurement file.

Data Mining

- > The import of methods from Data Mining template files will import the settings of the method too.
- > The time synchronization of logger images is adjusted if the loaded MDF file is replaced.
- > Improved stability when using Data Mining.

Driver Assistance

- > Camera Calibration Tool: Support of video calibration based on already captured images - without live data

Measurement Data Visualization and Manual Analysis

- > The Event Compare mode of Graphic windows can be used even if only virtual MDF signals are displayed.
- > Improved PDF export: The font used in the PDF now always corresponds to the one displayed in CANape.
- > The message ID of J1939 BLF logging data is displayed correctly again in the Trace window.
- > The synchronization between the Graphic and the Multimedia window has been improved.
- > The function SaveSignals now also supports LAB files that contain the measurement mode.

Working with Measurement Files

- > The measurement start time will be retained if signals from multiple measurement files using the same start time are saved into a new measurement file.
- > The export of measurement signals into MATLAB HDF5 format will support signals with combined linear conversion rule and status text table.
- > Measurement files in MDF4 format with signal data of variable length can be imported even if some samples have a data length of zero bytes.
- > Saving signals from a measurement file into a new file will retain the measurement file comment.

3.4 CANape 15.0 SP4

With Service Pack 4 (version 15.0.40), the following changes become effective:

User Operation and Display

- > All customized key combinations are considered after closing and reloading the project.
- > Hexadecimal display is possible for the value of constant signals from MDF4 files.
- > Printing display pages is now also possible if the display area is minimized or completely invisible.
- > When creating a new label list, it is possible to add bypassing functions again.
- > The Symbol Explorer can be hidden again without completely closing it.
- > It is now possible to search for measurement file signals before the calculation of the envelope curve has been finished.
- > The behavior upon deactivation or deletion of a partial configuration can be influenced with a new flag in the Options dialog. By default, the signals attributed to the partial configuration now are removed from the measurement list again.
- > Measurement signals are saved in display buffer even if another device is working in DHPR mode.
- > The Administration Installation Manual for CANape 15.0 is available.

Communication Protocols

- > The XCP command GET_DAQ_CLOCK will not be sent anymore when the ECU is offline.
- > CAN and FlexRay support for ETAS ES891/ES892 devices via BOA.
- > The CASL function SendMessage now sends more than 8 bytes when CAN FD is used.
- > Fixed an error when using XCP with predefined DAQ lists
- > Corrected an error which occurred when setting special baud rates via CASL script
- > Support of XCP devices on CAN/CAN FD networks in mixed-mode.
- > PDU messages on Ethernet networks can now be interpreted and measured.
- > The configuration tool for CSM measurement hardware, CSMconfig, is included in version 8.7.2.
- > XCP on FlexRay: Fixed an issue that occurred when reestablishing the connection after spy mode was deactivated

Measurement Data Acquisition

- > With a new project setting, signals measured once can be saved several times in all further MDF recorders.

- > A new option in the device setup for CAN-based devices allows to ignore the source information (logical CAN channel number and CAN message name) in the configuration. When activated, assignment is based on signal names only.
- > For DHPR, ODT entries were adapted in case of XCP devices.
- > Improved measurement restart in case of an error for XCP on CAN devices
- > Recording measurement data in split or triggered measurement files is also possible when the comment template is to be shown in the measurement comment dialog at the end of the measurement.
- > Fixed an error with MDF4 bus logging of CAN FD frames
- > Files from recorders that write only one channel group, now can be split as well.
- > The DAQ configuration in the measurement configuration now shows the RAM usage by default.
- > Improved time synchronization for CSM HS measurement modules
- > The conversion rule of signals with a 1:1 conversion and a status table is written according to the MDF4 specification
- > Improved AVI time synchronization in case of dropped frames and file splitting.
- > XCP DAQ Measurement: The setting GRANULARITY_ODT_ENTRY_SIZE for values > 1 will be taken into account when configuring DAQ.

Database

- > Differences between the conversion rules of ARXML 3.2.2 and 4.2.2 databases have been eliminated.
- > When the feature for automatic detection of database is used, the new database is loaded automatically when a change is detected.
- > Fixed an error that occurred while importing conversion rules from Ethernet Autosar ARXML files. Signals using the affected conversion rules can now be measured.
- > The MDF trigger for large VLSD data was corrected in case of DHPR.
- > In case of ARXML databases for CAN, selection of a cluster is now possible.
- > No save prompt is displayed for ASAP2 databases that are marked as read-only.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Changed behavior for datasets with parameters violating the standard ranges: Flashing and activating is possible now.
- > If a parameter in a parameter set is changed and saved, and then another change is applied to another parameter, all previous changes will be correctly saved into the file.
- > Improved robustness in report „Generic EXCEL Data listing“. If the option „Export Array parameters into separate file“ is active additional checks are added whether this can be executed or not.
- > When saving a parameter-set file in PAR format, the window for the global file comment is shown correctly again.
- > Exporting parameter sets into a template-based parameter-set format considers the record-layout information correctly regarding the column or row direction of the values.
- > Improved support of calibration history for maps
- > The detection of parameter changes now also correctly works for datasets with variant-coded curves or maps.
- > Improved robustness in the dataset management when dealing with corrupt data, for example in the user settings.
- > The CDM Studio feature HEX post-process has been improved and now correctly supports the use case „Save As“.
- > When executing „Save as“ on a parameter set in PAR format, the comment dialog will be displayed correctly.
- > When CDM Studio is started with the command line parameter -yb and no license is found, a defined value is returned and no message box is shown. Hints regarding wrong command line parameters are still shown as message boxes.

Automation

- > The return value of the ASAP3 function Asap3GetDatabaseObjectsByType does not contain a leading dot anymore.
- > COM API 64 bit: Improved stability in conjunction with DIAdem.

- > API: A new function to get the working directory that is currently being used by the current CANape session was added.
- > Fixed a sporadic error during measurement via COM/API
- > COM API: Identifiers of released scripts are rejected if they are used later.
- > The 64-bit version of the COM API now also works correctly in case of an update installation.
- > When going online using the COM API, the parameters defining whether an upload or download shall occur, are considered correctly.
- > The iLinkRT command GET_DAQ_RESOLUTION_INFO now sends the correct time resolution again.

Calibration

- > Monotony violations now are also considered when loading parameter sets. The current option settings are applied.
- > AUTOSAR: For Pool-RAM addresses, the alignment defined in the A2L is considered correctly again.
- > Several improvements regarding the InCircuit2 calibration method
- > The included vFlash component has been updated to version 3.5 SP3.

VX PlugIn

- > The release V3.5 SP1 of the VXtools has been integrated.

Multimedia

- > Optimized the timestamps in the Multimedia window for image files.

Functions and Scripts

- > The macros PAGE and PAGE_COUNT return the correct page numbers again.

Measurement Data Visualization and Manual Analysis

- > Numeric conversion tables of floating point signals are interpreted as defined in the MDF4 standard.
- > Improved stability of the Graphic window during signal selection and scaling.
- > Legends are displayed with their correct width even if error messages are displayed when a configuration is loaded during program start.
- > Moving signals within the legend of a Graphic window is also possible when the legend is displayed at the bottom of the window.
- > When color functions are used in Graphic windows, the signal value before color change are displayed with the correct color.

Working with Measurement Files

- > Measurement files with signals of datatype „half precision float“ can be exported into other file formats.
- > During export of measurement data into text or Excel files, the algebraic sign is also regarded for raw data.
- > The Logging Import converter takes into account the length of valid data in CAN FD messages.
- > The MATLAB Export converter now supports signal names with more than 63 characters.

4 CANape 14.0

User Operation and Display

- > GPS window included in CANape Base Version

Communication Protocols

- > Time Synchronization (Subset of XCP 1.3)

Database

- > Format Support ASAP2 V1.7

Offline Analysis of Measurement Files

- > Offline Trace Analysis
- > ETH-SOME/IP: Signal oriented offline analysis
- > XCPonETH: Signal oriented offline analysis

Hardware Support

- > 3rd party measurement hardware integration
- > ETH-Monitoring: 10BASE-T Support for VN5610
- > VX0312-Support / VX0344

Extended MATLAB/Simulink Support

- > Algorithm Designer

4.1 CANape 14.0 SP1

With Service Pack 1 (version 14.0.10), the following changes become effective:

User Operation and Display

- > Via an input box in the toolbar, the length of the displayed time range of Graphic windows can be set.

Communication Protocols

- > XCP on FlexRay via Ethernet now also supports channel B.
- > Simplified and improved the integration of CSM modules.

Measurement Data Acquisition

- > The problem with the saving of measured arrays in MDF4 files that occurred with more than 256 channel groups in an unsorted file, has been fixed.
- > The byte order for all CAN signal data types is considered.

Offline Analysis of Measurement Files

- > For the script-controlled output of several display pages in one PDF document you can optionally change the environment (e.g., global cursor, global variables) from page to page.
- > The MATLAB export converter supports measurement files with numeric and string signals within a channel group.
- > At PDF export signal names in the legends of the display windows are completely shown if enough space is available.

Database

- > Linker map files ELF/DWARF 4 (GNU Compiler): Improvements for packed struct type declarations.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Dialog Dataset Management: In order to structure datasets, editing of groups has been improved.

Automation

- > Via the COM API no corrupt device configurations with the same device name for multiple devices can be created.

Calibration

- > When loading a parameter set file in CANape, it is checked whether the description of the parameter type in the file matches to the parameter type of the current database description of the selected device. If not, this is reported and the parameter value is not loaded.
- > In case of a pointer-based calibration concept, writable measurement signals cannot be made writable as parameter.

Multimedia

- > Saving of a multimedia synchronization signal for video is also possible with measurement files larger than 4GB.

Bypassing

- > VN89: Support of bit masks for XCP signals.

Data Mining

- > Improved memory management while Data Mining analysis, and thus a greater number of calculated values is possible.
- > Virtual measurement file channels can now be calculated if some or all input signals are not present.

4.2 CANape 14.0 SP2

With Service Pack 2 (version 14.0.20), the following changes become effective:

User Operation and Display

- > For signals with a status text table, the corresponding values on the Y-axis are labeled with the status text.
- > The EPK and the ID of an ECU can be used via macros.
- > The automatic scaling of report pages also considers display elements.
- > The output of the signal index within a display window can be deactivated in the printout.
- > Color functions for signals can be configured individually in any display window.
- > Improved stability when using the Keyman license dongle.
- > The window position in dual monitor operation is kept properly.
- > When configuring the measurement, the signal selection supports the combined selection of more than 65535 signals.
- > Software deployment in system context is supported.

Communication Protocols

- > The use of the CAN FD ISO variant is supported and displayed when used.
- > ETAS ES593-D devices are now supported.
- > Enhanced the baud rate settings for XCP over the serial interface.
- > Optimized the writing of PAR files using diagnostic services (CDD device).
- > Improved determination of the separated page switching (XCP) by means of IF data from the database.
- > The Trace Window displays bus error messages also when analyzing log files.
- > Support of the diagnostic interface VN8810.
- > Support of VLAN for XCP on Ethernet.
- > The configuration of CSM hardware in CANape is now possible.
- > Several XCP on Sxl devices are now supported.

Measurement Data Acquisition

- > The upper limit for the number of measurement signals was doubled to 200.000.

- > Settings in ASAP2 databases in XCPplus format are supported regarding XCP events.
- > CSM HSS modules with CAN gateway functionality are now supported.
- > Improved hardware time synchronization when no sync pulse is detected.
- > Improvement: When saving video streams and measurement signals together, due to high system load no individual cycles or video frames are getting lost anymore.
- > Support for GPS receivers which use high data rates.
- > Parameter sets, saved by recorders during triggered measurements, are referenced in the measurement file with the current timestamp.
- > In the measurement configuration, the measurement mode of already existing signals can be set to their default measurement mode.
- > Improved measurement data acquisition when using the IO interface with VN8900 devices.

Offline Analysis of Measurement Files

- > When calculating virtual signals from measurement file signals, the absolute time of the input signals is used.
- > The measurement file export converter to MATLAB also adds string signals into the configured time raster.
- > Bus logging files in the ASC format, including the system variables, CAN FD and Ethernet messages can be displayed in the Trace window.
- > When changing the project only the assigned bus databases of the new project are used by the Logging import converter.
- > The Logging import converter now supports Ethernet log files in PCAP format.
- > Displayed signals from bus logging files in MDF files can be saved in MDF files.
- > Correction when creating logger configuration with floating-point numbers.
- > In the ASAM GES syntax, formulas of algebraic conversion rules are stored in MDF4 measurement files.
- > The Vector Logging import converter generates optionally the additional PDU signals of FlexRay messages.
- > The Vector Logging converter generates a warning if the timestamps of the imported events do not increase monotonically.
- > The creation of the logger configuration now supports algebraic conversion rules.
- > With the new GPS import converter GPS data in NMEA or GPSLOG format can be read from text files.
- > MDF files with the file extension *.dat can be exported into the Diadem DAT format.
- > Corrected the calculation of the start bit for signals when evaluating XCP on Ethernet data.
- > Improve support of bit signals for the creation of the logger configuration.

Database

- > In the ELF Reader, the assignment of conversion tables during address update was corrected.
- > For the current option that defines how the A2L information INDEX_DECR is evaluated in AXIS_PTS, you have now the possibility to specify it in the Options dialog.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Enhanced the attribute-based filter in the CDM Studio: Function to find values based on texts.
- > Changed values are correctly managed in the dataset management if the changes are discarded when closing.
- > Improved mouse handling in list view of CDM Studio to reset the drag and drop operation correctly.
- > CDM Studio: With the new the color settings for different values in the Numeric detail view, it is possible that only the text and not the complete cell use the defined color.

- > CDM Studio: The interpolation feature in the Numeric detail window also considers the option „Ignore read-only“.
- > Enhanced the functionality of „Change dimension“ in the CDM Studio: Even if a parameter set file is loaded without A2L file, it is now possible to change the dimension.

Automation

- > Improved the configuration of channels in the measurement signal list via the COM interface.

Calibration

- > Memory mappings from a flash kernel configuration are now considered.
- > Executing a disconnect command after flashing via CCP/XCP is now configurable.
- > Enhanced the functionality for saving parameters in the Calibration window and the Map/Curve window: You can now also save only the selected parameters into a parameter set file.
- > The Map/Curve window correctly saves the settings concerning the axis display.
- > In the Map/Curve window, the 3D view can be removed in the graphic display.
- > Improved the dataset management when configuring the cache.

VX PlugIn

- > Improved support of the flash sequence for ECUs without executable software.
- > Improved the automated updating of the ECU parameter structure.

Multimedia

- > Support of multiple trigger points in one MDF file.
- > A multimedia signal can be used as input for virtual file channels.

Functions and Scripts

- > New script functions added to access all signals of a measurement file or a device without knowing their names at compile time.

Data Mining

- > Data Mining evaluates the global variables correctly.

4.3 CANape 14.0 SP3

With Service Pack 3 (version 14.0.30), the following changes become effective:

User Operation and Display

- > Stimulation objects are saved in the configuration.
- > The Project Selection dialog considers changes in upper and lower case of directories in the list of the recently opened project files.
- > Improved the display of text fields and images.
- > A calibration object measured in the Graphic window remains as associated signal for common axes.

Communication Protocols

- > CANape now warns in case of conflicted FlexRay slots.
- > The simultaneous use of CAN and CAN FD networks has been improved.
- > The stability of the FlexRay Ethernet router in case of higher bus load has been improved.
- > Added support of the device VN1630log.
- > Improved the time synchronization for DAIO devices.
- > XCP on Ethernet: A local port can be set for the VN5610.
- > XCP on user DLL: Improved the configuration when creating a device.

- > Improved the cache synchronization when database information is determined from the ECU.
- > Improvement of time-based assignment of GPS values. The event mode has to be switched to cyclic.
- > XCP on FlexRay: Bandwidth calculation has been improved.
- > XCP on SXI: Improved stability when uploading code segments from ECU.
- > CANopen Driver integrated in Setup as selectable Feature „Extras/CANopen“. Version 3.36 supports assignment of multiple CAN channels.

Measurement Data Acquisition

- > The measurement signals of the device for the system monitoring are automatically captured with the appropriate measurement mode when they are inserted to the measurement list.
- > Algebraic expressions in the measurement list can now also calculate values of parameters that are calibrated at the same time.
- > For trigger event macros in the measurement file name and for manual triggering via the menu, only characters are used that are valid for file names.
- > The creation of a logger configuration with polling signals and bit fields with several bits has been corrected,.
- > Increased the limit for measurements of very large arrays up to 1.000.000 elements.

Database

- > For fixed axes, values of type Double can now be used to describe the axis parameters.
- > The symbolic conversion tables for enum values that are automatically generated when updating the addresses now have a correct format specification.
- > Corrected the check of XCP 1.3 AML version.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Correction in the dataset management: Value changes in the CDM Studio that happen in the active dataset are applied correctly.
- > Expanded the configuration possibilities in the CDM Studio automation interface: Even multiple source parameter sets can be specified for the „Merge“ action.
- > Enhanced the return values of the CDM Studio automation interface: If the target parameter set is write-protected or a parameter set is invalid, this is reported.
- > Standardized the option „Display of measurement values“ in the CDM Studio: This option can now be set in CANape as well. It is counterchecked against the selection for the current device and can be changed if required.
- > Improved the dataset management: You can additionally change to a new empty directory and decide whether the inventory data shall be copied or not.
- > Improved the automation interface of CDM Studio: In case of broken or missing source files the robustness of the application is enhanced.
- > Expanded the component to read and write parameter sets in the CSV format: Improved handling of values that come from a symbolic conversion table and the reading routine to read files saved with Excel.
- > CDF20 format: If the number of axis point values has changed, the values are correctly written to the parameter file.
- > Parameters based on data type FLOAT and have a value greater than 10e9 with exact 10 significant digits are written correctly to the PAR file.

Automation

- > Problems that occurred when using the COM API method IApplication2.Open2() with MATLAB have been fixed.
- > The ASAP3 command SET_PARAMETER returns the correct error code if no parameter is found.

Calibration

- > Dataset switching has been improved for devices with FIBEX files.

- > Improved stability of stimulation via XCP on Ethernet.
- > In case of pointer-based calibration methods, write-protected memory segments are synchronized anyways.
- > AUTOSAR pointer based calibration method ensures data consistency when switching calibration groups from RAM to Flash.

VX PlugIn

- > The release of the Vxtools V3.0 is integrated.

Multimedia

- > UNC paths can now be used for image file sequences.
- > Support of pause and restart for video capture.

Bypassing

- > Error handling has been improved.
- > CAN bit signals are supported.

Functions and Scripts

- > CASL function GetMeasurementString: From function arguments with symbolic conversion table or status text table you can determine the respective text of the current value.
- > A new script function for replacing the database has been added.

Data Mining

- > Date format of Data Mining hits considers language settings.

Driver Assistance

- > Automatic camera calibration for object overlay has been added. Fish eye and wide angle lenses are now supported.

Measurement Data Visualization and Manual Analysis

- > Virtual measurement file channels can be displayed with their input signals on an absolute timeline.
- > Virtual signals with algebraic expressions also support signal names with dots.

Working with Measurement Files

- > MDF3 measurement files that were incompletely saved due to system problems are now also completed automatically if they contain more than 255 channel groups.
- > The MATLAB Export converter for measurement files can optionally create a hierarchical structure based on dots in the signal name.
- > The standalone tool CallConverter.exe for measurement file conversions controlled via command line needs up to 4 GB main memory on 64-bit operating systems.
- > The ASCII Import converter for measurement data allows again the setting of floating-point numbers for the time raster.
- > Saving a part of a measurement file (MdfSplit) also supports files with signals of variable length and a lot of cycles.

4.4 CANape 14.0 SP4

With Service Pack 4 (versions 14.0.40 and 14.0.41), the following changes become effective:

User Operation and Display

- > Improved PDF export: The font used in the PDF now always corresponds to the one displayed in CANape.
- > When selecting signals in the signal selection dialog, it is possible to select all signals using <STRG>+<A> again.
- > Loading of measurement configurations with a large number of measurement functions has been significantly accelerated.
- > When Panel windows are printed, the description texts of input/output controls are included as well.

- > When copying/pasting existing display pages, the page allocation of your windows is applied correctly.
- > The included vFlash component has been updated to version 3.1 SP2.

Communication Protocols

- > Improved the behavior of diagnostic devices and VN16xx hardware when using „Alternating FlowControl“
- > Improved the reading of IF data from ASAP2 databases with transport layer-specific settings
- > When deleting a complete flash group, flash sectors that do not belong to this group are not deleted.
- > CAN network: 2 MBaud can be selected again.
- > The device setting „Independent XCP and ECU page access possible“ only depends on the IF_DATA XCP settings of the calibration segments.
- > XCPonETH: Improvements in case of a reconnection of the ECU during a measurement
- > Improved the automatic loading of the database from the ECU
- > Improved hardware time synchronisation in case of lost sync pulses
- > Added full support for VX1135 FlexRay

Measurement Data Acquisition

- > Simultaneous use of the block measuring mode and bus logging is now possible.
- > FlexRay: Ignores null frames when monitor is in Spy mode.
- > Troubleshooting for measurement configurations with address differences greater than 31 bits.
- > Measurement options from partial configurations can be transferred into the main configuration correctly.
- > XCP 1.3: Improved the PTP support for CSM gateways
- > Measurement objects that belong to a partial configuration, but are assigned to a recorder belonging to a different configuration, do not lose their recorder link even after the project has been saved and reloaded.
- > Unsupported DAQ configurations with large objects are detected.
- > Support of fixed CAN IDs for dynamic XCP events
- > MC3 MATLAB Interface: Fixed calibration of non-scalar objects via function ml_CANapeWriteCalibrationObject.
- > The Ethernet/CAN Interface VN5610 is now regarded for hardware time synchronization.
- > Bus monitoring of multiple FlexRay bus systems using the same database is possible now.
- > The Ethernet/CAN Interface VN5610A is supported.
- > The ETH network interface VN5640 is supported.
- > XCPonFLX: Support for non-cyclic measurement modes.
- > Improved the configuration of static DAQ-lists with limited number of ODTs
- > The measurement data will be recorded entirely even when the measurement object is assigned to several recorders of which only one is active.

Database

- > CANdbc: Improved reading of physical minimum and maximum values for offsets of signals
- > The ASAP2 keyword CALIBRATION_ACCESS is interpreted to control the write access to a calibration parameter.
- > Improved support of large ELF files with deep nested arrays
- > The interface data for XCPplus are restored when saving an ASAP2 file in standalone editor.
- > In ASAP2 files, escape sequences inside of strings are supported corresponding to the ASAP2 standard.
- > The CASL function ReplaceDatabase has been improved.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Reading parameter set files in PAR format: Files with incomplete format-description lines are read without error.
- > Improved handling of file extensions when loading parameter sets. In some cases, also a file extension with upper cases is detected and evaluated correctly.
- > Improved reading of parameter set files in DCM format. Multidimensional value blocks are supported correctly.
- > Improved handling of information from the A2L file to accelerate its display in the CDM Studio detail window.
- > Improved reading of parameter set files in CSV format: Lines consisting only of delimiters are interpreted according to the specification as blank lines.

Automation

- > COM/API: Improved inserting of measurement objects for ETH SOME/IP monitors
- > ASAP3: Corrected the forwarding of a connection error to the client application
- > CANapeAPI: Improved reading of maps
- > MC3 MATLAB Interface: Fixed calibration of non-scalar objects via function ml_CANapeWriteCalibrationObject
- > Improved reading of axis values of maps via the MATLAB-API
- > The parameter RecorderID of the CANape API now also supports the 64bit data format.
- > Improved the COM interface via TCP. Script execution is possible now.
- > Improved the COM interface. Values of bus signals can be determined at their first occurrence.

Extended MATLAB/Simulink Support

- > Improved automatic linkage of DLL port names

Calibration

- > Improved Map/Curve windows so that parameters are not removed when saving the configuration
- > Improved behavior while activating the dataset when it references another A2L file
- > Correct handling of the axis information for global variables. Descriptions of the value ranges are correctly saved and read.
- > InCircuit2: The default option of the cache synchronization dialog now is „download“.
- > Completed the support of address extension for calibration memory synchronization
- > Improved function for loading parameter sets: Parameters with a dimension that does not match the device's A2L are ignored.
- > Merging of a parameter set to a binary file has been improved.

Diagnostics

- > Access to parameters with script function DiagSetCommParameter has been fixed.

Multimedia

- > Multimedia signals with frame numbers can be cut and saved as new.
- > Different color converters are used for different video formats.

Bypassing

- > Improved handling for sending bit signals via CAN
- > Support of multiple VN89 devices independent of their USB connection position.

Functions and Scripts

- > Improved the behavior of the SignalValueIterator for script-based evaluation: Values at the beginning and at the end of the series of measurements are read exactly once.

- > With the „invalid“ modifier in scripts and functions, the status of signals calculated using algebraic expressions can be determined.
- > The script command Call () can also call scripts from subdirectories of the project if no path is specified.

Data Mining

- > Data Mining results with images (e.g. from loggers) can now be displayed synchronized in multimedia window.

Driver Assistance

- > A GFX line with same start/end point is drawn as a pixel.
- > Camera Calibration Tool: Several improvements

Measurement Data Visualization and Manual Analysis

- > Calculated signals are also displayed properly when the envelope curve is activated.
- > Displaying the absolute measurement time is also possible in „Display from measurement file“ mode.
- > The display of GFX objects in Multimedia and GPS windows also works for signals from measurement files with only one value.
- > The calculation of multiple virtual file signals between the current measurement and difference-cursor position is possible.
- > Virtual file signals can also be calculated exclusively for the current position of the global cursor.
- > The Text window considers changes to the global time offset of a measurement file.
- > Removed Google maps due to legal terms
- > Virtual measurement file channels: Calculation of algebraic expressions has been improved. The device name is also evaluated correctly when it is contained within quotation marks.
- > The automatically determined count of decimal places for signals with a few data bits has been increased.
- > The post-calculated min/max values of signals in MDF files are only saved to the file if the asynchronous calculation is completed.
- > Calculations between measurement and difference cursor are only executed if the difference cursor is activated.

Working with Measurement Files

- > The measurement data export to Excel files creates empty cells for signals that have no value at a time. This makes it possible to display the signal values in Excel as graphics also if the values are missing.
- > The import converter supports signals of FlexRay messages from bus-logging files in ASC format.

5 CANape 13.0

User Operation and Display

- > Completely reworked printing and reporting
- > Logger configuration without connected electronic control unit
- > Simplified and optimized menu hierarchy

Communication Protocols

- > SOME/IP and automotive Ethernet (BroadR-Reach) support with Vector VN5610

Data Analysis

- > Display of statistic columns in graphic windows
- > Time synchronized display of picture sequences from Vector GL Logger data
- > Display of Data Mining hits as hit lines in Graphic windows
- > Improved flexibility of ASCII measurement data import

Hardware Support

- > ETAS ES595 support for CAN and FlexRay
- > Simplified integration of 3rd party measurement equipment

5.1 CANape 13.0 SP1

With Service Pack 1 (versions 13.0.10 and 13.0.11), the following changes become effective:

User Operation and Display

- > New partial configurations are created in the set directory for configuration files.
- > CANape recognizes suspend modes and stops the measurement in these cases.
- > Added new demos, e.g. Data Mining, Printing & Reporting, etc.

Communication Protocols

- > Reverted changed default for SEED_AND_KEY_ON_DEMAND, default is NO again.
- > CAN: PDU bit offsets are considered.

Offline Analysis of Measurement Files

- > In MDF3 files of CANalyzer/CANoe the source information in the signal name is supported.
- > The content of text box display elements will be updated automatically when a measurement file is replaced.
- > In a project or configuration, several text-based measurement files can be opened also with different formats, i.e., with different settings of the ASCII Import converter.
- > A problem with opening the printing dialog has been fixed.

Database

- > If you convert a value block into a map or curve, the appropriate axes are created.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Improved support of inconsistent A2L descriptions when configuring a user-defined filter. A2L descriptions that contain multiple functions with the same name, can be handled.
- > When a value is changed in the CDM Studio directly in the list, the behavior is the same as in the detail view „Numeric display“. The value ranges are considered with each change.

Automation

- > Signal names of bus messages and ECU variables can be the same.
- > Runtime improvement when creating devices.

Calibration

- > AUTOSAR calibration method considers byte alignment of calibration data groups.
- > AUTOSAR calibration method: Communication sequence improvements for making a parameter adjustable.
- > During the script-based reprogramming the flash group can be defined in the script.
- > Improved support of displaying parameters that reference a symbolic conversion formula. Also parameters with data type Unsigned Integer are correctly supported.
- > Improved support when changing parameters that reference a symbolic conversion formula during a measurement. Proper management of hotkeys defined in CANape after leaving the selection list in a Calibration window.
- > New mode for creating flash data
- > Flashing: Flash strategy are saved in project settings now.

Diagnostics

- > The byte order for a measurement signal defined by a PXD database is considered.
- > FlexRay: Communication via the B channel is supported.

Multimedia

- > Video files can be displayed in Multimedia windows by using drag and drop onto the user interface or onto a Multimedia window.

5.2 CANape 13.0 SP2

With Service Pack 2 (version 13.0.20), the following changes become effective:

User Operation and Display

- > When editing a measurement function, its assignment to a partial configuration is retained.
- > The message saying that due to missing license the application goes into the Offline mode, may be suppressed.
- > In the DEMO mode, a request for a time-limited trial version can be sent to Vector directly from the application.
- > The macro DISPLAYED_FILEID uses the same index as the macro DISPLAYED_FILENAME.
- > The command line option -G activates the analysis mode where all online activities are blocked.
- > Several stability improvements.

Offline Analysis of Measurement Files

- > Measurement files in GLX format of the G.I.N. data logger can be imported.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Troubleshooting enhancements in the dataset management to handle corrupt files or references to nonexistent files.
- > Predefined entries in the calibration data quality are now written correctly to the project file, even if they include XML-specific characters.
- > CDM Studio: In the VRML detail view of the HTML report, the units are now displayed at the axes. This corresponds to the visualization in the 2D/3D window.
- > Improved handling of the dataset information during the start of the project.
- > CDM Studio: Enhanced display options in the EXCEL report to show the columns of a parameter set in a consistent form.
- > CDM Studio main view: Improved handling of the focused cell to e.g., always ensure the recalculation of the comparison status.

Automation

- > The configuration of the ASAP3 interface in case of iLinkRT has been improved regarding the option ILINKRTEXTENTION.

Extended MATLAB/Simulink Support

- > Filter to restrict the search within the Model Explorer.
- > Support of „From/Goto block navigation“ within the Model Explorer. Requires model file generation with MIP 12.0.9.

Calibration

- > Improved the behavior when editing the memory segments in the Device configuration.
- > The configuration of flash groups now allows deleting not written flash sectors.
- > In the array windows, the display of the working point can now be affected by the user. It is also possible to display all intersection lines in the sectional view. The current intersection line is then highlighted.

Functions and Scripts

- > The import and export of global variables of the type map/curve also supports the properties of their axes.

5.3 CANape 13.0 SP3

With Service Pack 3 (version 13.0.30), the following changes become effective:

User Operation and Display

- > „Shobunsha Super Mapple X/G“ maps support on Win7 64 bit.

Communication Protocols

- > When sending CAN FD packets, the correct packet size is ensured.

Offline Analysis of Measurement Files

- > When importing bus logging measurement files, up to 256 databases and logical bus channels are supported.
- > The export and printout of split windows of a Graphic window is possible.
- > With the help of a new default page template, individual windows with comments of the measurement file can be printed.
- > When evaluating measurement data of XCP log files, files are supported in which the XCP measurement has been started several times.
- > Improved working with templates for measurement data import converter.
- > The macros {DISPLAYED_FILEID} and {DISPLAYED_FILENAME} can be used on a display page to issue information on measurement files that are visible on this page.
- > Deactivated signals in display windows can be hidden either when displayed on the screen or in the legend of the printout.

Calibration Data Management (Parameter Sets & CDM Studio)

- > In the numeric detail view of the CDM Studio displaying of values for the active parameter set has been improved. And for filters that compare different variants of a parameter, the value display is also correct.
- > Improved support of multiselect in the file selection dialog in the function „Create filter from LAB file“. The maximum character length for all selected file names and the directory is about 66000 characters.

Automation

- > The maximum possible measurement data rate on the automation interface was increased.

Extended MATLAB/Simulink Support

- > Filter to restrict the search within the Model Explorer.
- > Support of „From/Goto block navigation“ within the Model Explorer. Requires model file generation with MIP 12.0.9.

5.4 CANape 13.0 SP4

With Service Pack 4 (version 13.0.40), the following changes become effective:

User Operation and Display

- > Increased stability when working with very large panels.
- > Deactivated display elements are no longer shown in the print view and in the printout.
- > After a measurement the position of the global cursor is activated correctly again even with an active Trace window.
- > The statistics columns „MinValue“ and „MaxValue“ are not limited to the value range greater or less than zero.
- > Improved MSI-based silent installation.
- > In the numeric view of the Map/Curve window the display of the units of axes can now be activated/deactivated via a menu entry.

Communication Protocols

- > Correction of the length of the XCP UNLOCK command.
- > Improved the spy mode for FlexRay networks.
- > The configuration of data loggers now includes information on the byte order.
- > Improved saving the setting for Ethernet on FlexRay communication.
- > The functionality „Init access“ for FlexRay networks can be deactivated.
- > IO channels of the devices VN75xx and VN89xx are supported.
- > For creating an offline logger configuration the protocol parameter XCP_RESOURCE_PROTECTION_STATUS is supported.
- > XCP on FlexRay via Ethernet now also supports channel B.

Measurement Data Acquisition

- > Triggered long-term measurements of complete bus messages are supported more stable.

Offline Analysis of Measurement Files

- > In a text file the ASCII Export converter generates only rows that contain at least one measurement value.
- > Macros for accessing signal values now also support string signals.
- > Regardless of the word wrap comment fields in MDF files are detected by the word wrap commands CR or CR/LF.
- > The measurement file export converters support byte array signals with up to 16 kByte.
- > Importing BLF bus logging files with J1939 messages is also supported for files with additional CAN messages.
- > The comment of a measurement file can also be edited if the measurement file contains declining timestamps or similar format errors.
- > The MATLAB export converter supports measurement files with numeric and string signals within a channel group.
- > The measurement data export to Excel repeats values in cells as long as a new value exists.
- > When outputting reports in PDF files, signal names are no longer displayed truncated.

Database

- > Database Editor: Improved filters to be used for bus signals.
- > A2L files that include UTF8 characters and are marked with the corresponding BOM marker, are read correctly. In CANape, the information is displayed correctly on systems with appropriate character set support.
- > The Linker MAP Reader for the ELF format optionally replaces the scope separator „:“ by the specified character.

Calibration Data Management (Parameter Sets & CDM Studio)

- > In CANape the parameter values are written to the corresponding parameter set files with the accuracy set in the CDM Studio options.
- > CDM Studio: Changes to user-defined filters are saved back correctly when the CDM Studio is used in CANape.
- > Dialog Dataset Management: In order to structure datasets, editing of groups has been improved.
- > Improved handling of invalid file names in the dataset management. For example, too long file names are detected and reported.

Automation

- > Improved connectivity for COM via TCP.
- > Issuing UPLOAD commands via the COM API has been improved in case of an error.

Calibration

- > XCP 1.2: Improved overruling of IF data by the XCP on UDP transport layer.
- > Improved the creation of parameter groups for calibration methods from a MAP file.
- > When creating a device with the driver type HexEdit, the setting „Expand memory range automatically“ is treated correctly. Regarding the address range, the corresponding HEX file is not modified anymore.
- > When loading a parameter set file in CANape, it is checked whether the description of the parameter type in the file matches to the parameter type of the current database description of the selected device. If not, this is reported and the parameter value is not loaded.

Functions and Scripts

- > The function „CopyArray“ supports copying a vector into an array.

Data Mining

- > Time synchronized display of Data Mining hits and video images if multiple MDF files are used.
- > Improved memory management while Data Mining analysis, and thus a greater number of calculated values is possible.

5.5 CANape 13.0 SP5

With Service Pack 5 (version 13.0.50), the following changes become effective:

User Operation and Display

- > The dialog for adding a comment during measurement will be opened only once even when it is opened by script.
- > Improvement of printing functionality for PDF as output format.
- > Improvement of start behavior when a Keyman is used as a license carrier.

Communication Protocols

- > XCPonSXI: Support of parallel usage of several interfaces
- > XCPonSXI: Acceleration of data transmission. User defined baud rates are possible.
- > In case of flashing via XCP necessary optional commands are checked and missing commands are reported.
- > XCP STIM messages are limited to 255 bytes if the ECU DTOs support > 255 bytes.

Measurement Data Acquisition

- > The Calibration signal for recording the calibration operations during measurement is saved in triggered measurement files.
- > An issue was solved that potentially caused data loss on systems with high CPU load during simultaneous measurement of ECU signals and video.
- > MDF3 measurement files will be restored automatically after a system crash even when they contain more than 256 channel groups. Manual restoration is not required any more.

- > The interpretation of 48-bit Motorola signals for CAN signal datatype was corrected.
- > Correction of the start bit calculation for Motorola signals at polling when creating a logger configuration
- > Correction when creating logger configuration with floating-point numbers
- > Improved support of bit signals for the creation of the logger configuration
- > Correction of signal evaluation for signals having byte order Motorola with bit mask when creating a logger configuration

Database

- > Fixed issue in database filters when modified objects do no longer match the filter criteria

Calibration Data Management (Parameter Sets & CDM Studio)

- > Changed values are handled correctly in the dataset management if the changes are discarded upon closing
- > Improved mouse handling in list view of CDM Studio to reset the drag and drop operation correctly

Multimedia

- > Multimedia signals can be stored into MDF4 measurement files even when these files will get larger than 4 Gigabyte.

Bypassing

- > VN89 Target: Bit mask support for XCP signals
- > VN89 Target: Separate STIM buffer for each bypass

Functions and Scripts

- > Components of Bus Message Structures can be used as input for measurement functions.
- > Global variables can be imported from other projects.
- > Signals of algebraic expressions will be connected to measurement signals by default.

Data Mining

- > Global variables are considered correctly at Data Mining.

Measurement Data Visualization and Manual Analysis

- > The state text of signals will be displayed as label of axis in graphic windows.
- > Algebraic expressions used for virtual file channels can reference file identifiers other than FILE1 now.

Working with Measurement Files

- > Measurement file export converters optionally use the signal source information of label lists for filtering the signals.
- > Selected bus databases of a project will be unloaded if a new project is loaded.

6 CANape 12.0

User Operation and Display

- > Significantly extended features for analyzing bus communications with CANoe Trace window
- > In developing driver assistance systems, additional objects may be written to the GPS Window (e.g. other vehicles, warning signs, fog)
- > OpenStreetMap display in the GPS window
- > Easy to reuse windows with templates

Communication Protocols

- > CAN FD monitoring and support of XCP on CAN FD

Measurement Data Acquisition

- > You can conveniently save bus data in special recorders in BLF or MDF format
- > CCP/XCP connection can be set up without needing to synchronize the mirror memory
- > CAN and FlexRay monitoring via VX1131 measurement and calibration hardware
- > If you split measurement data during the measurement, e.g. due to file size, the associated video files are now also cut synchronous to this split
- > Compression of measured data by new ASAM MDF 4.1 format

Calibration Data Management (Parameter Sets & CDM Studio)

- > You can access maturity level information from a Calibration window

Extended MATLAB/Simulink Support

- > As an alternative to use of a PC, the VN8900 may also be used as a platform for the runtime environment for DLLs from the model generation process

Calibration

- > Direct use of vFlash projects for reprogramming of parameter sets

6.1 CANape 12.0 SP1

With Service Pack 1 (12.0.10), the following changes become effective:

User Operation and Display

- > The representation of numeric values in panels can be preset via the configuration dialog.
- > In the display buffers the measurement data of the last measurement remain intact when data bases or device settings are edited or partial configurations are activated/deactivated.
- > Tab Controls of a panel can be linked with variables, e.g. to select the visible page.
- > ANNOTATIONS of data base variables from ASAP2 files can be displayed in a separate data column. The tooltip displays the entire text of the annotation.

Communication Protocols

- > Local TCP/UDP port is now configurable.

Measurement Data Acquisition

- > Before saving the comment in the measurement file, alternatively the comment template can be edited.
- > XCP 1.2: Display of the estimated ECU resource consumption generated by the measurement configuration.
- > XCP on TCP/IP: Support for XCP resume measurement mode.

Offline Analysis of Measurement Files

- > Signal value comments are also displayed in the Digital window and can be created and edited there.
- > The displayed measurement file can be substituted for the signals of a single window.
- > Signal value comments appear to the foreground when the mouse pointer is moved onto them. In addition, their position can be changed in the properties dialog.
- > When saving signals from Graphics windows, also one of the already opened files can be selected as source.
- > When importing measurement data from text files, numeric values and texts are stored in a group, so that the signal values filters affect all data of a line of the text file.

Database

- > When exporting an ASAP2 description file, the file size can be minimized by exporting only the necessary AML definitions.

Automation

- > Improved support for raw diagnostics services.

Calibration

- > If several CAN signals are calibrated during a function call, the affected messages are sent only once.
- > Network interfaces are released, if an ECU is reprogrammed via vFlash.
- > CDM Studio: Improved saving of changes within the current device or the active dataset.
- > CDM Studio: Improved support of parameters with indirect addressing for the column „Current device“.

Multimedia

- > Vector Screen Capture settings are now saved.

Bypassing

- > STIM/Trigger events can now be used multiple times for the bypass configuration.

Functions and Scripts

- > With the new script methods `GetDatabaseVariableUnit()`, `GetDatabaseVariableLongName()` and `GetDatabaseVariableShortName()` unit and name of variables in scripts and functions can be processed.

6.2 CANape 12.0 SP2

With Service Pack 2 (version 12.0.20), the following changes become effective:

User Operation and Display

- > The present time range of the Display windows does not change when the global measurement cursor is activated and the option, that the cursor should always be activated in the visible range, is enabled.
- > In the Graphic window signals can be drawn via drag and drop on an existing Y-axis or a common axis to be displayed with a shared axis.
- > The legend in the Map window is activated automatically when a second object is inserted into the appropriate window.
- > A signal can be drawn by drag and drop on the time legend in the Graphic window to use this signal as X-axis for the XY-display.
- > Signals with logarithmic axis scaling can be arranged on top of each other.
- > The symbol information of a Tab Control in a panel can be thus inserted, that this Control is automatically linked with the variable when loading the panel.
- > The size and the layout of the Map/Curve window is restored correctly, even after being minimized or maximized.
- > The representation of the legends in the Display windows also considers color schemes with dark backgrounds.

Communication Protocols

- > XCP: PROGRAM_VERIFY command is supported.
- > CCP/XCP: The generation of logger configuration file supports symbolic conversion rules.
- > A CAN monitor device can be created without specifying a database, e.g. when only bus logging is required.
- > Improved the compatibility for CANape projects having Ethernet networks.
- > XCP: Support for STIM mode DAQ lists for ECUs with a static DAQ list implementation.
- > FlexCard Cyclone SE II support improved.
- > The J1939 protocol interpretation in the Trace window has been improved.

Measurement Data Acquisition

- > The ASCII Import Converter supports further formats for dates and unit.
- > Improvement of the automatic assignment of time and pulse master.
- > XCP: The fixed assignment of a signal to a measurement event can be ignored.
- > Saving of all bus events into a measurement file is simplified by a separate configuration page at the recorders. New BLF recorders save all bus events in the presettings.
- > The audio device supports more than one microphone.
- > The anonymous measurement of ECU signals is also supported for ECU processors with Motorola Byte Order.
- > Logger configurations for XCPonEthernet can be generated. The file format is FIBEX 4.1.

Offline Analysis of Measurement Files

- > The replacement of the signals of a Display window with the corresponding signals of another file also works for signals without source information.
- > The storing of subsequently identified signal value ranges (min/max) in measurement files can be deactivated if the measurement files generally shall not be changed.
- > Improved the display speed of a large number of signals from compressed MDF4.1 measurement files via the global measurement cursor.
- > When replacing the signal source of signals in Display windows by selecting a different measurement file, the global thesaurus is considered.
- > Measurement files of G.i.N data loggers in the CLF format can be read.

Database

- > The properties of the axes of several curves and maps can be edited together.
- > At A2L description files with invalid symbol names in the LINK_MAP-entries, always the specified addresses are used.

Calibration Data Management (Parameter Sets & CDM Studio)

- > User-defined filters now support groups and functions with the same name.
- > Deleting multiple datasets is now also supported in the Symbol Explorer.
- > During the address overlapping check, the alignment information is interpreted correctly.
- > When you start editing a parameter value in the list view of the CDM Studio, the unit is no longer copied into the edit field.
- > Correct treatment of the values during testing whether parameters are the same or not. If a quantization is executed during the test, the original values are used for it (and not the possibly rounded values).
- > If changes are made in a dataset in the CDM Studio, they are now correctly detected and listed in the dialog.
- > Improved behavior of the CDM Studio in drag and drop: Regardless of the sequence of the A2L and parameter set file, writable measurement values are now displayed or not. This depends on a global option.

- > The configuration of the attribute-based filter in the CDM Studio is expanded by the mode „Match case sensitivity“.
- > In the CDM Studio binary files (Intel HEX or Motorola S) are fully loaded, even if the parameters have invalid dimensions due to an incorrect A2L. These are marked and cannot be displayed.
- > CDM Studio: + is also supported when the focus is in the Name column. Here, the changes in the active parameter set are undone.
- > Correct behavior while copying maps if the option „Accept from source WITH keeping the destination value“ is activated. For the Y dimension, the correct maximum information is used now.
- > The configuration of the tooltip content in the CDM Studio is now saved correctly when the program is exited.
- > CDM Studio: Improved the display and sorting properties in the configuration dialog. The sorting properties are now automatically adapted and it is prevented that these can be completely removed.
- > The annotations on a parameter can be displayed as attribute in a parameter set column. The text element of the first annotation from the database description is shown as single-line text. Furthermore, the annotations on a parameter can also be displayed in the tooltip. Here, the entire text of all annotations is shown.

Automation

- > Expand API functionality for A2L information like min and max value.
- > Improved examination when using the function „LoadParameterset“ and „SaveParameterset“ in scripts.

Extended MATLAB/Simulink Support

- > Model Explorer: ZIP archive support for model description file including graphics.

Calibration

- > Improved address calculation in case of load granularity not equal to 6.
- > Improved support of calibration operations on axis values that contain a monotony description.
- > Improved robustness when flashing a dataset.
- > The annotations on a parameter can be displayed as column in the Calibration window. The text element of the first annotation from the database description is shown as single-line text. In the tooltip to this column, the entire text of all annotations is displayed.

Diagnostics

- > If the diagnostic variant cannot be determined automatically, the variant „Common Diagnostics“ is used.

Multimedia

- > Support of GIN logger camera pictures for offline evaluation.

Bypassing

- > The number of attempts to establish a VN89 connection is limited.

Functions and Scripts

- > Script commands to create display pages and partial configurations.

6.3 CANape 12.0 SP3

With Service Pack 3 (version 12.0.30), the following changes become effective:

User Operation and Display

- > Loading individual windows of partially loaded configurations is also possible, if the device in the current project does not exist.
- > Large MDF files are sorted and opened in the background. It does not block the user interface.

- > While inserting into display windows, the selection of map elements uses the dimension of the device variable according to the description file.
- > The column width for Calibration windows are saved correctly, even if they are on a non-visible display page at the time of storing the configuration.

Communication Protocols

- > When generating CCP and XCP logger configurations, extended CAN IDs are handled properly.

Measurement Data Acquisition

- > Optimized speed while working on the measurement signal configuration, when many signals are included.
- > LIN messages are saved in MDF4 measurement files with signal description.

Offline Analysis of Measurement Files

- > Importing LIN messages from data logging files in CLF format is supported.
- > When importing measurement files with the Vector logging converter, the J1939 transport protocol is only used on bus channels, to which an appropriate data base with J1939 identifier is assigned.
- > When importing, mode-dependent signals with high byte offset are interpreted correctly.

Database

- > System constants in functions and conversion rules of ASAP2 description files are supported by using the keyword „sysc()“.

Calibration Data Management (Parameter Sets & CDM Studio)

- > If in the CDM Studio a subcolumn is hidden, which was defined as a sorting criterion, a default sorting criterion is defined automatically. This is done only if it was the last sorting criterion.
- > Consider the option „Readonly Parameter“ also for in-place edit at the column data.

Automation

- > The automation interfaces support the execution of diagnostic jobs.

Calibration

- > Improved monotony check when changing axis point values, e.g. via the clipboard.
- > Stability improvements for reprogramming use cases.

Diagnostics

- > For Seed & Key calculations in CASL, „GenerateKeyExOpt“ and „DiagGenerateKey“ are supported.

VX PlugIn

- > Improved A2L database handling.

Data Mining

- > User-defined macro texts can also be used by a Data Mining analysis.

6.4 CANape 12.0 SP4

With Service Pack 4 (version 12.0.40), the following changes become effective:

User Operation and Display

- > The envelope curve display also works with black signal color on light background.
- > In the configuration manager, partial configurations can be added, which in turn contain partial configurations.
- > The new columns „ECU address“ and „Byte number“ indicate the effective addresses and number of data bytes that are used for accessing measurement and calibration values in the ECU memory.
- > With the new macro „{DEVICE <name> DATASET}“, the name of the current dataset of a device can be inserted into comment texts.

- > Prevented cases where the tool seems to be blocked by hidden or invisible dialogs.
- > Speed up starting the application.

Communication Protocols

- > Improved bus logging and tracing for J1939.

Measurement Data Acquisition

- > Time synchronization improved in case of different bus systems and XCP.
- > XCP: Maximal measurement data throughput improved.

Offline Analysis of Measurement Files

- > Virtual file channels based on a MATLAB DLL are now initialized on every recalculation.
- > Already loaded measurement files can be used for „Show values from measurement file“ via drag and drop.
- > Converting BLF files to MDF with extremely large floating-point timestamps is supported.
- > Signals from CAN messages that are explicitly measured and additionally saved into an MDF4 file by the general bus logging, are displayed only once in the file's signal list.
- > With active difference cursor the gradient column displays the slope of the signal between measurement and difference cursor.

Database

- > Fixed issue of the MAP file reader for ELF files at enumerations without content.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Extended user-defined filters: These allow filtering on different values in the calibration data quality.
- > Improved stability of the dataset management feature.
- > Improved reading of Intel HEX/Motorola files. It will not only evaluate the file extension to activate the appropriate reading components, it also evaluates the content. This makes it possible to read in files with the extension HEX but with the Motorola S format without any problems.
- > Optimized calibration of axis point values that reference a monotony description.
- > The CDM Studio report components create the correct physical representation out of parameters with invalid raw values.

Automation

- > Calibration of very large maps is supported.
- > The measurement configuration cannot be changed via the programming interface (ASAP3, CANape API) if the user makes changes via the user interface of CANape as well.
- > Fixed an issue where no measurement data were delivered to the client for a specific device access sequence.
- > Fixed issue of a CANape COM C# client code example.

Calibration

- > The content type of memory segments is editable.

Functions and Scripts

- > New CASL functions (predefined by CANape) to optimize the support of the use case „load parameter set“: With these functions it is possible to monitor the loading operation on the parameter level and in case of failure to cancel the process deliberately.

Data Mining

- > The parameter file belonging to a Data Mining analysis is not deleted until both the template file and the result file were deleted.

6.5 CANape 12.0 SP5

With Service Pack 5 (version 12.0.50), the following changes become effective:

User Operation and Display

- > When exchanging an A2L database, it is ensured, that the EPROM identifier is updated from the new A2L.

Measurement Data Acquisition

- > Correction of the time synchronization when ECU timestamps are activated during data acquisition: In version 12.0 SP4, this resulted in a temporal drift.
- > FlexRay messages which contain multiplexed signals are evaluated correctly.
- > XCP: correction for the resume measurement mode.
- > Improved measurement data visualization during measurement.
- > Improved hardware time synchronization for configurations with high measurement data rate.

Offline Analysis of Measurement Files

- > In the Graphic window, value axes of signals can be displayed without showing the signal curve. Thus, a color legend can be shown in the window when other signals display this signal by color function.

Calibration Data Management (Parameter Sets & CDM Studio)

- > If an Intel HEX or Motorola S file is loaded with address mapping information in the CDM Studio, the complete content is also saved in a new file – even if this file has a different format.

Automation

- > When creating a device, the cache is not activated unintentionally.

Extended MATLAB/Simulink Support

- > Diagnostics jobs can be executed using the MATLAB MC API.

Calibration

- > Correction for parameter set re-programming.

VX Plugin

- > The VxPlugin is now updated correctly during a CANape update installation.

Multimedia

- > New GFX object „Polynomial“ with range and step size.

Data Mining

- > The script function DataMiningGetFileName() has been extended in order to identify the name of the analysis file. With additional options, components of the file name can be evaluated, e.g. drive, path, name, extension.

6.6 CANape 12.0 SP6

With Service Pack 6 (version 12.0.60), the following changes become effective:

Measurement Data Acquisition

- > The file name of a recorder can optionally be created at the end of the recording by using macros.
- > MDF and BLF measurement files recorded at the same time now contain the same measurement starting time.
- > The order of CAN monitors may now be modified in order to control the interpretation of the messages.

Offline Analysis of Measurement Files

- > When exporting MDF signals to MATLAB, signal names longer than 64 characters are now supported for filtering with a LAB file.

- > When importing bus logging files in BLF format, system variables are imported as well.
- > While using fixed scaling of Y axes in the Graphic window, the scaling is no longer changed when the display detail is changed for other signals via keyboard.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Improved the robustness of calibration data quality overview dialog to handle also parameter with no valid or no database description.
- > Improved copy & paste action in case the filter „Based on thesaurus“ is active.
- > Correct saving of the data when with changes directly in CDM Studio main view the program closes immediately.
- > Enhanced check when creating a dataset; for example, the selected HEX file must always be readable.
- > If a value change of a parameter is inside the quantization range, the parameter is written back anyway into the file with this new value.

Automation

- > The automation interface has been extended by an ASCII export.
- > It is now possible to measure global environment variables via automation interface.
- > Diagnostic messages larger than 260 bytes can now be sent via automation interface.
- > initial values are uploaded from the ECU via automation interface after the ECU has been reset.

Calibration

- > Improved the order of download commands in pointer-based calibration methods compliant to AUTOSAR.
- > The alignment in the PoolRAM is now taken into account in pointer-based calibration methods compliant to AUTOSAR.
- > The processing file for the vFlash integration now also supports absolute and relative path information.
- > While loading a configuration, the calibration windows are filled with the correct values even if errors occur during the ECU communication.

Bypassing

- > Support of multiple VN8900 devices for Bypassing.

Data Mining

- > With the CASL-function „DataMiningGetFileName ()“ the file name of the currently selected Data Mining result file and the measurement file name of the current hit can be determined in a script.

6.7 CANape 12.0 SP7

With Service Pack 7 (version 12.0.70), the following changes become effective:

User Operation and Display

- > A measurement function remains connected with its partial configuration, even if it is changed later.
- > When calculating envelope curves, signal groups that are displayed in the user interface are calculated first.
- > Several stability improvements.

Offline Analysis of Measurement Files

- > Configured databases of the Vector Logging import converter are used for all bus channels of MDF4 files even if they are not assigned to a special bus channel.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Corrected value changes of parameters with symbolic conversion table to handle objects correctly which are based on „signed integer“.
- > Improved stability in dataset management.

Calibration

- > When reprogramming memory segments, flash sectors with no available data can be deleted optionally.

Diagnostics

- > Event-triggered measurement data acquisition is supported.

7 CANape 11.0

General Operation

- > Modernized and unified the look-and-feel of array windows.
- > Support of multiple simultaneously used configurations.
- > Management for multiple ECU data sets. A data set consists of an A2L file and one or more HEX files.

Communication and Hardware Interfaces

- > Support of Vector hardware time synchronization.
- > Support for all Vector IO interfaces (IOCab, VN1600 series, VN8900 series).
- > Diagnostics on VN1600 series K-Line interface.
- > New DAIO driver for high-performance capturing of digital and analog data streams.

Calibration Data Management

- > Access to calibration data quality in the CDM Studio.

Bypassing

- > Support for CAN and IO signals.
- > Support of multiple bypass DLL files.

Measurement Acquisition and Analysis

- > Bus logging support using MDF4 as logging file format.
- > Thesaurus feature which helps to re-use configurations in a database substitution use case.
- > Protection of development know-how with anonymized measurement: Measurement configurations with anonymized signal names.

7.1 CANape 11.0 SP1

With Service Pack 1 (version 11.0.10), the following changes become effective:

User Operation and Display

- > In the Symbol Explorer, windows and their displays are also listed according to display pages.
- > The displayed content of lists (e.g. in the Symbol Explorer or the Measurement Configuration) can be copied as text to the clipboard.
- > The macros for creating the command line of an external program call (AddOn) support file names and comment fields of loaded measurement files.
- > In .NET panels, signals and parameter can be displayed and input in hexadecimal form.
- > Improved copying of the values from the Calibration windows to the clipboard as well as from the clipboard to the Calibration windows.
- > Panels can be displayed via drag and drop of their configuration file (*.xvp, *.cnp). The controls of .NET panels can be connected automatically with variables and scripts of the project.

Communication Protocols

- > Improved support of Seed & Key DLLs that are not compliant with ASAM standard.
- > If the A2L contains an EPK, the check is automatically activated when creating the device.
- > The CAN monitor supports FIBEX files as network description file.

Measurement Data Acquisition

- > In measuring signals from J1939 messages the frame type of the CANdb data base is considered. This enables the measurement of proprietary CAN messages.
- > Optimized display and analysis of trigger conditions of high frequency measured signals (10 kHz to over 1 MHz possible).
- > Fixed sporadic data loss of the FlexRay monitor.
- > XCP: Improvements for resume mode measurements.

Offline Analysis of Measurement Files

- > When configuring and storing a measurement data analysis, signals and structures with the same name are possible.
- > The representation of signals in XY mode is alternatively possible with the time raster of the Y signal. Thus all values are displayed even if the Y signals were measured with a higher raster than the X signal.
- > With activated measurement cursor the bit values of a signal in the Digital window are displayed correctly if more than one bit is displayed.
- > The MATLAB Export Converter for measurement files exports also the user-defined comment fields.
- > Anonymously recorded measurement files in MDF3 format are permanently completed with the signal description from the device description file.

Database

- > In the Properties dialog the version of an ASAP2 description file is displayed and can also be changed.

Calibration Data Management (Parameter Sets & CDM Studio)

- > DCM files, which represents the default text of a symbolic conversion table, are read and processed correctly.
- > The action „Download to Flash“ now creates a new dataset if the dataset management is enabled for the device.

Automation

- > New script functions to open/update the Model Explorer.
- > In the scripting language nested switch case statements are possible.
- > Increased stability of the communication via the ASAP3 interface.
- > Scripts are stopped when a modal dialog, e.g. configuration dialog, file selection dialog or message box, opens.

7.2 CANape 11.0 SP2

With Service Pack 2 (version 11.0.20), the following changes become effective:

User Operation and Display

- > GPS track display of all GPS objects in one window.
- > The linkage of panel controls to bus signals from measurement files remains maintained while replacing the measurement file, even when switching between files with and without source information (message name).
- > With „Display from measurement file“ the legend of the Graphic window shows the current values, even when the envelope curve calculation of the measurement file is completed.
- > The order of the signals in the display windows can be changed via the configuration dialog by taking the sort for any column into the window.
- > In the selection of variables for elements of ActiveX windows user-defined filters can be utilized.
- > CANFlash removed from CANape. If required, use standalone version (be sure DEP is deactivated for execution, contact your IT helpdesk). We highly recommend to use vFlash instead.
- > The description of the expanded signal names in the user interface is in the same form in which the signals in the scripting language can be referenced.

- > For digital signals with color function the envelope curve is also displayed.
- > The mode to display only selected signals in color and all the others in gray is available in the Digital window.

Communication Protocols

- > XCP: Improved static DAQ list support.
- > XCP on FlexRay: Improved bandwidth calculation.
- > Support of VN1640.

Measurement Data Acquisition

- > The multimedia file is relative to the MDF file.
- > The partially sorted writing of measurement files in MDF4 format with more than 3000 channel groups is possible.
- > When storing measurement files with many channel groups (e.g. by measuring very many different bus messages), augmented fragmentation of measurement files is prevented.
- > Improved support of FlexRay bus monitoring with regard to multiplexed frames.
- > FlexRay: Improved bus synchronization.
- > Added bus statistic signals for AUTOSAR system description based CAN monitors.
- > Improved the start time of a measurement with a lot of signal groups (e.g., with many bus signals) and the storage in MDF4 files.

Offline Analysis of Measurement Files

- > With the [] operator the access to individual bytes of a string signal in measurement files is possible.
- > Invalid parameters of script methods to edit files are intercepted.
- > The new script methods GetRawByteFromSignal () and GetRawBitsFromSignal () allow access to all bytes of 64 bit integer signals.
- > The ASCII import converter for measurement data can create measurement files in MDF4 format.
- > The DIADEM export converter also supports measurement files with negative timestamps.
- > When replacing the measurement files in an analysing configuration, also signals are considered, starting with a dollar sign.
- > With the new script function RestoreMeasurementFile(), the restored signal description can be added to a measurement file with anonymously measured signals again.
- > User-defined comments of signal groups in MDF4 files are adopted when the signals are saved into a new file.

Database

- > Linker MAP file symbols with a length of more than 255 characters are ignored.
- > The Linker MAP Reader handles structures without structure elements correctly.
- > The ASAP2 keyword GUARD_RAILS is kept when editing the ECU description files.
- > MAP files of the Tasking 8051 Compiler in format IEEE 695 are supported.

Calibration Data Management (Parameter Sets & CDM Studio)

- > A new option makes it possible to prescribe for all parameter set formats, that always an A2L must be specified, when the file is opened in the CDM Studio.
- > Objects of the type MEASUREMENTARRAY are shown in the new Map/Curve window.
- > When loading a parameter set file, dimension changes are executed correctly and the parameter is adapted into the dimension, if possible.
- > When you exit the CDM Studio, the GUI elements are reset properly so the data will always be saved correctly.

- > Comments that were created in the templates of the calibration data quality are also provided in a shortlist in the dialog of the calibration data quality.
- > In the CDM Studio inserting of values from the clipboard with multiple selection is possible.
- > All comparison filters are now available below the filter „Based on the Thesaurus“.
- > Changes in a parameter set that was opened write-protected and then saved under a new name will be detected and saved correctly.
- > If the dataset management is activated for a device, a new dataset with this HEX file is created after the action „Download (program) to flash“.
- > For changes in the database description the calibration history always terminates. This is necessary, since the removal of parameter descriptions is not supported.

Automation

- > In the silent mode (e.g. data logger) no error messages of recorders are displayed, even if an USB drive is removed during the measurement.
- > Added an API method which lets a client terminate a non-modal instance of CANape.
- > CANape API (COM): Introduced possibility to mark unavailable signal values (NaN).

Diagnostics

- > Diagnostics window: „Support single errors“ and „Groups“ of the service 0x14 (Fault Memory Clear).

Driver Assistance

- > New GFX object „Polyline“ as video overlay.
- > New GFX object property „Pen Style“.
- > Same GFX object reference for online and offline use case (GRAFX_SOURCE:SourceName:ObjectSignalName:[row][col]).

7.3 CANape 11.0 SP3

With Service Pack 3 (version 11.0.30), the following changes become effective:

User Operation and Display

- > Improved working with multiple configurations in many details.
- > Added new macros to query the MAP file configuration of devices.
- > ActiveX windows can be copied with their signal configuration.
- > Improved the configuration possibilities of toolbars.
- > The time axes of all windows of a display page respectively of all windows in the configuration can be synchronized automatically.
- > The activation and deactivation of partial configurations with loaded measurement files has been accelerated.
- > The labeling of the value axes in the Graphic window is hexadecimal when the signal is displayed in hexadecimal.
- > Fixed the automatic reduction of the height of the legend window in array windows due to changing the display pages.

Communication Protocols

- > CCP/XCP: Fixed data acquisition and tracing for DAQ lists, which send their data not on the response CAN ID.

Measurement Data Acquisition

- > Display of H.264 video format during measurement if the video device supports H.264.
- > Improved saving and restoring of anonymous measurement files.
- > Stopping and starting a recorder during the measurement is also possible if the measurement file of the recorder is automatically divided.

- > Improved the calculation of buffer sizes for data blocks in MDF4 files.
- > CCP: For arrays DAQ measurement modes are now available.
- > CCP: Fixed an issue which affected the feature „restart measurement in case of an ECU error“.
- > CCP/XCP: Fixed the recording of measurement data, if some of the signals were deactivated for recording.
- > Added software time synchronization for VN8900 series network interfaces.

Offline Analysis of Measurement Files

- > Signals from MDF 4.1 files with compressed data blocks can be displayed.
- > MDF3 files with corrupt numeric conversion tables can be read.
- > The envelope curve of signals from measurement files is calculated even if for some signals in the file, the envelope curve is already permanently present.
- > Signal comments are displayed in the XY display mode at correct locations.
- > The display of structure elements with data from a measurement file considers changes to the memory layout of the structure.
- > Merging several MDF4 measurement files into one file is supported.

Database

- > Searching for variables in the Database Editor considers the currently selected group.
- > The saving and reading of ASAP2 files with very many unnamed conversion rules has been accelerated.

Calibration Data Management (Parameter Sets & CDM Studio)

- > CDM Studio: During the copy/paste process, the monotony check is executed using the physical values of the source as well as the conversion rules and the monotony settings of the target parameter.
- > Robust behavior when reading a parameter set file with referenced A2L file containing an invalid description (MAP refers a parameter as axis).

Automation

- > Measurement signals can be enabled and disabled with new script functions for label files.
- > With the new functions $\min(a, b, \dots)$ and $\max(a, b, \dots)$ values of two or more signals can be compared.
- > CCP/XCP: Fixed an issue where a signal was shifted by one time cycle when several signals were measured with the same DAQ event.
- > Disengageable delay after the ASAP3 command SWITCH_ONLINE to adapt CANapes behavior.

Extended MATLAB/Simulink Support

- > VN89 support as execution platform for MATLAB/Simulink models.

Calibration

- > Improved the behavior for drag and drop operations of objects from the Calibration window.
- > The information on the thesaurus are also evaluated when loading parameter sets.

Data Mining

- > DataMining supports virtual MATLAB signals with multiple outputs, which can be used as inputs of further virtual signals.
- > Signal names with special characters can also be used in algebraic expressions with single apostrophe.
- > While executing a Data Mining analysis via script, the current values of the global variable or the current settings of the project can be optionally adopted.

7.4 CANape 11.0 SP4

With Service Pack 4 (version 11.0.40), the following changes become effective:

User Operation and Display

- > The order of the signals in the legends of the Display windows can be changed via the configuration dialog according to the current sorting.
- > In the Graphic window the text box of a signal value comment can be moved with the mouse.
- > The settings for global time axes are saved in the configuration and are restored when loading.
- > When displaying signals from MDF files, only a numeric time channel is considered.
- > The Simulink XCP server supports software-based licensing.

Communication Protocols

- > XCP: Important stability improvements for XCPonEthernet devices, in particular interfaces of the Vector VX1000 family.
- > XCP: Consideration of the parameter DAQ_GRANULARITY for objects that are greater than one byte.
- > When creating XCPonFlexRay logger configurations FIBEX 3.1 is supported.
- > XCP: Improved the support of static DAQ lists.

Measurement Data Acquisition

- > The hardware time synchronization now uses only those interfaces that are also used in the CANape project.
- > NI-DAQmx: Support for cyclic measurement of counter inputs tasks.
- > XCP: Fixed storage of measurement data for static DAQ lists, if the consistency mode is set to DAQ.

Offline Analysis of Measurement Files

- > Splitting and merging of measurement files is even possible if the time channels contain very large gaps.
- > With the script function SetGlobalTimeOffset() the timestamps of all signals from one measurement file can be corrected by a constant offset.
- > Measurement files of the software Inca from the company ETAS with empty data link blocks can be read.
- > The outputs of a virtual MATLAB signal which are used as function result, can be used as inputs of further virtual signals.
- > Floating point numbers from communication databases are read correctly even if software components of thirdparty manufacturers change the system settings for the decimal separators in the Windows file explorer.
- > The FunctionDLL interface for the extension of the scripting language allows the transfer of arrays with up to 1 million values.

Database

- > The MAP reader supports bit variable from Linker MAP files in ELF format.
- > The available information under the keyword HEADER in ASAP2 files remains unchanged when saving the ASAP2 file.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Parameter of the type fix value block are read from a parameter set file even if the dimension differs from the current one in the Calibration window. If the dimension is changeable, it is adapted. If not, the parameter will still not be read.
- > In the CDM Studio parameter of the type map are copied correctly if the copy option is set to „Accept from source WITH keeping the destination value“.
- > If a parameter could not be readout correctly from the parameter set file (parameter set file contains text for a parameter with verbal conversion table, but the current data base description expects a number), this is detected while copying and the parameter is not copied.

Automation

- > ASAP3Translator supports CANape environment variables.

Extended MATLAB/Simulink Support

- > Improved MATLAB/Simulink ASAP2 file generation.

Calibration

- > Improved the cache synchronization when communication errors have occurred.
- > New visualization of values in BIN format in the Display and Calibration windows. In the Calibration windows the bits can be changed directly (mouse click). The editing of the entire value is still possible.
- > Optimized the process „Load parameter set of“ for better support of devices without activated cache.
- > During the measurement it is now possible to change the values of a map or a curve by interpolation.

7.5 CANape 11.0 SP5

With Service Pack 5 (version 11.0.50), the following changes become effective:

User Operation and Display

- > Improved the display of values in the format „binary“: The display can be set using a global option. In addition, the representation of „Simple graphic elements“ is optimized.
- > Improved the loading of configurations with partial configurations from other projects.
- > In the Digital window, signal value comments can be created, displayed and changed.
- > An active global time axis is also used by undocked Display windows.
- > For 1-bit digital signals with symbolic conversion tables, the display mode „Digital“ is used by default.
- > With the automatic assignment of axis templates on units, enclosing spaces are ignored.
- > The position of the text box of signal value comments in a diagram can be changed via the properties dialog of the comment.
- > The representation of the time axis can be customized via a user-defined axis template.
- > An installed MDF Shell Extension is no longer deactivated when a newer program version without MDF Shell Extension is installed.
- > Improved display of tooltips in the Calibration window. The information about the parameter is shown under the mouse cursor.
- > The legend in the Map window is activated automatically when a second object is inserted into the appropriate window.
- > The present time range of the Display windows does not change when the global measurement cursor is activated and the option, that the cursor should always be activated in the visible range, is enabled.
- > The partial load or addition of configurations is also possible if the Symbol Explorer displays a partial view of the symbols.

Communication Protocols

- > Support for VX1131 FlexRay controller.
- > XCP on Ethernet: Local TCP/UDP port is configurable.
- > If several CAN signals are directly changed within a function execution, the appropriate bus messages are sent only once.
- > XCP: T3-T7 timeout values are considered.
- > XCP on FlexRay: Improved generation of logger configuration files regarding multiplexed signals.
- > XCP on FlexRay: Simplified ARXML handling.
- > Support for XCP on Ethernet Resume-Mode.
- > XCP: PROGRAM_VERIFY command is supported.
- > Improved address calculation in case of load granularity not equal to 6.

- > CCP/XCP: The generation of logger configuration file supports symbolic conversion rules.
- > XCP: Support for STIM mode DAQ lists for ECUs with a static DAQ list implementation.

Measurement Data Acquisition

- > The buffer size for the sorted writing of MDF4 measurement files is adjusted according to the data rates of the bus systems.
- > XCP: Improved DAQ list configuration for DAQ consistency mode.
- > At the end of a measurement, optionally the comment template of a recorder can be edited instead of a finished comment.
- > Improved hardware based time synchronization.
- > XCP: The fixed assignment of a signal to a measurement event can be ignored.

Offline Analysis of Measurement Files

- > Support of unsorted MDF4 files with VLSD technology (Variable Length Signal Data).
- > The storing of subsequently identified signal value ranges (min/max) in measurement files can be deactivated if the measurement files generally shall not be changed.
- > Improved the display speed of a large number of signals from compressed MDF4.1 measurement files via the global measurement cursor.

Database

- > At A2L description files with invalid symbol names in the LINK_MAP-entries, always the specified addresses are used.
- > When exporting A2L description files, optionally only the used AML definitions can be exported to minimize the file size.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Improved the robustness during copy actions in the CDM Studio.
- > Upgrading of the feature „monotony check“ in the CDM Studio: The monotony can be specified by the user. In this case, the information of the A2L during the check is ignored.
- > CDM Studio: Improved the storage of the docking position of detail views.
- > Improved robustness of the CDM Studio connection in CANape to save changes to the „Current device“ without any difficulty.
- > Improved connection of CDM Studio in CANape to correctly handle parameters with indirect addressing.

Automation

- > Added function to enable or disable the memory cache of a CCP/XCP device.
- > Implemented EX_SET_PARAMETER and EX_GET_PARAMETER.
- > Tester Present support in CANapeAPI/COM.
- > With the script functions „GetDatabaseVariableUnit()“, „GetDatabaseVariableLongName()“ and „GetDatabaseVariableShortName()“ the appropriate properties of variables can be identified.
- > Via script functions, partial configurations can be activated/deactivated.
- > Improved scripting access to responses of diagnostics services which have been created by specifying the raw data bytes.
- > Expand API functionality for A2L informations like min and max value.
- > Improved examination when using the function „LoadParameterSet“ and „SaveParameterset“ in scripts.
- > struct TASKINFO2: Addon of the TASKINFO struct with additional information concerning the event number.

Extended MATLAB/Simulink Support

- > Thesaurus support for the Model Explorer.

Calibration

- > Improved support of calibration operations on axis values that contain a monotony description.
- > Improved the AUTOSAR calibration method.
- > Improved robustness when flashing a dataset.

VX Plugin

- > VXplugin: Several improvements.

Driver Assistance

- > Vector Screen Capture properties are located in the project directory.

7.6 CANape 11.0 SP6

With Service Pack 6 (version 11.0.60), the following changes become effective:

Communication Protocols

- > Improved support for FIBEX files of version 3.1.
- > When generating CCP and XCP logger configurations, extended CAN IDs are handled properly.

Measurement Data Acquisition

- > Optimized speed while working on the measurement signal configuration, when many signals are included.
- > The anonymous measurement of signals with Motorola Byte Order is possible.
- > Improved software time synchronization for VN8910.

Offline Analysis of Measurement Files

- > Improved library function „Normalize“.

Calibration Data Management (Parameter Sets & CDM Studio)

- > In the parameter selection dialog, address ranges are additionally displayed with the name, which was defined in the A2L.
- > Robust handling when predefined values are saved during editing in the calibration data quality dialog.
- > If the CANAPE_HEX.INI is write-protected, it is reported. The current options, new user-defined filters and configurations are not saved.

Automation

- > Improved calibration of large maps.
- > The automation interfaces support the execution of diagnostic jobs.

Calibration

- > Correct testing of the monotony check for the Y-axes.
- > Correct handling of the value changes when starting the calibration history.
- > Correct display of the saving options in the file selection dialog during the action „Save parameter set in binary format“ with Windows7.
- > Correct handling of variant descriptions from a parameter set file if the referenced A2L contains descriptions of the software track.

Diagnostics

- > For Seed & Key calculations in CASL, „GenerateKeyExOpt“ and „DiagGenerateKey“ are supported.

Data Mining

- > User-defined macro texts can also be used by a Data Mining analysis.

7.7 CANape 11.0 SP7

With Service Pack 7 (version 11.0.70), the following changes become effective:

User Operation and Display

- > Signals that are updated live in the Model Explorer will no longer be saved in the measurement file.
- > Improvement for multiple configurations.
- > Copying a Graphic window with XY display has been improved.

Communication Protocols

- > Interface channels without configured networks are not activated in any case anymore.

Measurement Data Acquisition

- > XCP: Improved time synchronization for ECUs, that timestamp the data.

Automation

- > Via the automation interface the ASCII export is available.
- > Improvement when calibrating large maps during running measurement.
- > Improved the reading of calibration parameters beyond the measurement.

8 CANape 10.0

Function bypassing in real-time

- > Conveniently configure your function bypass, which is executed on the VN8900 with deterministic time behavior.

AUTOSAR support

- > With the Status Monitor, you can analyze states, state transitions and events of your AUTOSAR ECUs as well as their time dependencies.
- > Support of AUTOSAR System Description Files for FlexRay and CAN.

Reliably manage calibration data

- > Direct transfer of parameter sets from CANape to database-based calibration data management systems such as eASee.cdm via the eCDM interface.

Integration of measurement systems

- > High-performance interface for integrating digital and analog I/O systems for sampling rates over 100 kHz.

Improved user operation and displays

- > Name shortening rules enable the use of very long object names, such as those generated from the AUTOSAR and Simulink environments.
- > Numeric display in exponential notation.
- > Extended axis settings let you adapt measurement window displays to individual tasks.
- > Simplified device configuration.

Handling of A2L files

- > The A2L Editor now also lets you display and edit interface-specific information.

GPS map support

- > Support of Google Maps with Option GPS.
- > GPS object mapping dialog to map GPS object properties to objects.

New calibration concepts

- > ECUs that are based on the pointer-based calibration concepts InCircuit2 and AUTOSAR can be developed with the aid of CANape.

8.1 CANape 10.0 SP1

With Service Pack 1 (version 10.0.10), the following changes become effective:

User Operation and Display

- > Added buttons to the GPS window info view to show/hide GPS marker and to set the master object.
- > Support of multimedia file selection as source in case of no connected video device.
- > Common axis settings are supported at Partial Loading of configurations.
- > A display page is selected at a Drag&Drop operation of a display if the mouse cursor is positioned for a short time on the same tab.
- > The file name of the recorder template is used for new recorders if it contains at least one macro.
- > The measurement configuration and measurement signal selection dialog provide a search feature with wildcards for signal names (hotkey F3).
- > A problem of the MDF Shell Extension for Windows 7 is solved.
- > The MDF Shell Extension for Windows 7 provides new columns to display the standard comment entries.

- > New display windows of protected configurations are not protected after the Database Editor was opened.
- > The measurement comment signal is inserted only once into graphic windows with multiple sub windows.
- > The Function Browser provides backward/forward navigation through the source code of scripts and functions.
- > Activating of display pages by script using the page name as parameter of the function SetDisplayPage().
- > Improved Intellisense feature in the Function Browser.
- > Moved CDP export from menu entry Configuration Export to Measurement list export.
- > Improved VN89 error/info message for RTKernel version check and update advise.
- > Adapted GPS window toolbar for faster access.
- > Functions and Scripts can access the characters of string objects using the [] operator.
- > Improved device configuration dialog.
- > Values at measurement cursor position are shown in the legend if displays are in pause mode through measurement.

Communication Protocols

- > XCP: Improved stability of polling measurement in case of high rates.

Measurement Data Acquisition

- > Disabled measured signals are enabled automatically if they are dragged from the device in the symbol explorer into display windows.
- > Measurement signals with Motorola byte order are stored always into MDF 4 files even storing is disabled for MDF 3 files.
- > The Project Optimization feature gives a hint if the Block Measurement mode of a XCP device is disabled automatically because different recorder configuration of measured signals.
- > XCP: Improved measurement performance in case of using multiple recorders.
- > Selection of adjustment point in „Graphical Curve Measurement Window“ is also possible if it is zoomed.
- > A measurement label list can be saved including the measurement mode. These modes are used if the label list is selected. New function SelectLabelList().
- > Enhanced the CDP export functionality.

Offline Analysis of Measurement Files

- > Color functions depending from third object values are supported in XY mode of graphic windows.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Recalculation of filter „Value unequal“ improved in case of open a empty parameter set.
- > A new option is added to improve the representation of standard axis values which based on floating point data type.
- > Problem in handling PAR files which includes parameter descriptions of more than one device is solved.
- > Improved handling of parameter description which does not have an A2L description.
- > Display the properties of database group or database function in the detail view if one is focused in the main view in CDM Studio.
- > Attach the calibration history during CANape startup correct if the baseline snapshot is not the first snapshot.

Automation

- > Improved stability of client-server communication.

Calibration

- > The minimum height of calibration windows is reduced to save screen space.
- > Reactivate feature to paste values in numerical calibration windows without mirror memory and disconnected ECU. The feature now is enabled if indirect calibration mode is set.

Diagnostics

- > FlexRay: Support of cycling sending of network management messages.
- > FlexRay: Improved communication stability.

Data Mining

- > The script configuration is set to default if a new Data Mining configuration is created.
- > Methods in the Data Mining tree view are sorted alphabetical.
- > New library functions IsGlobalMinValue / IsGlobalMaxValue to detect the location of minimal and maximal signal values.
- > The source code of methods from DMT and DMR files can be shown in the Data Mining Explorer.
- > The script function CreateDataMiningHit() has a new optional parameter to define the name of the hit.

8.2 CANape 10.0 SP2

With Service Pack 2 (versions 10.0.20, 10.0.21 and 10.0.22), the following changes become effective:

User Operation and Display

- > A user defined project file filter can be added to the project file selection dialog.
- > Variable names added to functions or scripts with Intellisense are encapsulated in apostrophes if they contain special characters.
- > The address property of variables in functions and scripts allows modification of the address. Address modification must be enabled in the project file before.
- > Feature of handling parameters which are located in a read-only segment has been improved. While the device is offline the parameter can be adjusted.
- > Improved functionality of reflection state for parameters being located in read-only segment or not.
- > Fixed issue which split multiview graphic windows into separate windows.
- > Width of (ActiveX) window subviews are now fixed, also if displayed on an additional monitor.
- > Extra command in Bypassing window to toggle bypass execution between PC and VN8900.
- > Support of Shobunsha Super Mapple GPS map style for all operation systems.
- > Support of shortening of object name rules for Matlab and Bypassing window.
- > The content of graphic windows is scrolled left or right if the measurement cursors are dragged near the left or right border of the window.
- > The search result of the Symbol Explorer shows signals from bus messages if the name of the message does match.
- > Issue with display of icons is fixed, if Windows XP Standard style with reduced color depth is activated.
- > The column selection dialog of list views provides a preview column to display the item text of the focused element of the list.
- > Display of signals in a graphic window with multiple views works if the window is a standard window.
- > Fixed Symbol Explorer issue if a CAN database file is edited externally and reimported.
- > A global variable can be deleted in the Function Browser even if it was renamed before.
- > Some minor issues when working with breakpoints in the Function Browser are resolved.
- > Accessing string characters using the [] operator is possible.
- > Fixed issue if the configuration accidentally contains multiple Write window signals.
- > User defined functions with more than 128 arguments are supported. Up to 1000 arguments can be used now.
- > Minimized calibration windows are restored after changing the display page.

- > Feature to display numerical value is improved to consider the option „Always use configured range“ with „Engineering notation“ in the correct way.
- > The feature to display numerical value is improved: In case of data type integer and no digit after dot defined in the database definition the optimal representation of a value consider all digit left of the decimal point.
- > Improved import of configurations containing long Japanese character strings.

Communication Protocols

- > XCP on FlexRay: Improved device configuration.
- > Improved ARXML support.
- > Issue resolved if there are no application channels for FlexRay defined in the Vector Hardware configuration dialog.
- > XCP: Fixed byte order issue for static daq lists.
- > LIN: Fixed device configuration issue which lead to wrong network assignment.
- > FlexRay: Ignored signals from null frames.
- > XCP: Fixed DAQ timestamp issue for motorola byte order ECUs.
- > CAN Replay: Fixed device configuration issue.
- > XCP on FlexRay: Removed some frame type checks due to customer databases which are not spec compliant.
- > Improved message name visualization of measurement signals for GMLAN LowSpeed DBC in trace window.
- > Accepted unsorted DAQ lists from CCP IF_DATA section.

Measurement Data Acquisition

- > Recording of ECU signals is possible again after stop and restart of measurement for a single ECU using script functions.
- > XCP: Improved daq list usage calculation at measurement configuration dialog.
- > Fixed overload issue when measuring many signals via polling mode.
- > Support of VN8900 as network interface for LIN. Requires PNI driver.
- > Measurement and processing of the payload data bytes of CAN messages is supported.
- > Enabled the usage of a CAN dbc database file for multiple devices with different logical channel numbers.
- > XCP: Fixed timestamp calculation in case of measuring more than 31 kByte per event.
- > Autosave function is removed because it is not required any more to restore temporary written measurement files.
- > Fixed sporadic issue which affected stability when switching between display pages during measurement.

Offline Analysis of Measurement Files

- > Issue fixed while displaying data from measurement file and working with the measurement cursors.
- > Improved playing of multimedia files with audio and video stream and only audio stream.
- > The MATLAB export converter creates valid time raster in M files if a signal group contains only one signal.
- > Dimension lines can be configured for the time axis.
- > The time signal is saved only once if the same signal is displayed multiple and saved from graphic windows.
- > Single array element signals from a MDF4 file displays the correct value.
- > Wrong bus statistic information of XLX files from data loggers is ignored at conversion into MDF format.
- > Additional comment fields of MDF4 measurement files can be deleted.

Database

- > If the database was not saved by the user an update of addresses in ASAP2 database will be made by the next start of the project.

- > Plausibility check of ASAP2 databases will not change the value range of integers if they differ only in not significant digits from the maximum value range.
- > Loading speed of ELF linker map files is improved.
- > Verbal conversion tables are created for enumerations if a variable is created from an IEEE 695 Map file.
- > Issue with duplicate ASAP1B CCP entries in the properties dialog of database variables is resolved.
- > The time to load an ASAP2 database file is reduced significantly.
- > Hyperlink code is removed from error messages of the Database Editor at startup.
- > Fixed issue to support formulas which contains a X1 instead of a X.
- > A2L parser supports A2L files based on Version 1.61.

Calibration Data Management (Parameter Sets & CDM Studio)

- > The correct data type during comparison of two physical values is used if the option „When comparing the physical values the quantization of the data type is considered“ is selected.
- > Fixed issue to support display values of a CURVE in ASCII format if the parameter management mode is set to symbolic.
- > Fixed issue to handle incorrect configured eCDM Plug-Ins.
- > If a parameter set is opened in CANape or CDM Edit mode display the parameter set ID and the file name in the column header of CDM Studio.
- > Fixed issues in case of loading parameter set during measurement. Improved handling of display selection dialog to consider whether measurement is running or not. Added feature to deny display selection dialog.
- > Enabled the saving of parameter set files from a calibration history snapshot.
- > Read of HEX files is improved: Detection whether a parameter is inside an address range or not is adapted to which bytes are written into a HEX file for a specific parameter.
- > Fixed issue in synchronizing symbol explorer after CDM Studio is closed.
- > Added the environment bar also into the save and load configuration dialogs of CDM Studio.
- > Removed the limitation in „Load parameter set“ based on the CVX (CSV) format containing parameter data based on type ASCII.
- > Values in CDM Studio reports consider the current option of parameter value representation.
- > In the detail window of CDM Studio the correct name of the function in which a common axis is defined is displayed.
- > If the numerical detail window in CDM Studio is not pinned it displays the same content as the multimode window.
- > Improved detection whether a parameter is modified or not in case of closing the CDM Studio. The focus in the numerical detail window is improved.
- > Improved the CDM Studio internal filter „Value exceeds the standard limits“ or „Value exceeds the extended limits“ to consider axis point values too.
- > Fixed issue in calculation of compare state for items in the CDM Studio filter „All (Active variant)“.

Automation

- > Fixed issue when loading an A2L file from MCD3 server.
- > Fixed measurement data issue when using `Asap3ReadCalibrationObject()`.
- > Ensured that CANape is closed when automation client terminates.

Extended MATLAB/Simulink Support

- > Improved loading of RTW DLL based devices if the file can not be found.
- > Highlighting of Stateflow data objects in the CANape Model Explorer also if there is no ASAP2 object reference.

Calibration

- > CCP/XCP: Ensured calibration memory update after measurement timeout error.
- > Pointer based calibration methods: Fixed pointer table state issue.
- > An issue has been fixed which affected CANape configurations with lots of calibration windows (more than 100).
- > Improved stability for configurations with lots of calibration windows.

Diagnostics

- > Support VN89xx as CAN network interface.
- > Fixed issues which affected stability of functional communication.
- > Provided access to standard vFlash product from CANape main menu (requires vFlash license).

VX PlugIn

- > Integrated VX1000 RELEASE 1.5 SP 1.

Data Mining

- > Data Mining result files created by a script need not to be located under the working directory any more.

Advanced Multimedia

- > Curve type objects can be drawn in negative X direction. New GFX Editor version 2.6.0.0.

8.3 CANape 10.0 SP3

With Service Pack 3 (version 10.0.30), the following changes become effective:

User Operation and Display

- > The dialog for selecting projects shows the names of the project files to facilitate the selection of different project files in the same directory.
- > Configurations with Asian texts with more than 255 characters in one line can be loaded.
- > In the legends of Display windows the file name of the measurement file of a signal can be shown within the data column „file“.
- > The data columns with device properties can be inserted into the legends of the Display windows.
- > Additional data source information in signal names from measurement files and configurations are detected and handled compatible to the Vector tools.
- > If parameters of the Symbol Explorer are drawn on display windows, you can choose whether a measurement signal or a parameter display should be inserted.
- > Corrected physical display of the axis values of maps and curves from measurement files if the axis values have been modified during measurement.
- > Corrected physical display of very small values if display option „Fixed Decimal Place“ is set for a signal in the display window.

Communication Protocols

- > Added detailed trace interpretation for CCP.
- > XCP: Fixed issue which lead to deleted IF_DATA for user-defined transport layer DLLs.

Measurement Data Acquisition

- > Support of triggered pre- and post-time for audio signals.
- > Recording signals of a CAN message was improved if a message with smaller DLC than defined in the data base was received.
- > Splitting a measurement file into several files is even possible if the path of the parted files changes by using macros in the file name during measurement.

- > Maps with a stored amount of axis points in the ECU can be measured even though the dimension could not have been calculated while loading the configuration.
- > XCP: Fixed DAQ resume mode issue.
- > The usage of a Windows energy saving profile can be disabled for the duration of measurement.

Offline Analysis of Measurement Files

- > Support of synchronized replay of triggered multimedia files with audio and video.
- > A very rare issue on analyzing measurement signals with algebraic conversion rules is fixed.
- > The generation of the signal names by the MATLAB export converter is configurable more versatily.
- > The ASCII export converter accepts a relative starting time of the measuring data greater than 11 days.
- > When saving bus signals from MDF3 files into a new MDF4 file, the name of the bus message is taken as source information.

Database

- > The linker MAP file format of the GreenHill 2000 compiler is supported.
- > Global variables in linker MAP files of the NEC 78KOR compiler are supported.
- > In the ASAP2 Editor partial databases can be removed from the master database.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Enhanced the MATLAB templates in CDM Studio to export the number of decimal places as well as information about data type and bit length.
- > The display whether a parameter is write-protected and why was improved in the Parameter Explorer.
- > Enhanced the DCM parser for improved reading of parameters with texts also for older formats.
- > Improved the management of eCDM data of a device. The eCDM data could also be assigned to a device later.
- > The automatic extension of the address range when loading and editing a HEX file in CDM Studio has been removed.
- > Added the code generation templates in CDM Studio to export the information to the display name.
- > If allowed by its parameter description a parameter of type CURVE is set to the dimension described in the parameter set file when being loaded.
- > Introduced a new option for PaCo files which supports the storing of value blocks with more than one dimension more efficiently.

Automation

- > The script function „FindFile“ ignores hits of the search mask in automatically shortend DOS compatible 8.3 file names.
- > The execution of scripts is paused when the measurement configuration is opened.
- > Enhanced API to retrieve measurement event information.
- > Fixed issue which affected adjustment of global environment variables.

Calibration

- > Improved page switching.

Diagnostics

- > Improved stability of script execution with regard to ECU communication.
- > Improved import of CDD-files.
- > Corrected display of settings of a diagnostic device in device configuration.

8.4 CANape 10.0 SP4

With Service Pack 4 (version 10.0.40), the following changes become effective:

User Operation and Display

- > Corrected physical display of the axis values of maps and curves from measurement files if the axis values have been modified during measurement.
- > Corrected physical display of very small values if display option „Fixed Decimal Place“ is set for a signal in the display window.

Offline Analysis of Measurement Files

- > When saving bus signals from MDF3 files into a new MDF4 file, the name of the bus message is taken as source information.

Calibration Data Management (Parameter Sets & CDM Studio)

- > Introduced a new option for PaCo files which supports the storing of value blocks with more than one dimension more efficiently.

Diagnostics

- > Corrected display of settings of a diagnostic device in device configuration.

8.5 CANape 10.0 SP5

With Service Pack 5 (version 10.0.50), the following changes become effective:

User Operation and Display

- > Improved Data Logger Use Case in conjunction with video acquisition.
- > In the definition of dimension lines for templates of Y-axes, a comment text can be specified.
- > In the Digital window the value column displays the bit values of all the selected bits of a signal.
- > Scripts cannot be called recursively.
- > Improved the speed when reading linker MAP files in the ELF format.
- > At partial loading of a complete configuration the global variables are imported, too.
- > The functions PosEdge and StrictPosEdge always return 0 (false) for the first value within an algebraic expression.
- > The script functions <Device>.Start and <Device>.Stop indicate via the return value the success of the call or an error code.

Communication Protocols

- > J1939: Improvement of measurement data acquisition in long-term measurements.
- > FlexRay: Improved stability of measurement data acquisition.

Measurement Data Acquisition

- > When saving calibration operations in measurement files, the selected devices are considered.
- > Support of conversion tables with status text tables from MDF4 files.
- > Measuring and storing a single map element is possible.
- > FlexRay: Improvement of time synchronization during logging of FlexRay messages.

Offline Analysis of Measurement Files

- > Improved video file format support.
- > The export converters of measurement files support extended names for structures from MDF4 files, too.
- > The sorting of the results of a Data Mining analysis is by ascending time.
- > The MATLAB export converter exports user-defined comment fields, too.

Database

- > ASAP2 description files can be read, even if they contain an invalid alignment.

Calibration Data Management (Parameter Sets & CDM Studio)

- > When saving CDF20 files, which are opened without A2L file, the accuracy for axis point values is calculated correctly.
- > CDM Studio: If the values of a shared axis are changed, the recalculation of the value comparison is now available for all map/curves, which use this shared axis or own it as axis.
- > Improvements in the CDF20 parameter set format: Parameters, which have been read as a text but currently according to the A2L file do not reference a symbolic conversion table, are saved consistently.

Automation

- > Improved stability of the ASAP3 interface at low baud rates.
- > Improvements of the CANape API.

Extended MATLAB/Simulink Support

- > The value of a ML/SL output can now be physical or decimal.
- > Output values of a virtual signal can be used as input of further virtual signals, even if signals calculated by MATLAB-DLL have multiple outputs.

Calibration

- > When going online, the cache is synchronized also if the connection to the ECU is lost during measurement.
- > XCP: Improved behavior of the command MODIFY_BITS in case of Motorola byte order.
- > Improved the behavior of Calibration windows for the use case „Load parameter set“ for bus monitor devices.
- > Interpolation in the Calibration windows is applied to the physical values, but not to the ECU-internal values.
- > Support of very long texts in symbolic conversion tables, which are used as axis points in a curve and are displayed in graphic calibration windows.

Data Mining

- > Script functions which require user interaction and are run in the Data Mining context, generate an error message in the analysis results.

8.6 CANape 10.0 SP6

With Service Pack 6 (version 10.0.60), the following changes become effective:

User Operation and Display

- > The linkage of panel controls to bus signals from measurement files remains maintained while replacing the measurement file, even when switching between files with and without source information (message name).
- > The order of the signals in the display windows can be changed via the configuration dialog by taking the sort for any column into the window.
- > With „Display from measurement file“ the legend of the Graphic window shows the current values, even when the envelope curve calculation of the measurement file is completed.
- > The calculation of virtual measurement signals in the background is terminated when a measurement is started.
- > For digital signals with color function the envelope curve is also displayed.

Communication Protocols

- > The CAN monitor supports FIBEX files as network description file.

Measurement Data Acquisition

- > When storing measurement files with many channel groups (e.g. by measuring very many different bus messages), augmented fragmentation of measurement files is prevented.

- > FlexRay: Improved bus synchronization.
- > Improved support of FlexRay bus monitoring with regard to multiplexed frames.
- > Added bus statistic signals for AUTOSAR system description based CAN monitors.
- > Improved the start time of a measurement with a lot of signal groups (e.g., with many bus signals) and the storage in MDF4 files.

Offline Analysis of Measurement Files

- > The export converter for Matlab supports measurement files with more than 2500 channel groups.
- > With the [] operator the access to individual bytes of a string signal in measurement files is possible.
- > The new script methods GetRawByteFromSignal () and GetRawBitsFromSignal () allow access to all bytes of 64 bit integer signals.
- > Invalid parameters of script methods to edit files are intercepted.

Database

- > Linker MAP file symbols with a length of more than 255 characters are ignored.
- > The maximum dimension of maps (CHARACTERISTIC of the type VAL_BLK) in ASAP2 files can be changed in the Database Editor.
- > The Linker MAP Reader handles structures without structure elements correctly.

Calibration Data Management (Parameter Sets & CDM Studio)

- > A new option offers to prescribe for all parameter set formats whether an A2L must be specified or not, when the file is opened in the CDM Studio.
- > Changes in a parameter set, that was opened as read-only and then saved under a new name, will be detected and stored correctly.
- > The calibration history detects changes to the database description, done by an import. Then, the calibration history terminates, because the imported changes may cause invalid data.

Automation

- > In the silent mode (e.g. data logger) no error messages of recorders are displayed, even if an USB drive is removed during the measurement.
- > CANape API (COM): Introduced possibility to mark unavailable signal values (NaN).

Diagnostics

- > Diagnostics window: „Support single errors“ and „Groups“ of the service 0x14 (Fault Memory Clear).

Data Mining

- > The simultaneous use of mdfScriptFunctions DLL and the sorting of MDF files is possible.

8.7 CANape 10.0 SP7

With Service Pack 7 (version 10.0.70), the following changes become effective:

User Operation and Display

- > In Graphic windows with XY display, signal value comments are displayed at the position of their signal value.
- > In the Graphic window the text box of a signal value comment can be moved with the mouse.

Measurement Data Acquisition

- > During the sorted storage of measurement data in the format MDF4 the sizes of the data areas are adjusted to the expected data volume.
- > Measurement signals with an invalid measurement mode are ignored by the recorders when starting the measurement.
- > NI-DAQmx: Support for cyclic measurement of counter inputs tasks.

Offline Analysis of Measurement Files

- > For the display of measurement data that were measured via structures, a possible change in the structure layout is considered.

Calibration

- > Improved the cache synchronization when communication errors have occurred.

Data Mining

- > The script function to start a Data Mining analysis has new parameters to use current project settings, global variable parameter values and Thesaurus files.



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