MDA V8.6.7 – What's New

Functional Enhancements & Usability Improvements

Cumulated Slides for MDA V8.6.x Releases

MDA V8.6.7 – What's New
Overview

- **What's New for MDA V8.6.7 (December 2023)**
  - Functional Enhancements
  - Files, Formats & Data Types
  - Usability Improvements

- General Notes
  - Installed Components and System Requirements

- Candidates for Future Versions

- What's New of Former Versions of MDA V8.6.x

(Chapter names are hyperlinks)

MDA V8.6.7 – What's New

Version Overview for MDA V8.6.7 (December 2023)

ETAS

- o **Functional Enhancements** (V8.6.7)
  - – Color handling when analyzing signals from several files
  - – Instrument to display the Histogram for Battery Cell Imbalance values
  - – Enhancements for Functions:
    Access to FMU files, additional predefined calculations and calculated signal operators

- o **Files, Formats & Data Types** (V8.6.7)
  - – Usage of Values from CDFX files for calculated signals

- o **Usability Improvements** (V8.6.7)
  - – Adaptation possibilities for oscilloscope axes:
    User-definable axis names and option to define an exponential or ordinary scaling
  - – Improvements for Device Mapping dialog
  - – Display meta information for signals in no-match state

(Section names are hyperlinks)

MDA V8.6.7 – What's New

Version Overview for MDA V8.6.7 (December 2023)

– **Functional Enhancements (MDA V8.6.7)**

- Color handling when analyzing signals from several files
- Instrument to display the Histogram for Battery Cell Imbalance values
- Enhancements for Calculations:

  Easier access to FMU files

  Additional predefined calculations, like State-of-Charge, PDM / PWM Duty Cycle,

  Section-wise calculations for specific time ranges separately

  Additional calculated signal operators, e.g. calculation with reset for Integral, Average and Sum,

  Difference of time stamp values

– Files, Formats & Data Types (MDA V8.6.7)

– Usability Improvements (MDA V8.6.7)

MDA V8.6.7 – What's New

Functional Enhancements: Color handling when analyzing signals from several files (V8.6.7)

– To better distinguish signals from different files, MDA allows to define one color per file

– The new mode is triggered by the user from the File Explorer, and the color is set in an additional dialog

– All signals from the same file will be displayed using the same color

– To return to the 'color per signal' mode either the color setting is cleared in the dialog or the color for a signal is set manually

Notes:
- Instruments supporting this feature are the oscilloscope, the scatter plot, and the GPS map instrument.
- For Calculated Signals the color can be set manually by the user.

MDA V8.6.7 – What's New
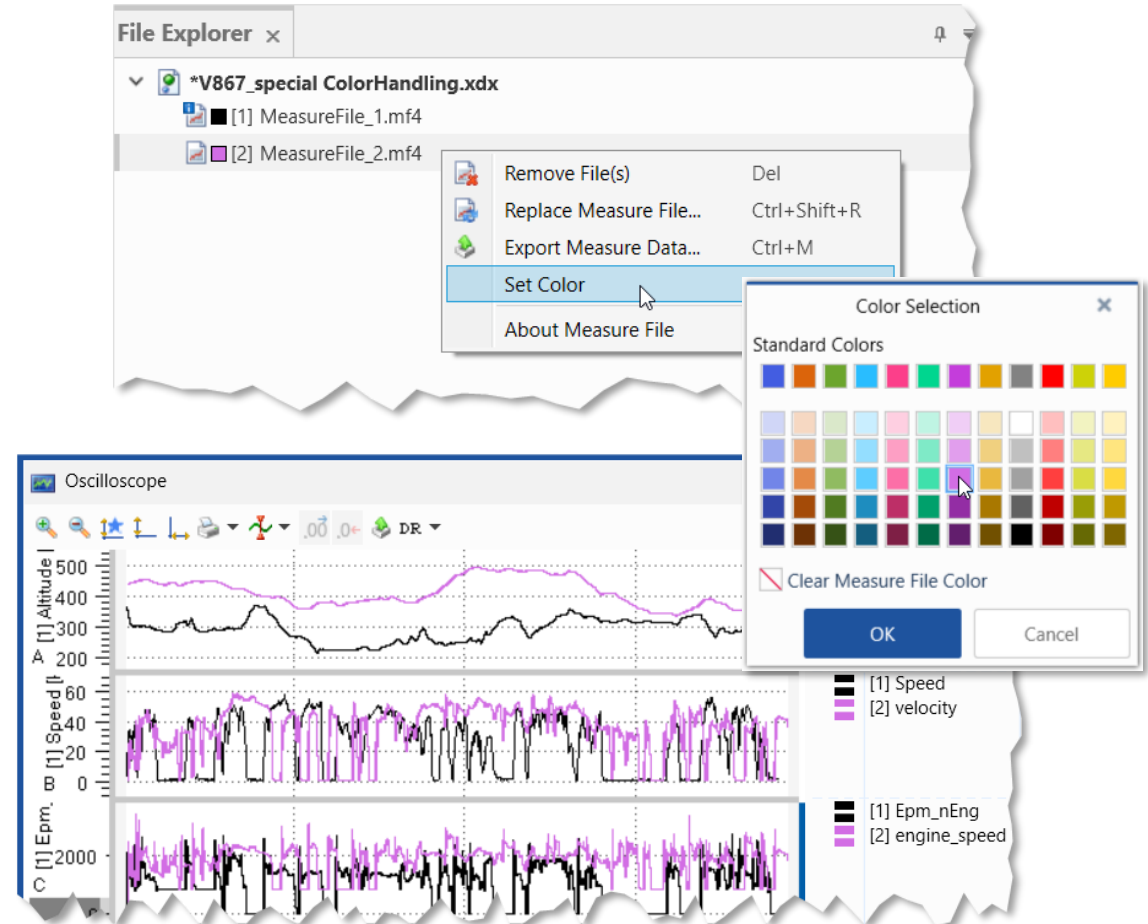
## Functional Enhancements: Histogram for Battery Cell Imbalance values (V8.6.7)

– The new Battery Imbalance Histogram shows quickly the distribution of the individual battery cell imbalance values for one specific point in time

– A tooltip lists the respective battery cell signals

– In the Properties window both number of buckets as well as their width can be defined

– Instruments synchronization is supported

For all Battery instruments:

– The header area was reworked for a better space usage and includes now the 'Total Voltage' value

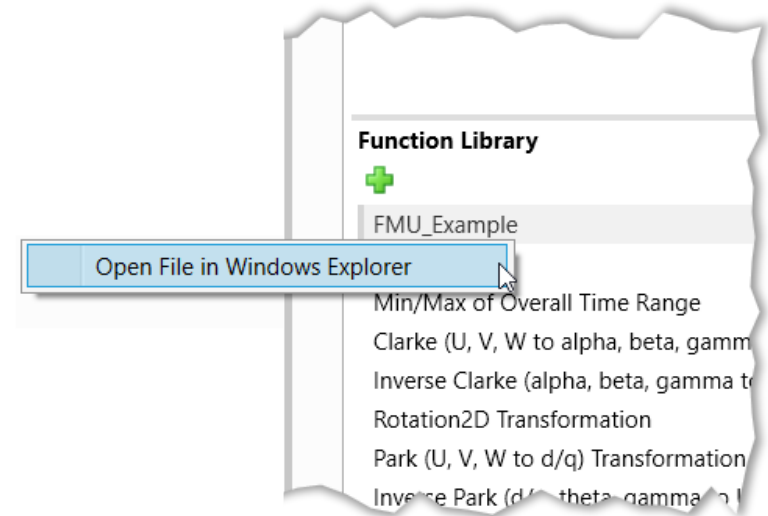– New colors for the bars were defined to improve the readability (blue = low, red = high)

Notes:
- If needed cells which exceed the range defined by the number of buckets and the bucket's width are summarized and displayed as additional buckets left and right from the defined buckets.
- Additional buckets might appear for signals with Errors, Warnings or no data.
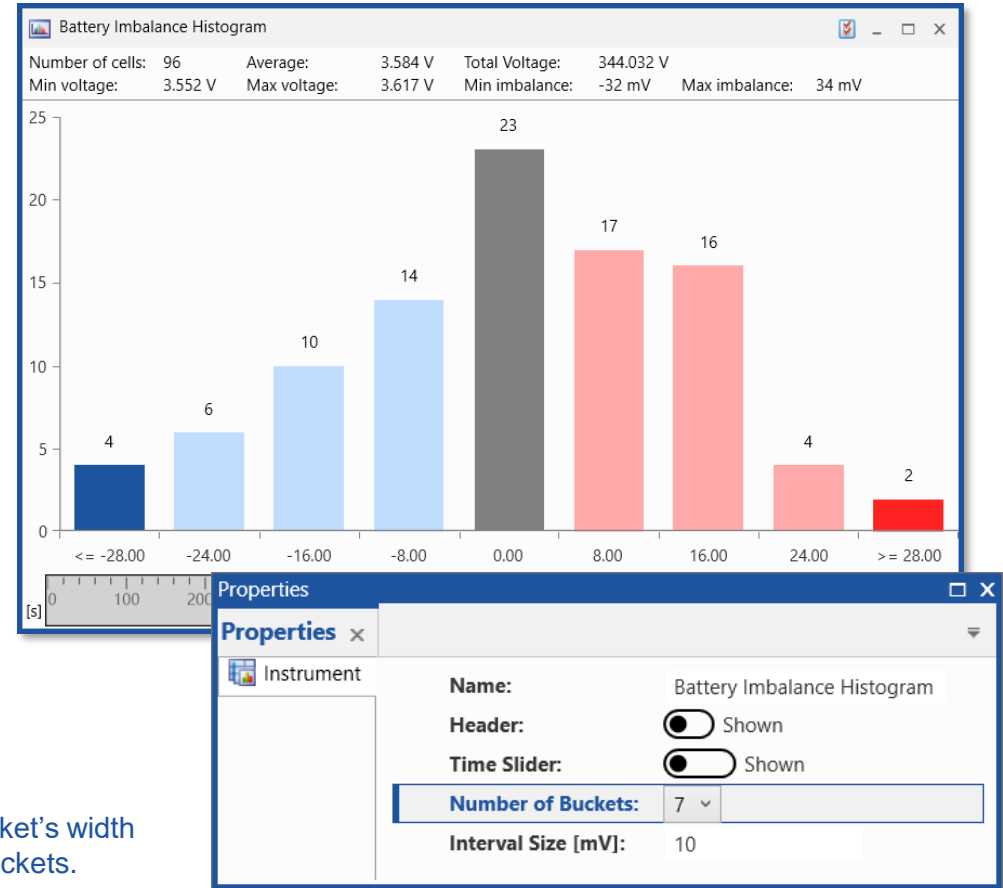
Functional Enhancements: Calculations – Access to FMU files (V8.6.7)

– To enable a direct and quick access to the FMU files used by MDA,
  a context menu is provided
– From the folder for the FMU files it is possible to
  – Delete an obsolete FMU
  – Open an editor for modifying the FMU model description
 – Copy the FMU and send it to another MDA user
  – …

Function Library

➕

FMU_Example

Open File in Windows Explorer

Min/Max of Overall Time Range
Clarke (U, V, W to alpha, beta, gamm
Inverse Clarke (alpha, beta, gamma t
Rotation2D Transformation
Park (U, V, W to d/q) Transformation
Inverse Park (d/ theta, gamma

Note:
- So far FMU files are NOT included into a configuration export file (ZDX) created with MDA.

MDA V8.6.7 – What's New

Functional Enhancements: Calculations – Additional Predefined Calculations (V8.6.7)

– Additional complex calculations can be managed comfortably by predefined calculations
  – State-of-Charge ("SoC") is offered in two variants:
    - with an SoC-Curve (voltage based)
    - with an SoC-Map (voltage and temperature based)
  – Evaluation of the Duty Cycle from a toggling signal 'Pulse Duration Modulation' (PDM, PWM)
  – Section-wise calculation
    Depending on a 'condition' (a Boolean signal) the Integral, Average, Sum, Minimum and Maximum are calculated for specific time ranges separately
  – Min / Max / Integral calculation for multiple input signals is extended to offer also Sum calculation

Note:
- 'Section-wise calculation' returns a value when the 'condition' input has a value of 1 (True).
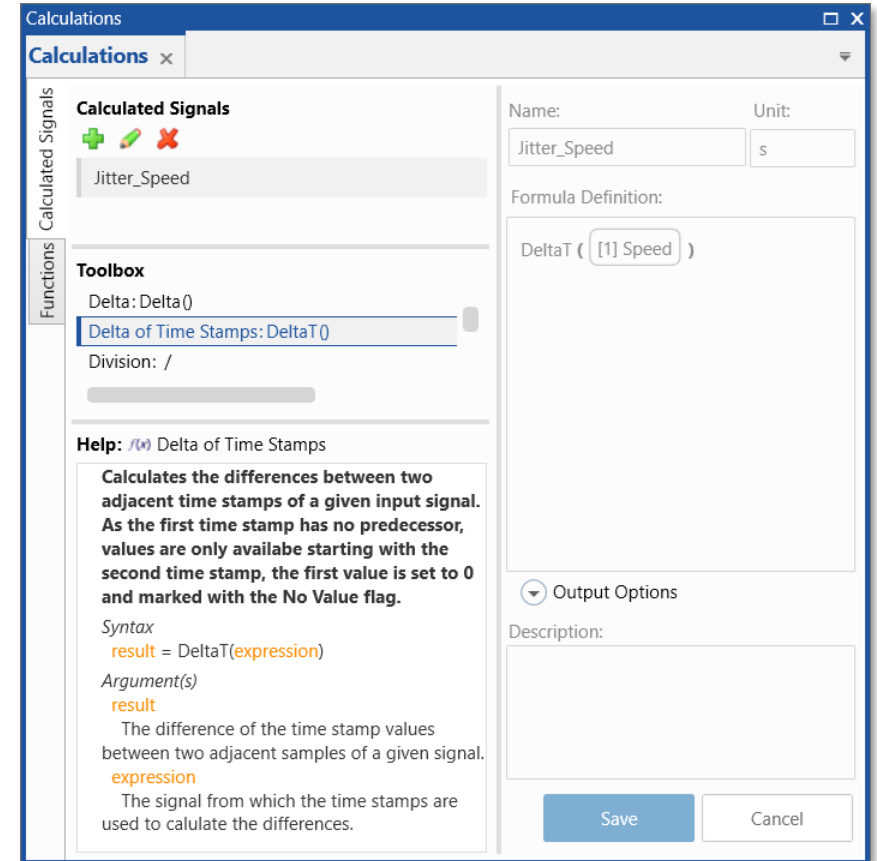
MDA V8.6.7 – What's New
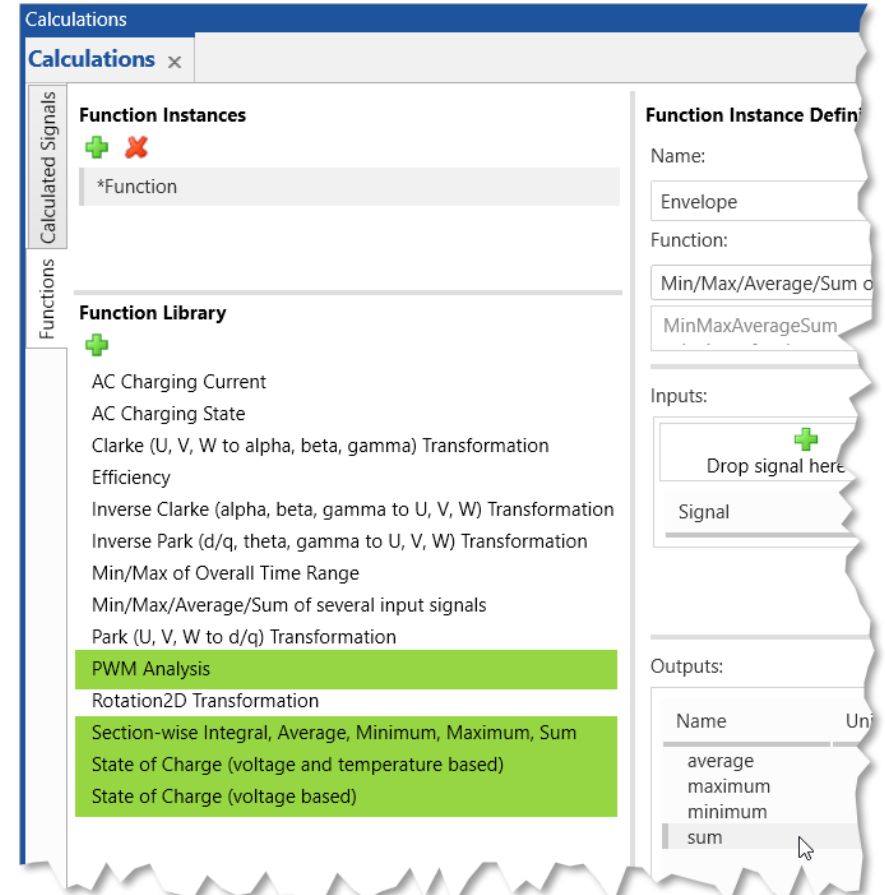
Functional Enhancements: Calculations – Additional Operators for Calculation Signals (V8.6.7)

– Calculated Signals window allows to define calculations more specifically using calculation operators

  – Reset Calculations
  Based on a Reset Signal the calculation of Integral, Average or Sum can be limited to specific time ranges
  Accumulate_Reset_Integral (input, reset signal)
  Accumulate_Reset_Average (input, reset signal)
  Accumulate_Reset_Sum (input, reset signal)

  – Difference of time stamp values
  To check more easily whether the time stamps of an input signal were provided as expected
  DeltaT (input)

Note:
- Using *Accumulate_Reset_...* in combination with a 'reset signal' resets the calculation to 0 whenever the Reset Signal has a value of 1 (True state).

MDA V8.6.7 – What's New

Version Overview for MDA V8.6.7 (December 2023)

– Functional Enhancements (MDA V8.6.7)

– **Files, Formats & Data Types (MDA V8.6.7)**
  – Usage of Values from CDFX files for calculated signals

– Usability Improvements (MDA V8.6.7)

MDA V8.6.7 – What's New

Files, Formats & Data Types: Usage of Values from CDFX files for calculated signals (V8.6.7)

– Data exchange files in the CDF format can be added to a configuration, e.g. to use its Curves and Maps for Look-Up tables of calculated signals

– With MDA V8.6.7 the support of CDF files was enhanced:

  – All kinds of calibrations variables are now listed in the Variable Explorer

  – Variables of type Value can be used as inputs for calculated signals
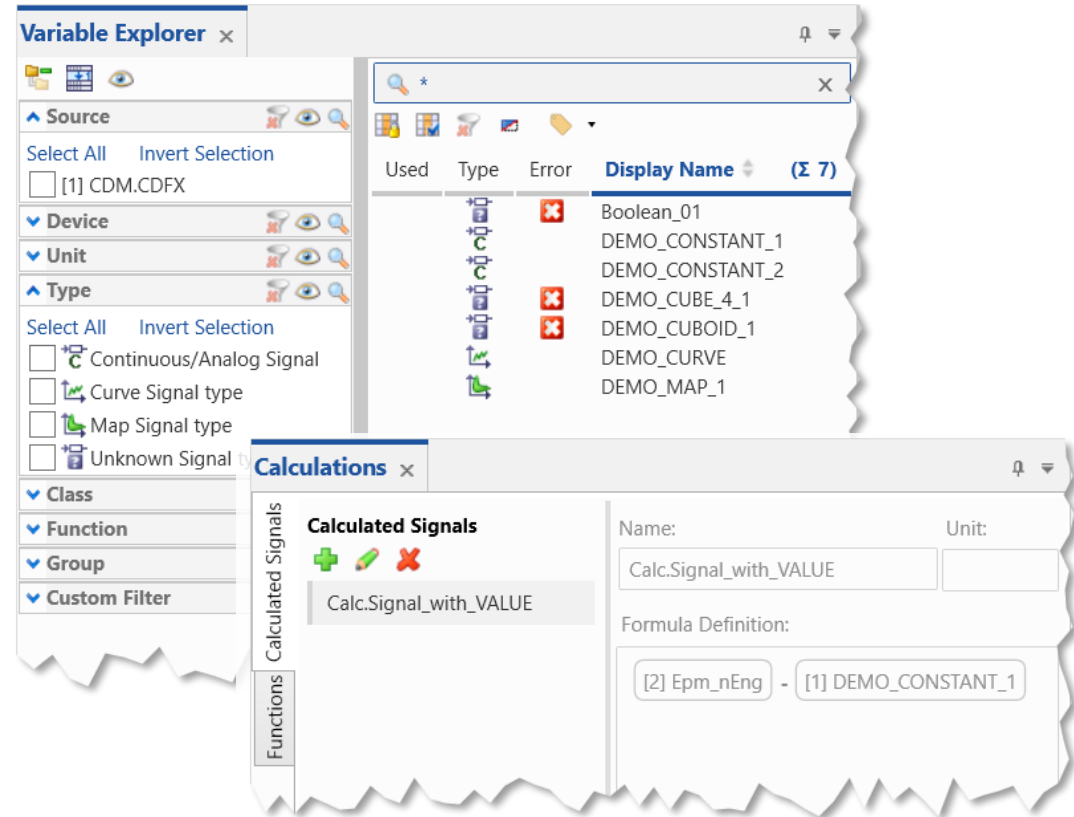
Notes:
- Other variable types than Value, Curve and Map are not supported in MDA.
- Supported variables can be used only as inputs for calculated signals. For a future version displaying of type Value in the oscilloscope is planned.
- If the Value variable is the only input of a calc. signal, a 'fixed raster' must be set in the Output Options to display the calc. signal in an oscilloscope.

MDA V8.6.7 – What's New

Version Overview for MDA V8.6.7 (December 2023)

ETAS

– Functional Enhancements (MDA V8.6.7)

– Files, Formats & Data Types (MDA V8.6.7)

– **Usability Improvements (MDA V8.6.7)**

- Adaptation possibilities for oscilloscope axes
User-definable axis names, and option to define an exponential or ordinary scaling
- Improvements for Device Mapping dialog
Wildcard (*) entries for ECUs are cleaned-up
Device Mapping dialog does not appear in case of perfect matches
- Display meta-information for signals in no-match state

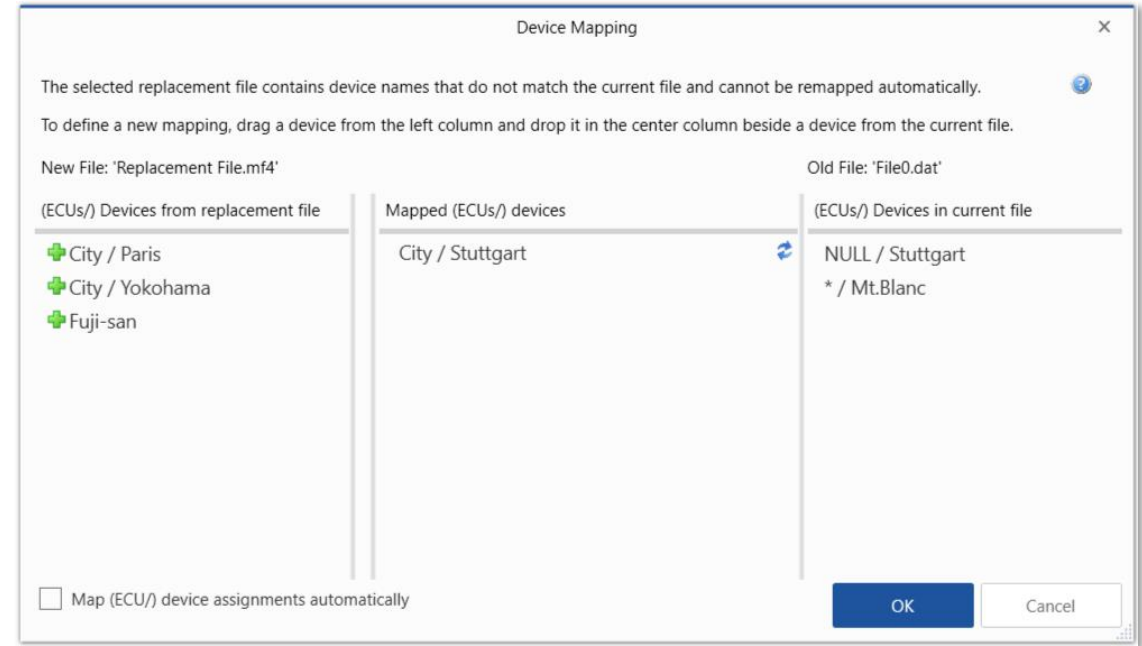Back to MDA V8.6.7 Overview

MDA V8.6.7 – What's New

Usability Improvements: Adaptation possibilities for oscilloscope axes (V8.6.7)

– To improve clarity of axes in the oscilloscope and scatter plot, MDA V8.6.6 offers new possibilities in the Axes Properties table

  – Renaming of axis
    An option allows to set a specific axis name; the new axis name is entered afterwards

  – Kind of axis scale
    Via an option it is possible
    to switch between an ordinary
    and a scientific scale

– Import of adapted axis names
  from an XDA file is supported

Properties	□ X

Properties ×						
🖿 Instrument 📈 Axes	Axis Id	Set name	Axis Name	Min Value	Max Value	Scale mode	Set as Favorite

Axis Id	Set name	Axis Name	Min Value	Max Value	Scale mode	Set as Favorite
⌃ **Strip 1**						
A	☐	[1] Altitude [meter]	885.725	959.975	Automatic ∨	★
C	☑	Particles [No. of]	10000000	20000000	Normal ∨	★
E	☐	[1] Speed [km/h]	-1.965898	42.098738	Automatic	★
⌃ **Strip 2**					Normal	
					Scientific	
B	☑	Temperatures [°C]	33.33255	393.21275	Automatic	★
D	☐	[1] EnvP_p [hPa]	22.55	908.15	Automatic ∨	★

MDA V8.6.7 – What's New

Usability Improvement: Improvements for Device Mapping dialog (V8.6.7)

– To facilitate the usage of the device mapping dialog
  two improvements were done
  – To reduce the number of the listed entries
    some clean-up is done in the background
    for entries with a wildcard *

– Criteria when Device Mapping dialog opens
  were refined for perfect matching devices
  – If after a perfect matching device assignment,
    all 'new' devices are consumed the device
    mapping dialog is skipped

Device Mapping

The selected replacement file contains device names that do not match the current file and cannot be remapped automatically.

To define a new mapping, drag a device from the left column and drop it in the center column beside a device from the current file.

New File: 'Replacement File.mf4'   Old File: 'File0.dat'

(ECUs/) Devices from replacement file	Mapped (ECUs/) devices		(ECUs/) Devices in current file
City / Paris	City / Stuttgart	⇄	NULL / Stuttgart
City / Yokohama			* / Mt.Blanc
Fuji-san			

☐ Map (ECU/) device assignments automatically   OK   Cancel

Note:
- For the ECU meta information a wildcard is created during the import of an XDA configuration. If a measure file is available, and provides a signal
  which has a wildcard for the ECU entry, the ECU entry is updated. As long as a signal can not be mapped, the ECU wildcard entry will remain.

MDA V8.6.7 – What's New

Usability Improvement: Display meta-information for signals in no-match state (V8.6.7)

- For a better information about the selected signal the oscilloscope offers for the signal list another column with the 'ECU' information
- To improve the identification of signals in no-match state all available meta information is listed in the Information Window and in the respective fields in the instruments
- Such meta information helps to decide whether another signal is an appropriate replacement or to remove the no-match signal

MDA V8.6.7 – What's New

Overview

- <u>What's New for MDA V8.6.7</u> (December 2023)
  - Functional Enhancements
  - Usability Improvements

- **General Notes**
  - Installed Components and System Requirements

- <u>Candidates for Future Versions</u>

- <u>What's New of Former Versions of MDA V8.6.x</u>

(Chapter names are hyperlinks)

General Notes

MDA V8.6.7 – What's New

Additionally Installed Components	MDA V8.4.1	MDA V8.5.7	MDA V8.6.7
.Net-Runtime-Environment [1]	V4.6.2	V4.8	V4.8
VCxRedist (V credist_x86 / V credist_x64)	VC10 + VC15 + VC17	VC15 + VC17 + VC19 [2]	VC15 + VC19 [2]
ETAS Certificate	X	X	X
ETAS License Manager (x86 / x64) [3]	V1.7.4	V1.8.5	V1.8.11
Direct X	V9	V9	V9
Others			
ETASShared (IPManager only)	13	13	14
System-Requirements			
Windows® 8.1 (64 bit)	X	X	X [4]
Windows® 10 (64 bit) [5]	X	X	X
Windows® 11	-	-	X
Windows® Server 2016 / 2019 / 2022	-	X [6]	X [6]

[1] This component is installed only when no or just an older version is installed. This is checked by a Microsoft installation routine.
[2] For Visual C++ 2019 Redistributable x64 only.
[3] ETAS License Manager is installed only in case no or just an older version of the License Manager is installed.
[4] MDA versions which will be released after December 2022 will not support Windows® 8 anymore.
[5] Supported are Windows® 10 64bit (version 1803 or higher), and Windows® 10 64bit Enterprise (LTSC 2016 or higher).
[6] Windows® Server 2016 / 2019 support given in V8.5.4; Windows® Server 2022 in V8.6.2. Usage of MDA is limited to one user at one time.

MDA V8.6.7 – What's New
Overview

o <u>What's New for MDA V8.6.7</u> (December 2023)

  – Functional Enhancements

  – Usability Improvements

o <u>General Notes</u>

  – Installed Components and System Requirements

o **Candidates for Future Versions**

o <u>What's New of Former Versions of MDA V8.6.x</u>

(Chapter names are hyperlinks)

Candidates for Future Versions of MDA

MDA V8.6.7 – What's New

– The following improvements are **candidates for future versions** of MDA8

- Export main configuration contents into XDA format for import in older MDA versions
- Reworked dialog for clearer and more flexible Replace Signal handling
- Allow to add signal(s) to multiple instruments
- Adapted Label file format with device information (V1.3 INCA dialect)
- Generate measure files: Separate lines for file path and file name in the export dialog
- Additional filter categories in the Variable Explorer for ECU, Raster, Errors and Warnings
- Improved representation of Pause Events in the oscilloscope
- Use calibration 'VALUES' from CDFX files in the oscilloscope
- Synchronization of Statistics instrument to cursor time range
- File mapping in case of import or copy&paste between configurations

Note:
This is an early information about what **might come** in a future version of MDA.
It is **no commitment** for a specific improvement in a specific version.

MDA V8.6.7 – What's New

Overview

- [MDA V8.6.6](September 2023)

- [MDA V8.6.5](June 2023)

- [MDA V8.6.4](March 2023)

- [MDA V8.6.3](December 2022)

- [MDA V8.6.2](September 2022)

- [MDA V8.6.1](June 2022)

- [MDA V8.6.0](March 2022)

(Version names are hyperlinks)   Back to MDA V8.6.7 Overview

MDA V8.6.6 – What's New
Version Overview for MDA V8.6.6 (September 2023)

ETAS

- o **Functional Enhancements (V8.6.6)**
  - Improvements for Functions
    Auto-refresh of FMU files, Time-offset for Function Outputs, additional predefined calculations
  - Additional Calculated Signals operators for Rolling Time Minimum and Maximum calculation
  - Definition and usage of a Configuration Template
  - New instrument to display for many signals the Battery Cell Imbalance values

- o **Usability Improvements (V8.6.6)**
  - Improvements for the Device Mapping dialog
  - Layers are imported in the same order as in the original configuration

(Section names are hyperlinks)

– **Functional Enhancements (MDA V8.6.6)**

- – Improvements for Functions
  Auto-refresh of FMU files, Time-offset for Outputs, additional predefined calculations
- – Additional Calculated Signals operators for Rolling Time Minimum and Maximum calculation
- – Support to define and use a Configuration Template
- – New instrument for displaying of Battery Cell Imbalance values for many signals

– Usability Improvements (MDA V8.6.6)

MDA V8.6.6 – What's New

Functional Enhancements: Improvements for Functions (V8.6.6)

– Whenever an FMU file is added, modified or deleted automatically a refresh of the FMUs is performed

– A notification informs when an FMU was added, removed, or changed

– MDA tries to identify whether for a modified FMU the signals can be assigned again

– To better support handling of unexpected situations with functions, an Error handling was introduced

– Details are given in a tooltip of the Error / Warning icon

– To define a signal time offset for function output signals the same approach is used as for ordinary signals: MDA creates a calc. signal with the time offset
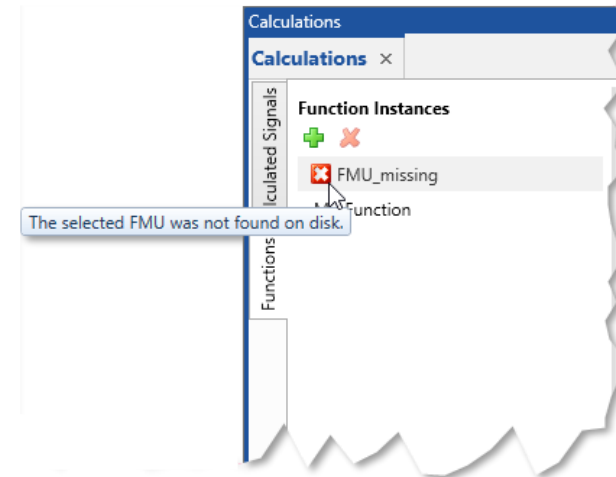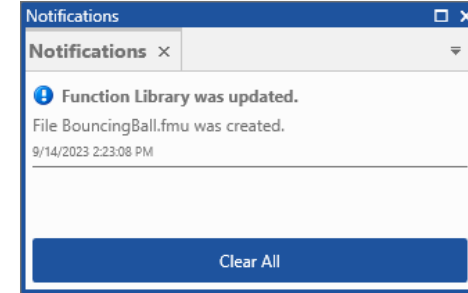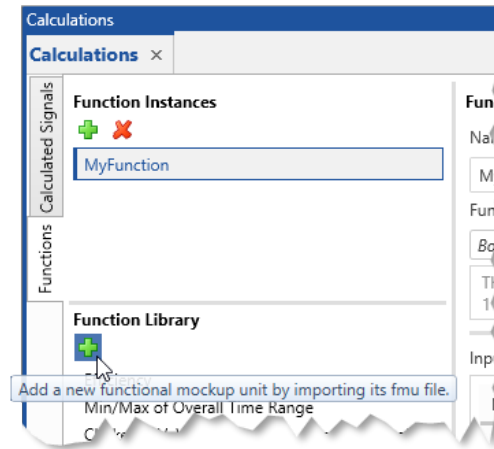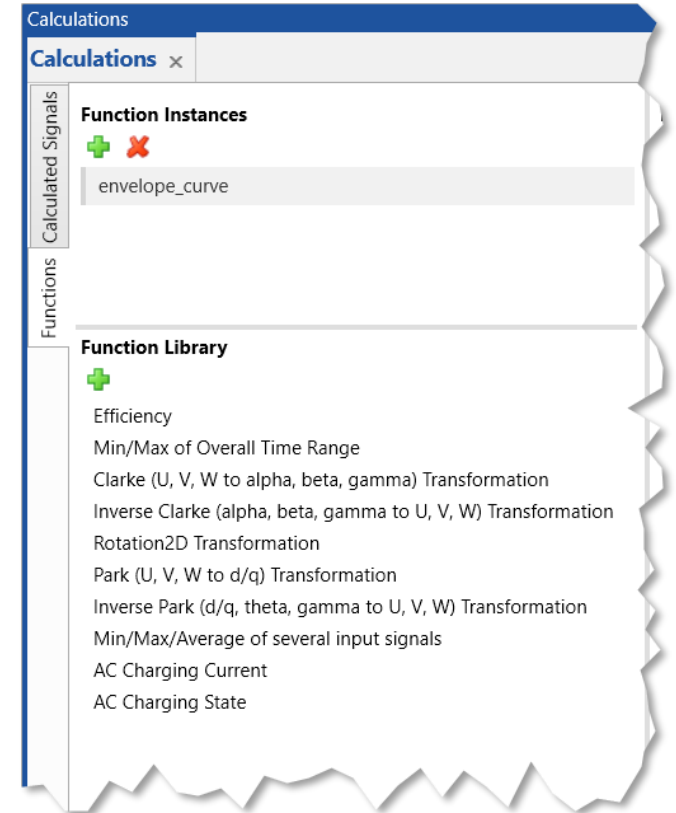
MDA V8.6.6 – What's New

Functional Enhancements: Further Predefined Calculations (V8.6.6)

– To facilitate definition of complex calculations MDA V8 includes predefined calculations:

– These require just the creation a new function instance, selection of the desired predefined calculation, and assignment of the needed input signals

– MDA V8.6.6 includes additional predefined calculations
  – Inverse Clarke & Park transformations
  – Minimum, Maximum and Average of multiple signals, e.g. to display an envelope curve in the oscilloscope
  – Analysis of the communication signal between the vehicle battery system and a charging station to evaluate the AC Charging Current and the AC Charging Status
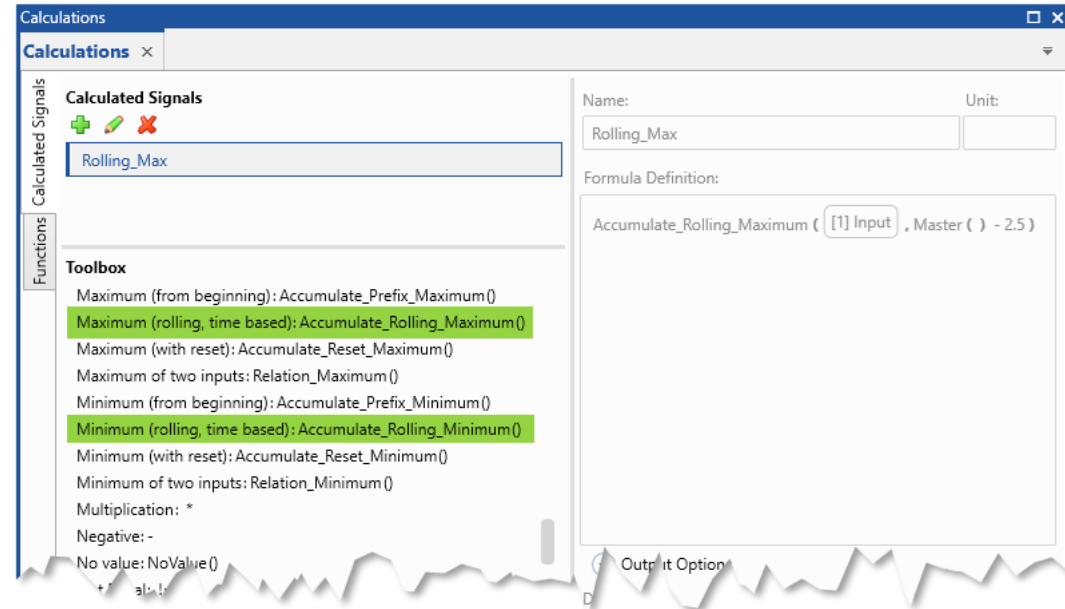
Calculations

Calculations ×

Calculated Signals

Functions

Function Instances

envelope_curve

Function Library

Efficiency
Min/Max of Overall Time Range
Clarke (U, V, W to alpha, beta, gamma) Transformation
Inverse Clarke (alpha, beta, gamma to U, V, W) Transformation
Rotation2D Transformation
Park (U, V, W to d/q) Transformation
Inverse Park (d/q, theta, gamma to U, V, W) Transformation
Min/Max/Average of several input signals
AC Charging Current
AC Charging State

Note:
- Handling of Functions for FMUs and predefined calculations was introduced in MDA V8.6.4 (see page 47) and enhanced in MDA V8.6.5 (see pages 35ff).

MDA V8.6.6 – What's New

Functional Enhancements: Additional Calculated Signals operators for Min / Max calculations (V8.6.6)

- For more flexibility when using calculated signals, two new operators for Minimum and Maximum calculations are supported
- Available Minimum and Maximum calculations:
  - "Prefix" from the very first sample

    Accumulate_Prefix_Minimum (input)

  - "Rolling" for a time window (*new feature*)

    Accumulate_Rolling_Minimum (input, window size) *

  - "Reset" depending on a Boolean input signal

    Accumulate_Reset_Minimum (input, reset signal)

Calculations

Calculations ×

Calculated Signals

Rolling_Max

Name: Rolling_Max   Unit:

Formula Definition:

Accumulate_Rolling_Maximum ([1] Input , Master ( ) - 2.5)

Toolbox

Maximum (from beginning): Accumulate_Prefix_Maximum ()
Maximum (rolling, time based): Accumulate_Rolling_Maximum ()
Maximum (with reset): Accumulate_Reset_Maximum ()
Maximum of two inputs: Relation_Maximum ()
Minimum (from beginning): Accumulate_Prefix_Minimum ()
Minimum (rolling, time based): Accumulate_Rolling_Minimum ()
Minimum (with reset): Accumulate_Reset_Minimum ()
Minimum of two inputs: Relation_Minimum ()
Multiplication: *
Negative: -
No value: NoValue ()

Output Option

* Note:
- "Window size" defines the point in time from which the calculation starts. It ends at the current point in time.
  For a rolling calculation with a window of a defined duration use "Master() – Value" wherein 'Value' is desired window time in seconds.

MDA V8.6.6 – What's New

Functional Enhancements: Definition and usage a Configuration Template (V8.6.6)

– By means of a 'Template Configuration' the same configuration setup
  can be re-used for analyzing new measure files

– From any configuration a template file (XDT) can be created
  via the new entry 'Save As Template…' of the Save icon

– The same template file can be opened multiple times,
  to create an instance of a new individual configuration (XDX)

– When a Template is opened no time consumed for loading of
  the formerly assigned file(s), instead new files can be added directly,
  and used to replace a former file in the Add or Replace dialog

– To modify an existing template, open it, modify it (if needed after having added a measure file),
  and then save it as template, thereby optionally the existing template can be over-written
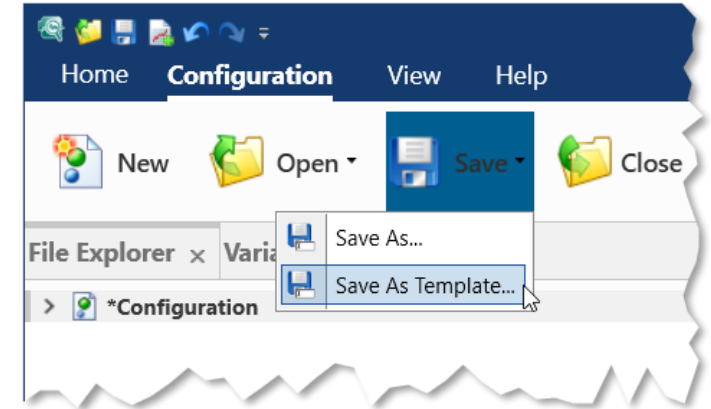
MDA V8.6.6 – What's New

Functional Enhancements: Display of Battery Cell Imbalance values for many signals (V8.6.6)

– The new instrument for Battery Imbalance evaluation
  can display all individual cells of a battery or
  a fuel cell system in parallel

– The height and color of each vertical bar represents
  the cell's imbalance, and allows a quick overview
  of the complete system for one point in time

– For a more detailed view on fewer cells, a zoom
  function is provided, and a tooltip displays data
  for the individual cell on mouse-over

– Horizontal lines indicate the imbalance minimum
  and maximum values to facilitate the evaluation

– The instrument's header summarizes some overall
  values of the assigned signals

– Synchronization with other instruments is supported
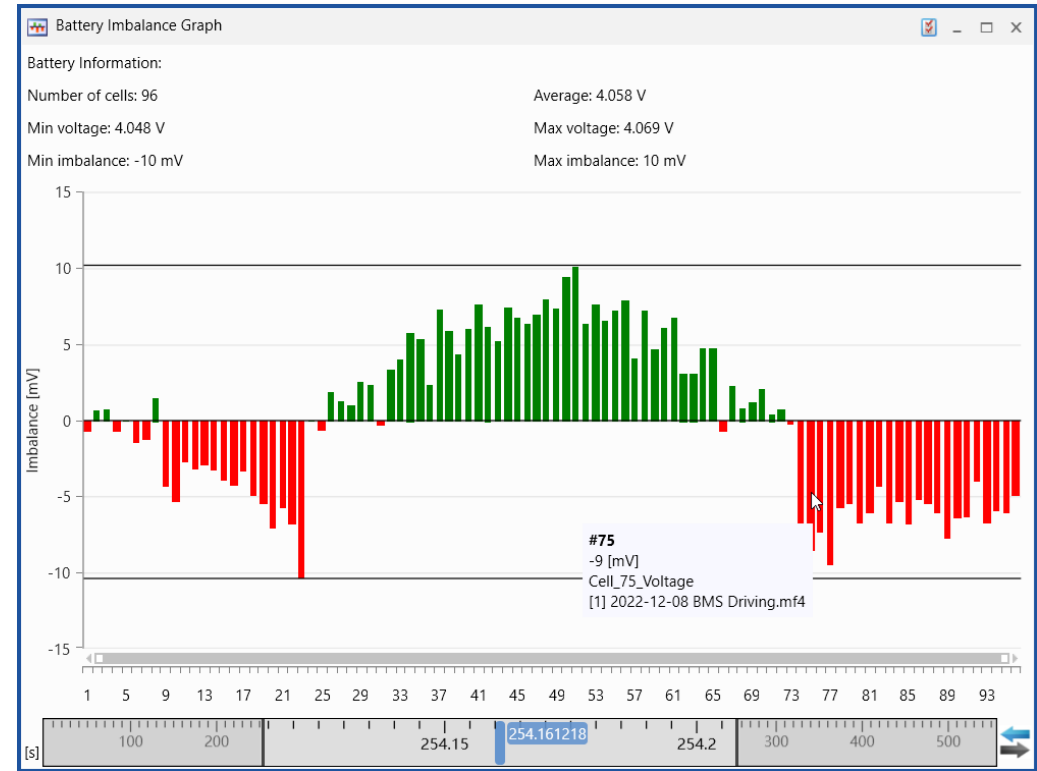
MDA V8.6.6 – What's New

Version Overview for MDA V8.6.6 (September 2023)

ETAS

– Functional Enhancements (MDA V8.6.6)

– **Usability Improvements (MDA V8.6.6)**
  – Improvements for the Device Mapping dialog
  – Layers are imported in the same order as in the original configuration

Back to MDA V8.6.6 Overview

MDA V8.6.6 – What's New

Usability Improvement: Improvements for the Device Mapping dialog (V8.6.6)

– To improve the usage of the device mapping dialog several improvements were done
  – MDA V8.6.6 performs a pre-mapping based on just the ECU name, or just the Device name
  – For more information about the mapping behavior a direct link into the online help is given
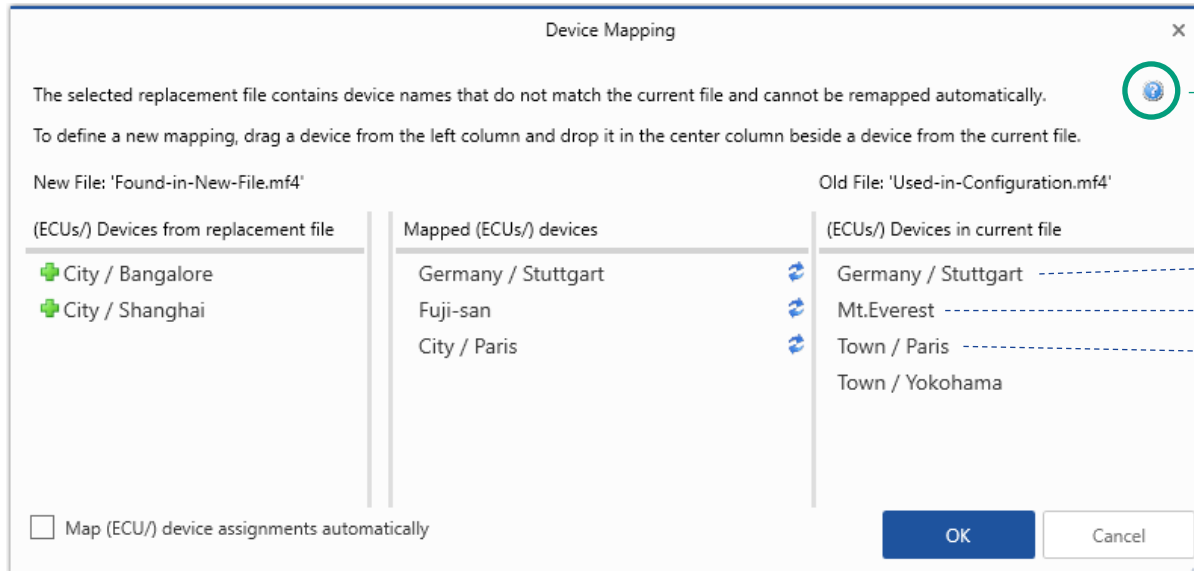
Link for more details about device mapping, and signal identification

Pre-mapping done, because
"Perfect match": ECU and Device are identical
Partial matching, same (no) ECU
Partial matching, same Device

Notes:
- Partial mapping is done only if there is no contradicting combination of ECU / Device.
- Alternatively the "Map … automatically" option can be checked. For details see page 38.

MDA V8.6.6 – What's New

Usability Improvement: Layers are imported in the same order as in the original configuration (V8.6.6)

– To make the list of objects for an import clearer, objects are sorted alphabetically in the import dialog

– But especially for layers users often have a special, not necessarily alphabetical order

– With MDA V8.6.6 layers are still listed alphabetically in the import dialog, but when being imported the layers are added in the same order as in the original configuration
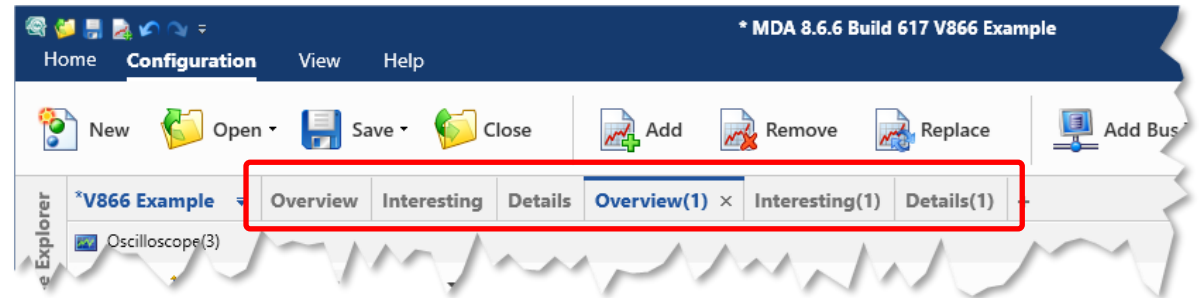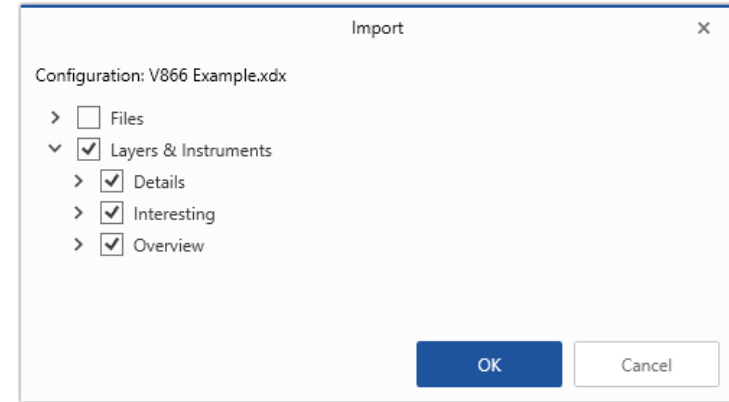
Note:
- To ensure unique object names, layer and instrument names get a number appended if needed.

MDA V8.6.5 – What's New

Version Overview for MDA V8.6.5 (June 2023)

o **Functional Enhancements (V8.6.5)**
- Improved handling of Functions
Import from XDX and ZDX, Copy& Paste of Functions instances, …
- More comfortable FMU usage
Add an FMU directly from the UI, Automatic refresh if FMUs get changed
- Additional Predefined Calculations
Minimum & Maximum for overall time range, Clarke-Park transformation
- Device Mapping dialog offers a check-box to enable automatic mapping

o **Files, Formats & Data Types (V8.6.5)**
- Option to define specific start and end characters for ASCII based measure file

o **Usability Improvements (V8.6.5)**
- New Properties table for Axes & Strips of Oscilloscope and Scatter Plot

(Section names are hyperlinks)

Back to Version Selection

MDA V8.6.5 – What's New

Version Overview for MDA V8.6.5 (June 2023)

- **Functional Enhancements (MDA V8.6.5)**

  - Improved handling of Functions
    Import from XDX and ZDX, Copy& Paste of Functions instances, …
  - More comfortable FMU usage
    Add an FMU directly from the UI, Automatic refresh if FMUs get changed
  - Additional Predefined Calculations
    Minimum & Maximum for overall time range, Clarke-Park transformation
  - Device Mapping dialog offers a check-box to enable automatic mapping

- Files, Formats & Data Types (MDA V8.6.5)

- Usability Improvements (MDA V8.6.5)

MDA V8.6.5 – What's New

Functional Enhancements: Improved handling of Functions (V8.6.5)

– To facilitate exchange and use of Functions several new functionalities are supported
  – Function instances can be copied & pasted within one and between configurations
  – Function instances can be imported from a configuration (XDX) or a zipped configuration (ZDX) file *
 – When the FMU used for the calculation is changed or updated, MDA tries to reuse the signals which were assigned as inputs
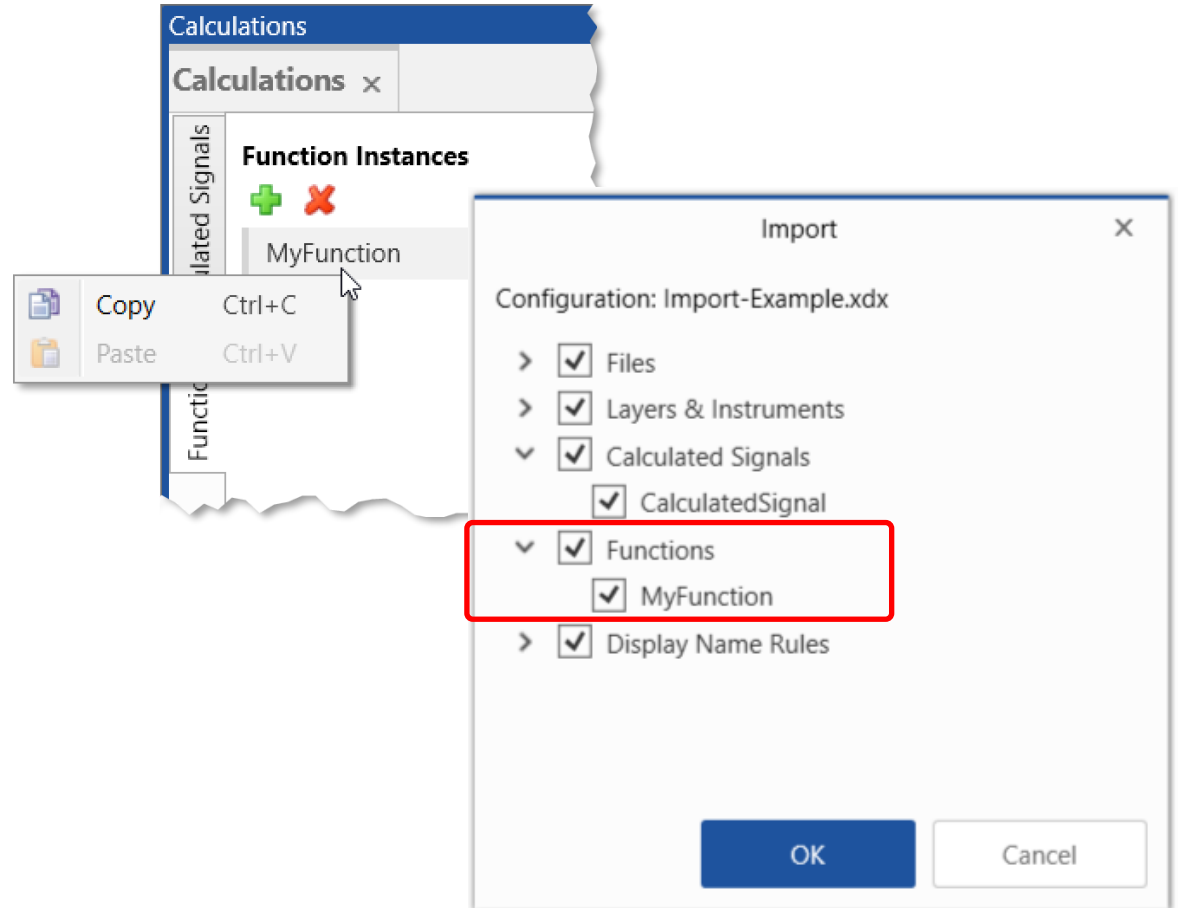
* Note:
- When importing Function Instances based on an FMU model, it must be ensured that the FMU file is available on the target computer.

MDA V8.6.5 – What's New

## Functional Enhancements: More comfortable FMU usage (V8.6.5)

– To facilitate the usage of Functional Mockup Units (FMUs)
  several improvement are implemented
  – Adding new FMU files can be done easily
    Just click the 🞧 icon in the Function Library, select a FMU file,
    and it will be saved by MDA in the respective target folder
  – Semi-automatic refresh for new or modified FMUs
    If an FMU file is added newly or is replaced by a modified version,
    an update is done when closing and re-opening the configuration
  – The tooltip of an FMU entry in the Function Library includes
    the file information to distinguish FMU models with the same name
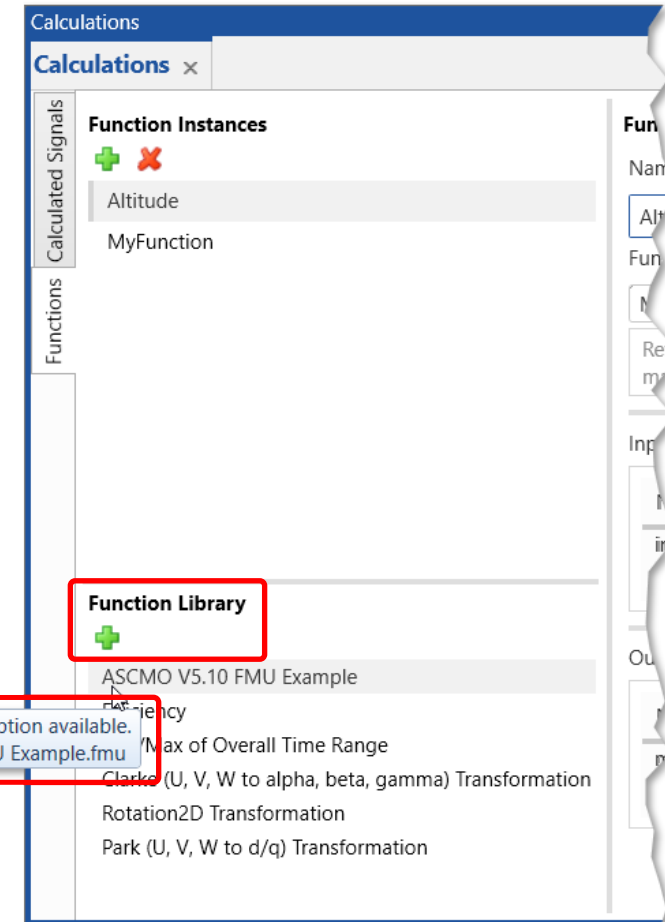
Notes:
- Target folder for FMU files is: *%ProgramData%\ETAS\MDA\8.6\CorePlugins\Etas.TargetAccess.VirtualTarget.*
- The name of the FMU file can be different from the name given in the description XML file for the FMU model.

MDA V8.6.5 – What's New

Functional Enhancements: Additional Predefined Calculations (V8.6.5)

– Additional predefined calculations are provided in MDA to enable comfortable and easy-to-use calculations

  – Absolute Minimum and Maximum values of one signal for the overall time range

  – Clarke and Park transformations to convert signals from a 3-phase system (e-motor) into space vectors for simplifying the system analysis

  – Rotational 2D Transformation to convert rotational into stationary coordinates
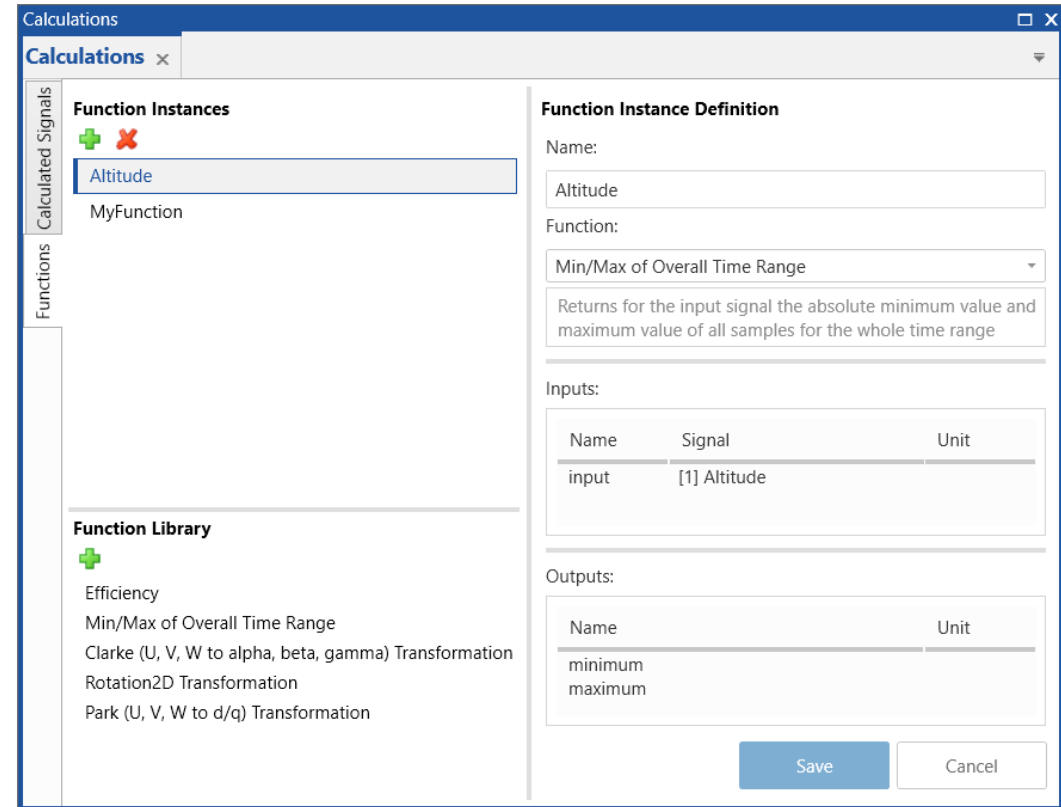
Note:
-   Published by Edith Clarke (1938-1939), resp. Robert H. Park (1929)

MDA V8.6.5 – What's New

Functional Enhancements: Device Mapping dialog – Check-box to enable automatic mapping (V8.6.5)

– In complex configurations often multiple combinations of ECUs and Devices exist
– Since MDA V8.6.4 the Device Mapping dialog forces the user to do a clear 1-to-1 assignment for ECU-Device combinations
– This is not always desired
– To enable an automatic mapping *
  a new check-box is offered
– If checked, user-defined assignment is blocked, and automatic mapping can distribute signals which originated from the same ECU-Device group to different ones

Device Mapping ✕

The selected replacement file contains device names that do not match the current file and cannot be remapped automatically.

To define a new mapping, drag a device from the left column and drop it in the center column beside a device from the current file.

New File: 'File3_2xTown+Mountain.mf4'   Old File: 'File2_Town+Mountain.mf4'

(ECUs/) Devices from replacement file	Mapped (ECUs/) devices	(ECUs/) Devices in current file
➕ City / Shanghai		City / Bangalore
➕ City / Yokohama		Mt.Everest
➕ Fuji-san		

☐ Map (ECU/) device assignments automatically

OK   Cancel

* Notes:
- The automatic mapping behaves as in MDA V8.6.3.
- Automatic mapping will eventually just consider the signal name for signal mapping. But even with automatic mapping signals with the same name which originate from different (ECU/) devices will not be merged to the same (ECU/) device. This means the signals might end up in no-match state.

MDA V8.6.5 – What's New

Version Overview for MDA V8.6.5 (June 2023)

– Functional Enhancements (MDA V8.6.5)

– **Files, Formats & Data Types (MDA V8.6.5)**
  – Option to define specific start and end characters for ASCII based measure file

– Usability Improvements (MDA V8.6.5)

MDA V8.6.5 – What's New

Files, Formats & Data Types: Additional option for ASCII based textual measure files (V8.6.5)

- To better support customer-specific ASCII based textual measure files new options are available
- These options allow to specify a start character as well as an end characters for the rows
  - When reading the file, the characters are ignored
  - When writing a file, the characters are added


```
Start-End_Characters-Example.sec

  1   Example File for Start/End Characters
  2   €Time;IMLATM;N10;LAMBDA$
  3   €;ETK;ETK;ES630$
  4   €s;kg;Upm;$
  5   €232.61504000000002;3.1914728999999999;1810;0.9199999999999993$
  6   €232.63424000000001;3.1914728999999999;1890;0.9199999999999993$
  7   €232.63800000000001;3.1914728999999999;1890;0.9199999999999993$
  8   €232.65408000000002;3.1971617999999999;1990;0.9199999999999993$
  9   €232.67520000000002;3.1971617999999999;2060;0.9199999999999993$
 10   €232.68900000000002;3.1971617999999999;2060;0.9399999999999995$
 11   €232.69504000000001;3.1971617999999999;2170;0.9399999999999995$
 12   €232.71488000000002;3.1971617999999999;2260;0.9399999999999995$
 13   €232.73472000000001;3.1971617999999999;2360;0.9399999999999995$
 14   €232.74000000000001;3.1971617999999999;2360;0.9439999999999995$
 15   €232.75456000000003;3.1971...999999...2460...
```

```
201
202
203   ; Start marker of a row
204   ; Optional. Default is no start marker.
205   ; Defines whether one or more specific characters are used to define the beginning of a row.
206   ; It can be added at the beginning of a data row or a row with signal meta information.
207   ;startRowMarker="[Start Marker]"
208
209   ; End marker of a row
210   ; Optional. Default is no end marker.
211   ; Defines whether one or more specific characters are used to define the end of a row.
212   ; It can be added at the end of a data row or a row with signal meta information.
213   ;endRowMarker="[End Marker]"
```

```
MS ini file        length : 10.725   lines : 213        Ln : 197   Col : 15   Pos : 10.117        Windows (CR LF)    UTF-8    INS
```

Notes:
- Start character and end character can be different.

MDA V8.6.5 – What's New
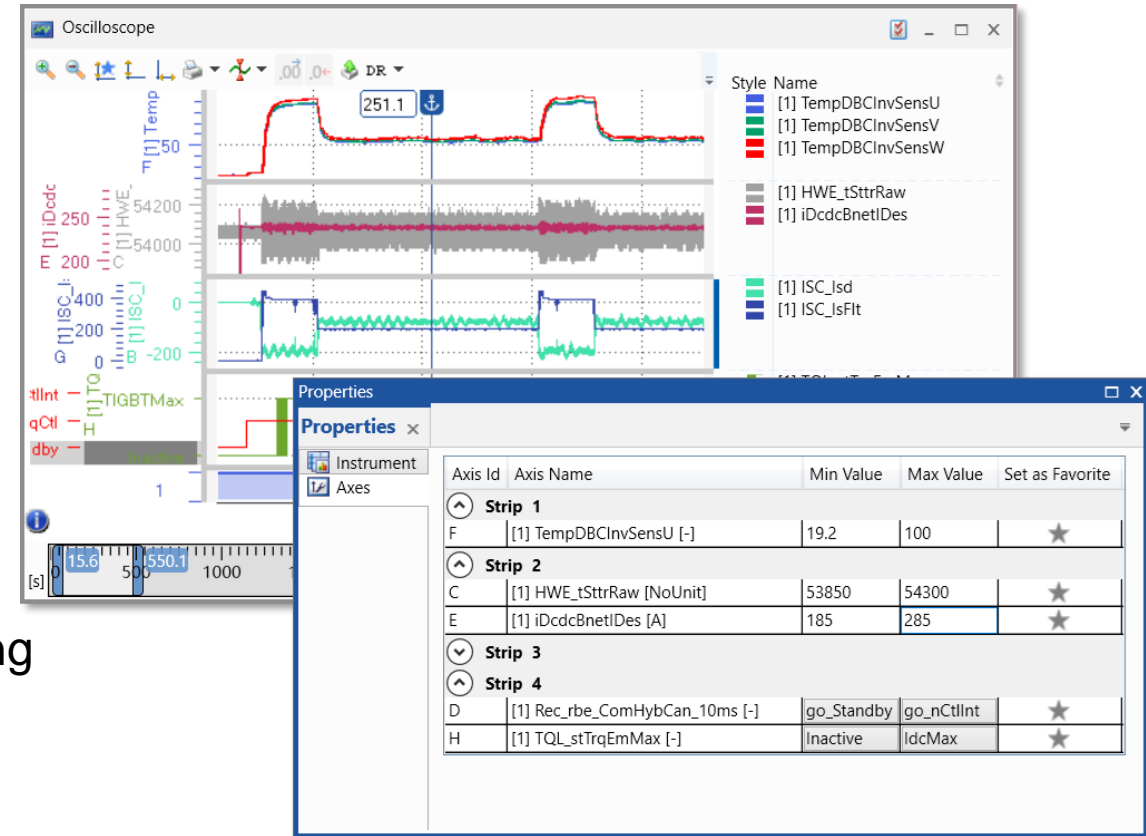## Version Overview for MDA V8.6.5 (June 2023)

– Functional Enhancements (MDA V8.6.5)

– Files, Formats & Data Types (MDA V8.6.5)

– **Usability Improvements (MDA V8.6.5)**
  – New Properties table for Axes & Strips of Oscilloscope and Scatter Plot

Back to MDA V8.6.5 Overview

MDA V8.6.5 – What's New

Usability Improvement: New Properties table for Axes & Strips of Oscilloscope and Scatter Plot (V8.6.5)

– Existing Axes Properties table was reworked
  to better display the axes in an oscilloscope
  or a scatter plot
  – Strips are listed from top to bottom and
    the axes included in the respective strip
  – Values for the axes ranges can be entered
    depending on the data representation

– The table is a preparation for a future MDA
  versions to enable additional functionality,
  like axis renaming, axis rearrangement, switching
  between normal and exponential axis scaling …

Notes:
- For Boolean strips no entry is shown.
- The x axis of a scatter plot appears always on top as "Strip 0".

MDA V8.6.4 – What's New

Version Overview for MDA V8.6.4 (March 2023)

ETAS

o **Functional Enhancements (V8.6.4)**
  – Replacement of files with multiple device supported by Device Mapping dialog
  – Calculations using ASCMO model FMUs are supported

o **Files, Formats & Data Types (V8.6.4)**
  – Read & Write support of LAB File formats V1.2 and V1.3
  – Correct connection line for signals with time gaps
  – Improved handling of invalid samples at the beginning of a file
  – Option for a separate row with device information for ASCII based measure files

o **Usability Improvements (V8.6.4)**
  – Replace a Measure File via Drag&Drop from Windows Explorer
  – Exactly matching signal names of an 'Insert' operation are listed on top
  – Context menu entries in the oscilloscope strips to re-arrange strips
  – Handling when trying to open an MDA configuration multiple times
  – Sorting in Variable Explorer supported by more columns

Back to Version Selection

MDA V8.6.4 – What's New

– **Functional Enhancements (MDA V8.6.4)**

    – Replacement of files with multiple device supported by Device Mapping dialog

    – Calculations using ASCMO model FMUs are supported

– Files, Formats & Data Types (MDA V8.6.4)

– Usability Improvements (MDA V8.6.4)

MDA V8.6.4 – What's New

Functional Enhancements: Replacement of files which require 'Device Mapping' (V8.6.4)

- Reuse of MDA configurations was improved to better support measure files which include signals having the same name but derive from several devices
- A Device Mapping dialog appears which allows the user to define how the devices shall be mapped after a file replacement was triggered
- The dialog lists combinations of ECU / Device
- On the left side the ECU / Device combinations of the new measure file are listed, on the right side these of the used signals from the old file
- For mapping an entry from the left is simply dropped into the central column of the desired target row

Device Mapping ×

The selected replacement file contains device names that do not match the current file and cannot be remapped automatically.

To define a new mapping, drag a device from the left column and drop it in the center column beside a device from the current file.

New File: 'MeasureFile_2.mf4'   Old File: 'MeasureFile_1.mf4'

(ECUs/) Devices from replacement file	Mapped (ECUs/) devices	(ECUs/) Devices in current file
➕ ECU1 / ETK-1		ECU1 / ETK-A
	ECU1 / ETK-2 ⟳	ECU1 / ETK-B
		GPS

[OK]   [Cancel]

Notes:
- If multiple files were defined for a replacement operation (e.g. in the Add-or-Replace dialog) the Device Mapping dialog can appear multiple times.
- Objects imported from an XDA file, will usually cause device entries which show additionally a wildcard for the ECU marked as "*".

MDA V8.6.4 – What's New

Functional Enhancements: Calculations using ASCMO model FMUs are supported (V8.6.4)

- According to FMI standard "Functional Mock-up Units" (FMUs) can be created which describe calculation models
- ASCMO FMUs can be used for calculations in MDA V8.6.4
- To use the predefined calculations of an FMUs, a new docking window named 'Functions' is introduced
- Available FMUs are listed in the 'Function Library'
- After an FMU is selected as function input signals need to be assigned, and the outputs of the function are calculated
- The outputs appear in the Variable Explorer and are usable like other signals from a file or calculated signals

Notes:
- FMI Standard V2.0 is supported. FMUs must include a 'DefaultExperiment' block.
- FMUs of ASCMO models created with V5.8 or higher are supported.
- FMU files must be stored under
  %ProgramData%\ETAS\MDA\8.6\CorePlugins\Etas.TargetAccess.VirtualTarget
- Parameters i.e. constant scalar figures are not supported as inputs in the current implementation.
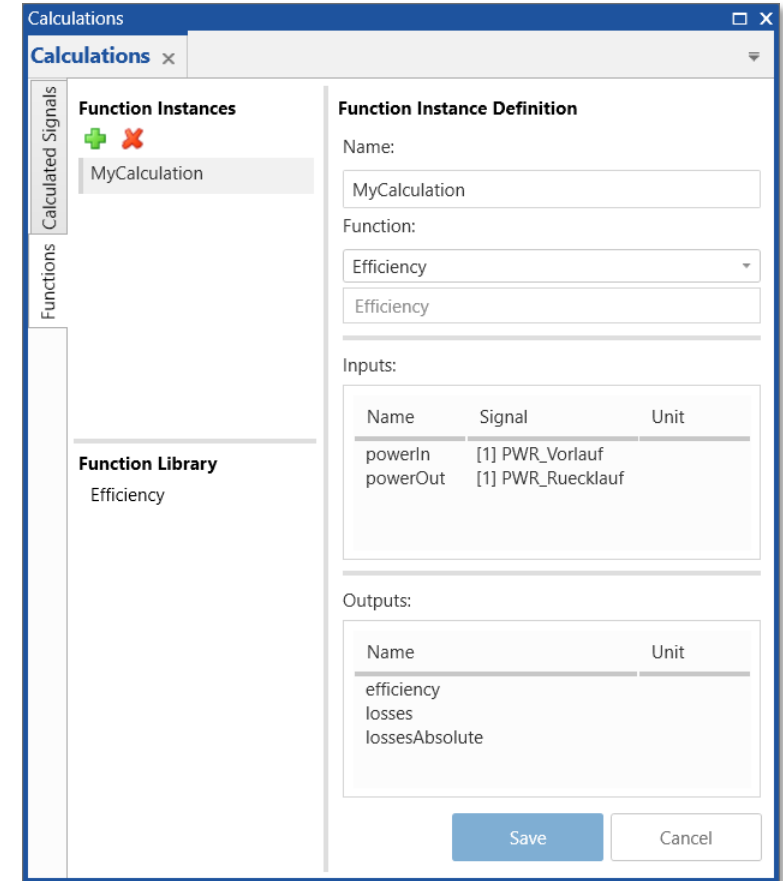
– Functional Enhancements (MDA V8.6.4)

– **Files, Formats & Data Types (MDA V8.6.4)**

  – Read & Write support of LAB File formats V1.2 and V1.3
  – Correct connection line for signals with time gaps
  – Improved handling of invalid samples at the beginning of a file
  – Option for a separate row with device information for ASCII based measure files

– Usability Improvements (MDA V8.6.4)

MDA V8.6.4 – What's New

Files, Formats & Data Types: Read & Write support of LAB File formats V1.2 and V1.3 (V8.6.4)

– To facilitate re-selecting of signals in INCA or MDA so-called LAB files can be used

– Starting with pure signal names in LAB file format V1.0 the following additional information can be included

  – V1.1: raster information
  – V1.2: key variable list (additional to V1.1)
  – V1.3: device information (additional to V1.2)

– MDA V8.6.4 supports writing of all listed LAB file formats

– Reading a LAB file and using it as filter in the Variable Explorer is possible *

* Notes:
- When using a LAB file as filter in the Variable Explorer, just the signal name is used as filter criterion. Combination with other filter categories (like raster, device, or function) can be used independently.
- Creation of LAB files can be done directly from the Configuration Manager, or by selection of the LAB file format in the Export Measure Data dialog.
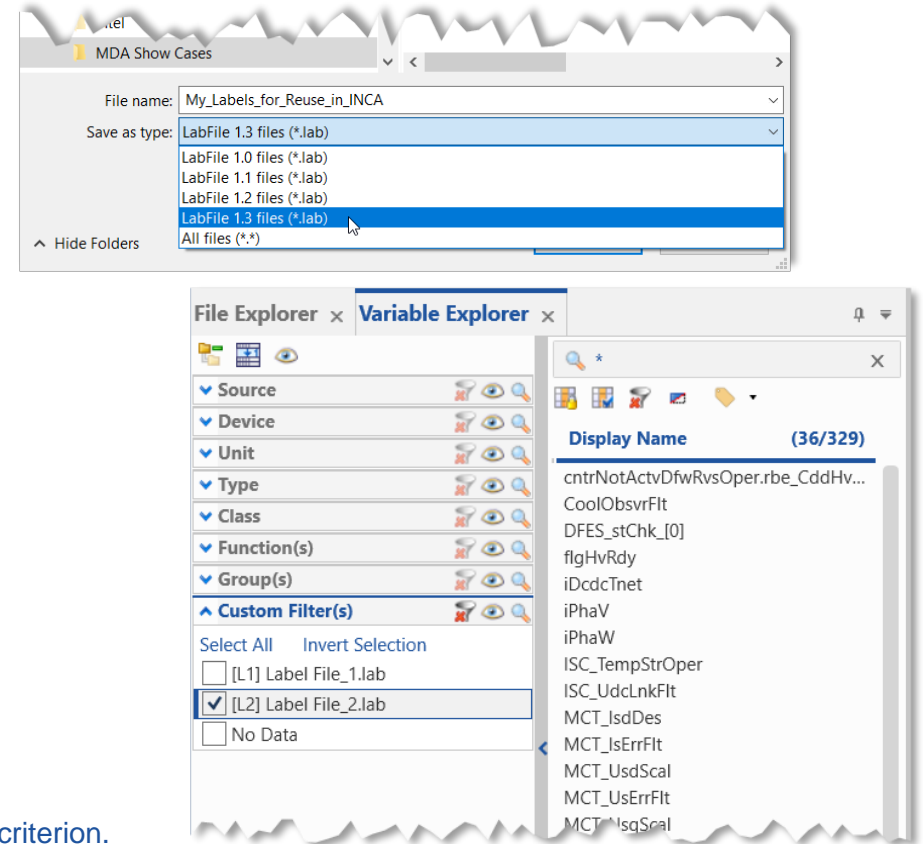
MDA V8.6.4 – What's New

Files, Formats & Data Types: Correct connection line for signals with time gaps (V8.6.4)

- For high performance of displaying signal curves in the oscilloscope usually reduced data is used
- Reduced data provides per pixel column on the screen only Minimum and Maximum values
- Along time areas in which no samples exist ('gap') this results often in a misleading connection line
- With MDA V8.6.4 the detection of gaps is extended to analog signals, and optionally detailed data from the measure file is requested
- Based on the detailed data the last available sample on the pixel left from a gap can be found, and an accurate connection line is drawn
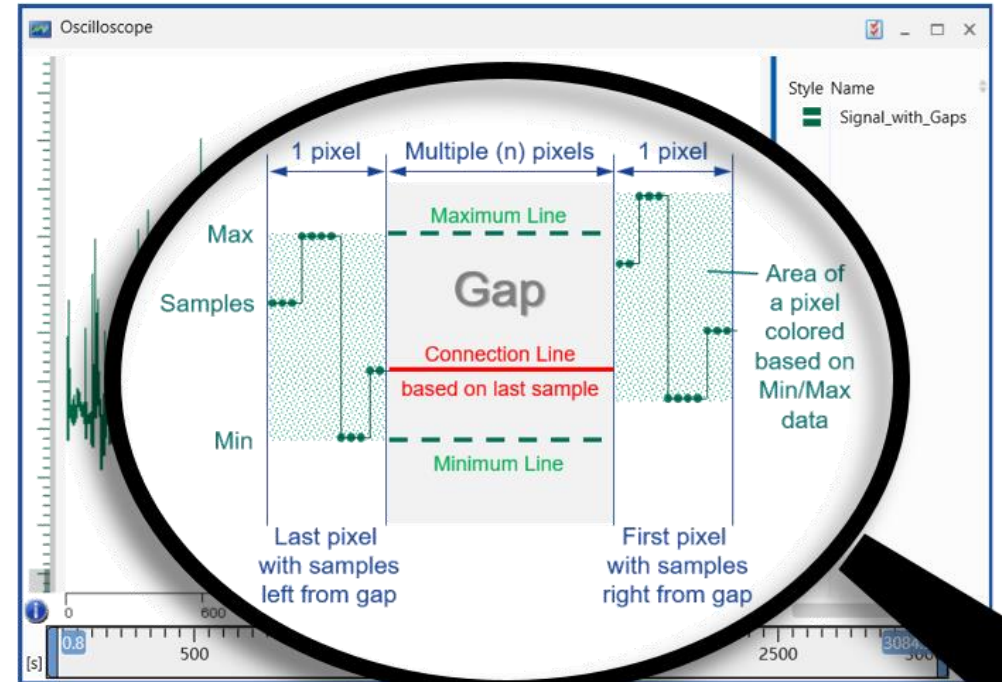
Notes:
- Gap detection was introduced in MDA V8.5.3 for signals with discrete data types, like Booleans, Enumeration signals, and signals assigned to a Boolean strip.
- For curve drawing first reduced data is used, then gap detection and re-fetching of detailed (i.e. raw) data is done.
  For signals having time gaps a delay might be noticed until the accurate curve is drawn, which depends on performance of file access, file size, etc.

MDA V8.6.4 – What's New

Files, Formats & Data Types: Handling of invalid samples at the beginning of a file (V8.6.4)

- In MDF V4 files individual samples can be 'invalid'
- Invalid samples are not drawn in the oscilloscope, and indicated in a table by a red exclamation mark
- An invalid sample causes that the resulting sample of a calculated signal gets invalid as well
- For calculations with a history (like average, …) all subsequent calculated samples are invalid

- If MDA V8.6.4 identifies that for a signal the invalid samples are just at the beginning of the file, then the invalid samples are interpreted as 'not available', and ignored in calculations
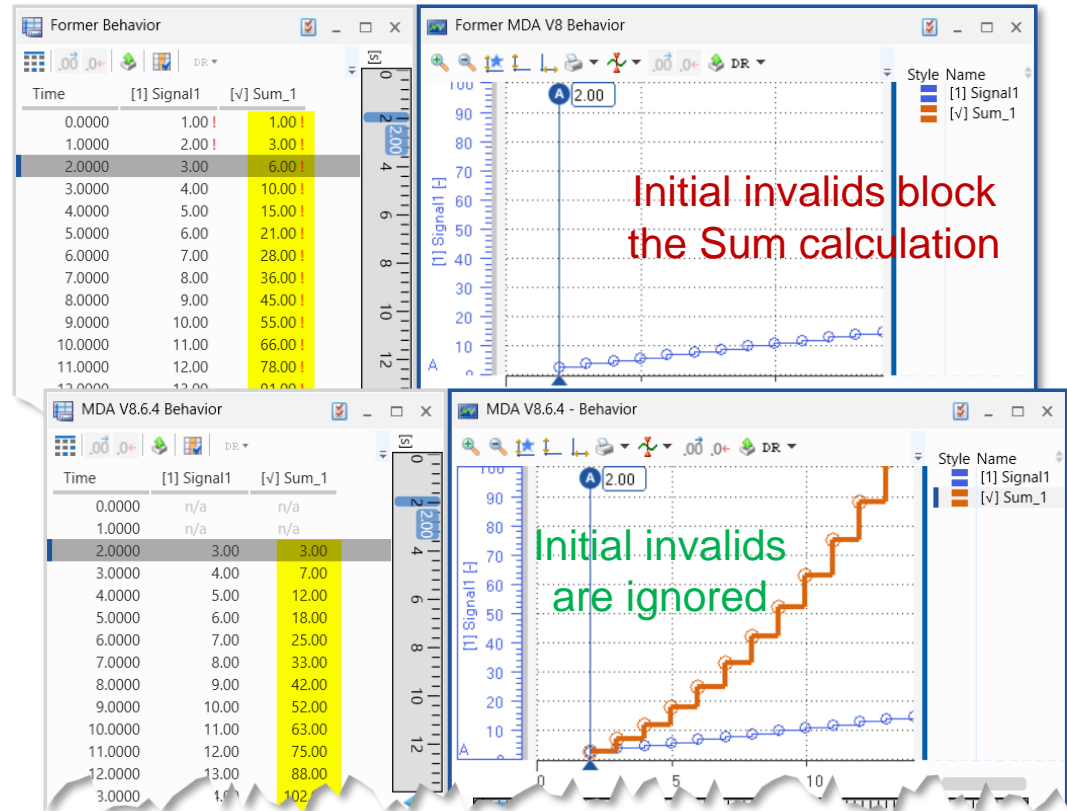
Notes:
- MDF V4 Standard defines 'invalid' flags only, but does not know 'not available' flags.
- MDF V3 Standard does not know 'invalid' or 'not available' flags at all.

MDA V8.6.4 – What's New

Files, Formats & Data Types: Row with device information for ASCII based measure files (V8.6.4)

– To include into ASCII based textual measure files more meta information about signals a new option is introduced
– By means of "deviceRow" the device name is added per signal but separately from the signal name

– Accordingly in MDA V8.6.4 the default MRF.INI file was modified to include by default the device name in a separate row

Notes:
- For customer-specific textual file formats an example file including a description of the format options can be found at:
  %ProgramData%\ETAS\MDA\8.6\CorePlugins\Etas.TargetAccess.Targets.MeasureFile.Formats.AsciiConfigurable
- The customer-specific INI files should also be stored there. Ensure that for each file format a different extension is used.

MDA V8.6.4 – What's New

Version Overview for MDA V8.6.4 (March 2023)

– Functional Enhancements (MDA V8.6.4)

– Files, Formats & Data Types (MDA V8.6.4)

– **Usability Improvements (MDA V8.6.4)**
  – Replace a Measure File via Drag&Drop from Windows Explorer
  – Exactly matching signal names of an 'Insert' operation are listed on top
  – Context menu entries in the oscilloscope strips to re-arrange strips
  – Handling when trying to open an MDA configuration multiple times
  – Sorting in Variable Explorer supported by more columns

[Back to MDA V8.6.4 Overview](#)

MDA V8.6.4 – What's New

Usability Improvement: Replace a Measure File via Drag&Drop from Windows Explorer (V8.6.4)

– For a quick and direct replacement of a measure file
MDA V8.6.4 supports Drag&Drop of a file from Windows
Explorer onto the desired file to be replaced in MDA
– The 🔄 icon indicates whether the replacement is possible
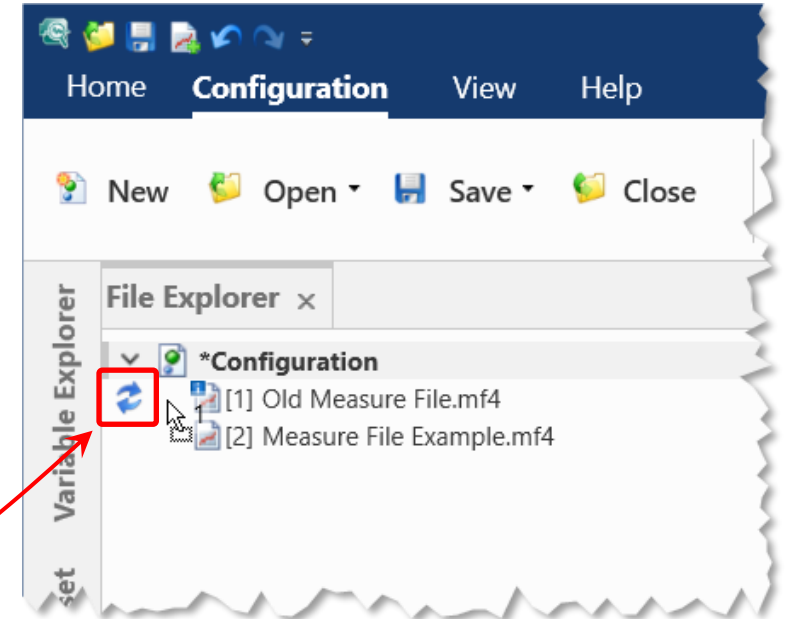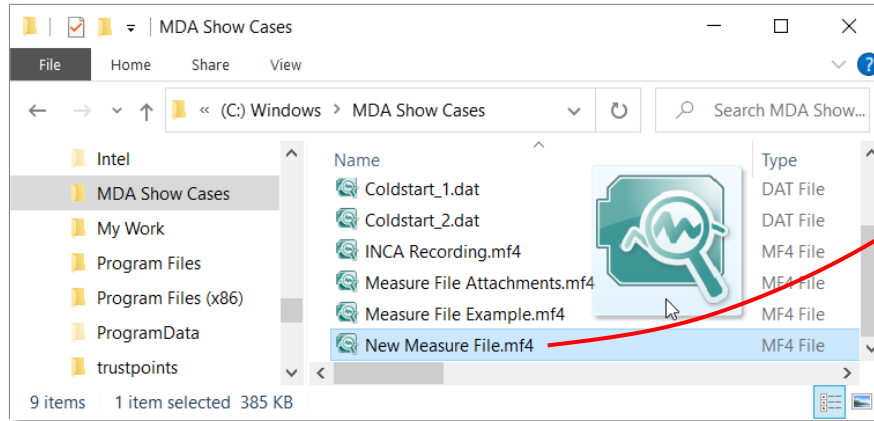
Notes:
- Only one file can be dragged & dropped for a direct replacement in one step.
- To add one or multiple files to a configuration drop these onto the configuration name entry in the File Explorer.

MDA V8.6.4 – What's New

## Usability Improvement: Exact matching signals of 'Insert' operation are listed on top (V8.6.4)

– Search for signals with very short signal names is improved
– Using the type-ahead functionality for Calculated Signals,
  or 'Insert' for an instrument MDA V8.6.4 lists on top
  the signals matching exactly the search string
– Thus signals with very short names are found,
  and can be selected more easily
– Below the exact matches the list shows
  optionally functions and signals
  which contain the search string

MDA V8.6.4 – What's New
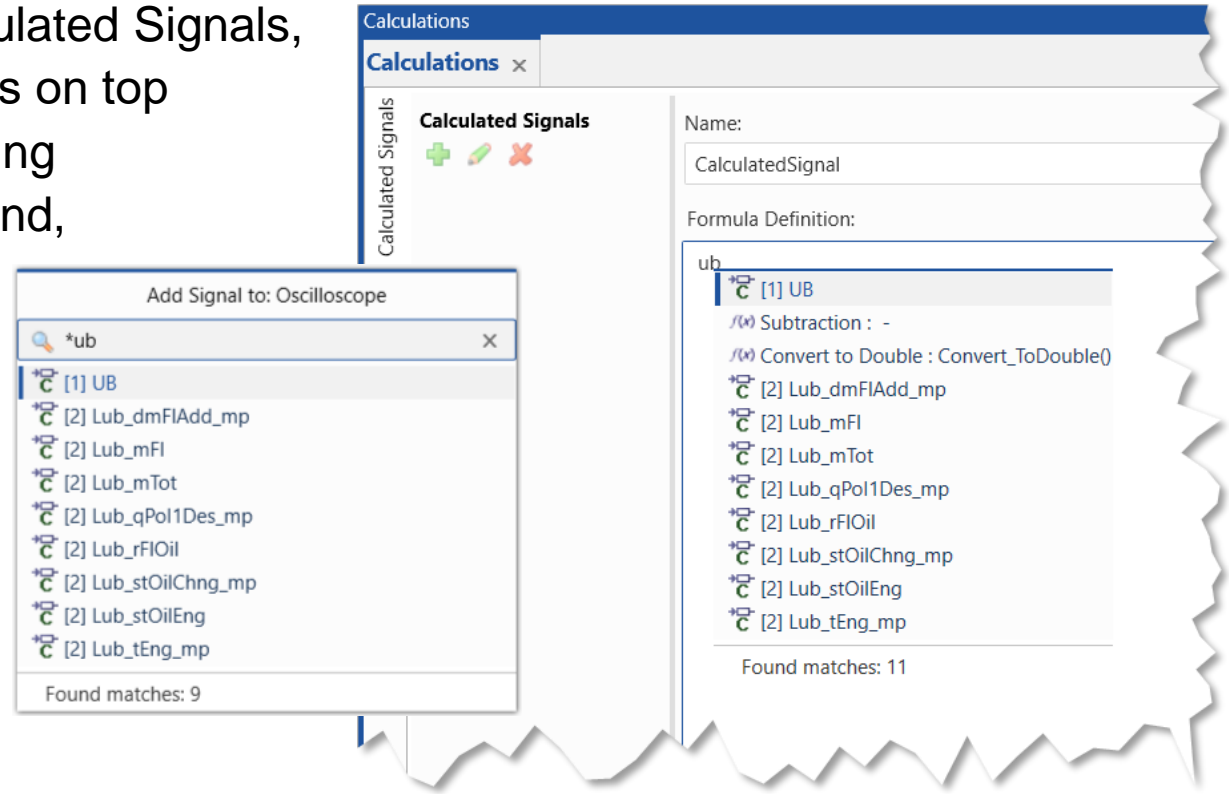
Usability Improvement: Context menu entries in the oscilloscope strips to re-arrange strips (V8.6.4)

– To facilitate rearrangement of strips in the oscilloscope
the context menu for strips includes two new entries
– Both available short-cuts are listed as well
– Already formerly supported other methods
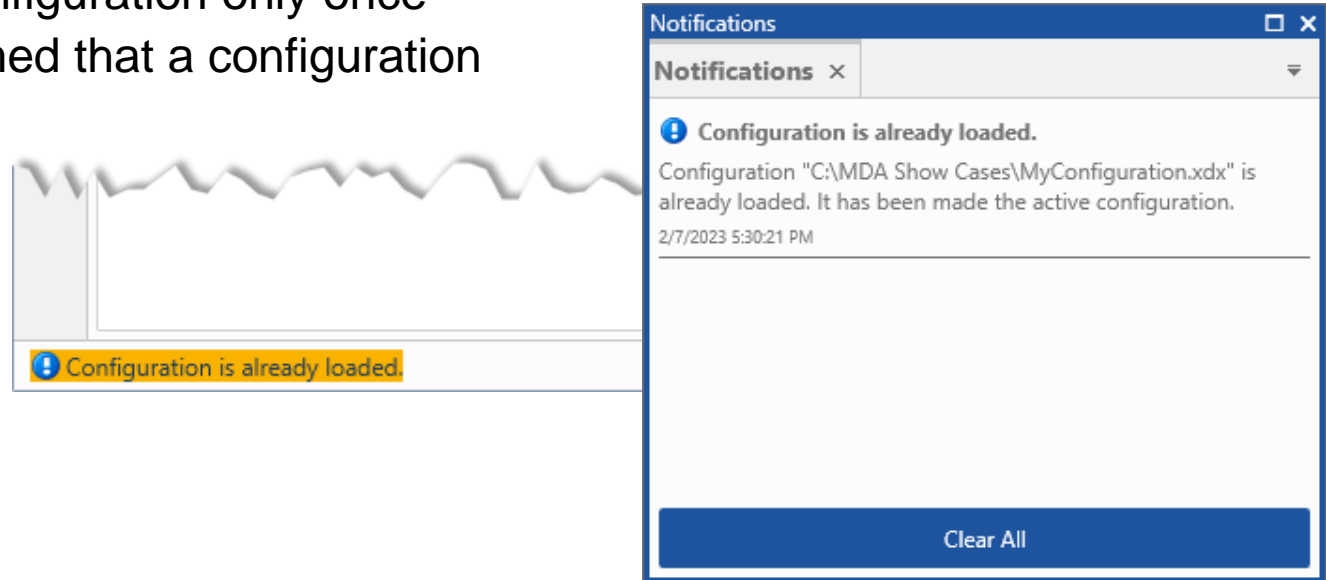for strip rearrangement remain unchanged
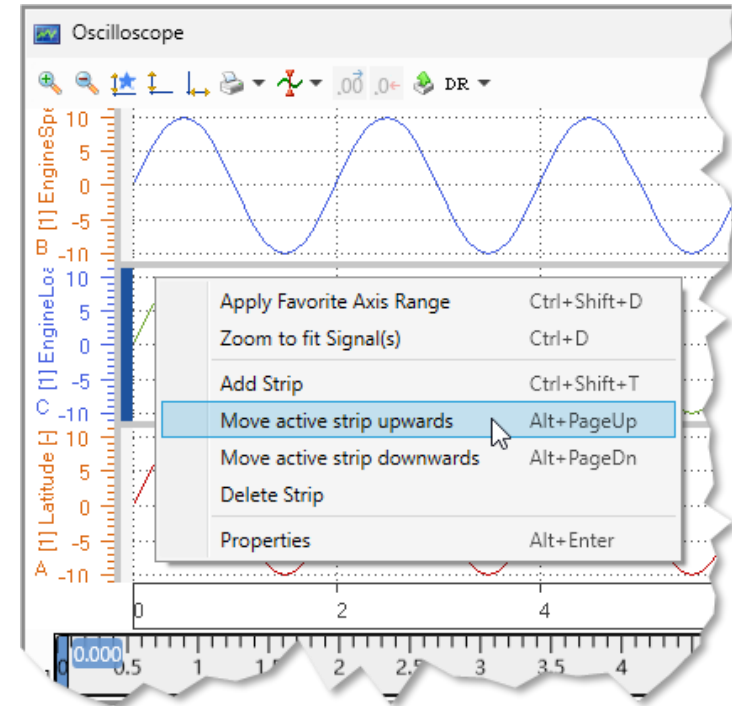
MDA V8.6.4 – What's New

Usability Improvement: Handling when trying to open an MDA configuration multiple times (V8.6.4)

– To prevent conflicts and inconsistencies of configurations
  MDA V8.6.4 allows to open any configuration only once
– Via the status bar the user is informed that a configuration
  is opened which is already in use

– MDA switches automatically
  to the already loaded instance
  of the configuration

Notifications

Notifications ×

🛈 **Configuration is already loaded.**

Configuration "C:\MDA Show Cases\MyConfiguration.xdx" is already loaded. It has been made the active configuration.

2/7/2023 5:30:21 PM

Clear All

🛈 Configuration is already loaded.

MDA V8.6.4 – What's New

Usability Improvement: Sorting in Variable Explorer supported by more columns (V8.6.4)

– In the Variable Explorer alphabetical sorting
   is supported for additional columns
   – 'File Name'
   – 'Name' *(mandatory, unique signal name)*
   – 'Display Identifier' *(optional signal name)*
   – 'Symbol Link' *(optional signal name)*
   – Description
   – Address

– The kind of the name of a signal which is used as
   'Display Name' throughout MDA UI is selectable
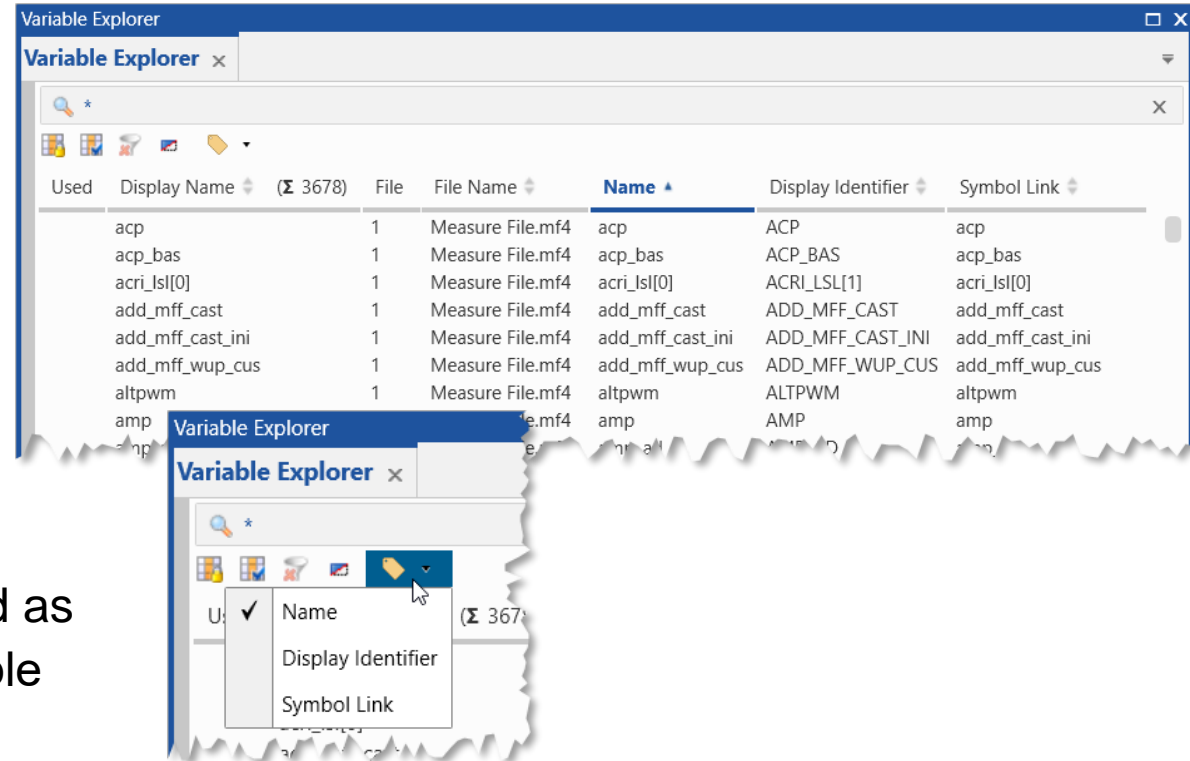
Notes:
- For technical reasons sorting by File ID is not offered. Instead sorting by the File Name column can be used.
- If for a signal no 'Display Identifier' or 'Symbol Link' is defined the always available and unique 'Name' will be used.

MDA V8.6.3 – What's New

Functional Enhancements & Usability Improvements

Slides for MDA Release of December 2022

MDA V8.6.3 – What's New

Version Overview for MDA V8.6.3 (December 2022)

ETAS

- **Functional Enhancements (V8.6.3)**
  - New instrument 'Battery Imbalance Table'

- **Files, Formats & Data Types (V8.6.3)**
  - Option to add an index (counter) to data rows of ASCII based measure files
  - Support of MAT files created with ATI Vision
  - Representation and handling of measure file attachments and referenced files

- **Usability Improvements (V8.6.3)**
  - More intuitive usage of the 'Add or Replace' dialog for file mapping
  - Definition of a signal time offset by graphically shifting a signal
  - Signal with a bit mask of 1-bit are added by default to a Boolean strip in the oscilloscope
  - Replace a signal directly within an instrument via context menu entry

(Section names are hyperlinks)

– **Functional Enhancements (MDA V8.6.3)**

  – New instrument 'Battery Imbalance Table'

– Files, Formats & Data Types (MDA V8.6.3)

– Usability Improvements (MDA V8.6.3)
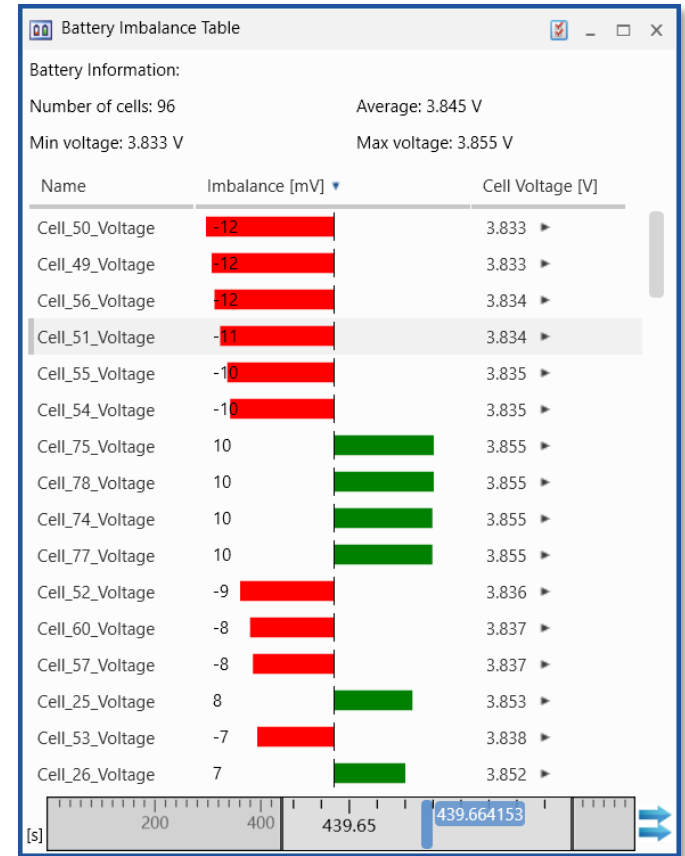
MDA V8.6.3 – What's New

eTAS

Functional Enhancements: New instrument 'Battery Imbalance Table' (V8.6.3)

– Quick identification of signals with the highest deviation
  from the average value of many comparable signals

– Typically the battery of an electric vehicle consists of many
  individual cells

– From the complete battery only the cells with the highest resp.
  the lowest voltage are important, as these limit the overall
  capacity and current during charging and discharging

– In the new Battery Imbalance Table the cells can be sorted
  in multiple ways, e.g. on top the cells with the largest deviation

– The header summarizes the overall status at the selected time

Notes:
- The Battery Imbalance Table can be synchronized with other instruments.
- When adding the same signal multiple times, only one instance of the signal is added.
- In case of different rasters, the last available value of a signal is used for the calculation of average and imbalance.

Battery Imbalance Table window:
Battery Information:
Number of cells: 96 — Average: 3.845 V
Min voltage: 3.833 V — Max voltage: 3.855 V

Name	Imbalance [mV] ▾	Cell Voltage [V]
Cell_50_Voltage	-12	3.833 ▸
Cell_49_Voltage	-12	3.833 ▸
Cell_56_Voltage	-12	3.834 ▸
Cell_51_Voltage	-11	3.834 ▸
Cell_55_Voltage	-10	3.835 ▸
Cell_54_Voltage	-10	3.835 ▸
Cell_75_Voltage	10	3.855 ▸
Cell_78_Voltage	10	3.855 ▸
Cell_74_Voltage	10	3.855 ▸
Cell_77_Voltage	10	3.855 ▸
Cell_52_Voltage	-9	3.836 ▸
Cell_60_Voltage	-8	3.837 ▸
Cell_57_Voltage	-8	3.837 ▸
Cell_25_Voltage	8	3.853 ▸
Cell_53_Voltage	-7	3.838 ▸
Cell_26_Voltage	7	3.852 ▸

[s] 200 400 439.65 439.664153

Public | ETAS-DAP | December 2023
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MDA V8.6.3 – What's New

Version Overview for MDA V8.6.3 (December 2022)

ETAS

– Functional Enhancements (MDA V8.6.3)

– **Files, Formats & Data Types (MDA V8.6.3)**

  – Option to add an index (counter) to data rows of ASCII based measure files
  – Support of MAT files created with ATI Vision
  – Representation and handling of measure file attachments and referenced files

– Usability Improvements (MDA V8.6.3)

MDA V8.6.3 – What's New

Files, Formats & Data Types: Option to add an index to data rows of ASCII measure files (V8.6.3)

– For post-processing of measure files sometimes a textual file format
  with equidistant time stamps is required

– MDA V8 already supports such file formats (like MRF, TSV, DXL),
  and an open interface to define customer-specific formats

– The interface definition was extended by an option
  for adding a counter (index) column to data rows

– Additionally, the default MRF file definition in MDA 8.6.3
  was modified to make MRF files created with MDA V8
  more similar to those created with MDA V7

```
🖫 mrf.ini ☒
 1    [Measure Data Refiller MDA V7]
 2    extension=".mrf"
 3    delimiter=" "
 4    headerRow=0
 5    header="ETASCustomAsciiItemFile record  CrLf    Tab"
 6    sampleCount="sampleCount"
 7    sampleCountRow=1
 8    namesRow=2
 9    ;typesRow=3
10    ;deviceRow=4
11    unitsRow=5
12    dataRow=6
13    indexColumn="yes"
14    timeSignalIndex=0
15    decimalSeparator="."
16    enumerationStoreMode="decimal"
17
```

Notes:
- For customer-specific textual file formats an example file including a description of the format options can be found at:
  %ProgramData%\ETAS\MDA\8.6\CorePlugins\Etas.TargetAccess.Targets.MeasureFile.Formats.AsciiConfigurable
- The customer-specific INI files should also be stored there. Ensure that for each file format a different extension is used.

MDA V8.6.3 – What's New

Files, Formats & Data Types: Support of MAT files created with ATI Vision (V8.6.3)

– MATLAB® file format is widely used, but also a broad range of format variants exists

– With MDA V8.6.3 reading and writing of another specific dialect is now supported, namely MAT file format V7.3 created with ATI Vision
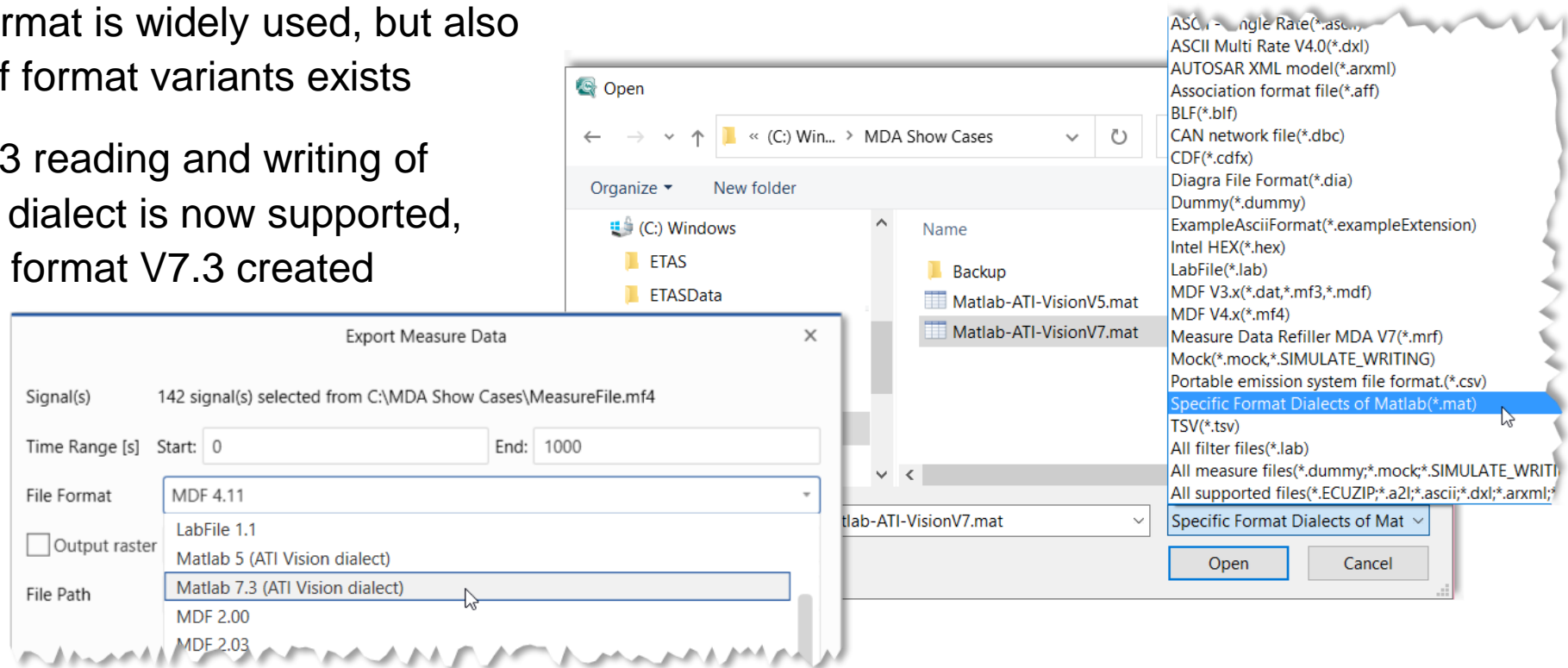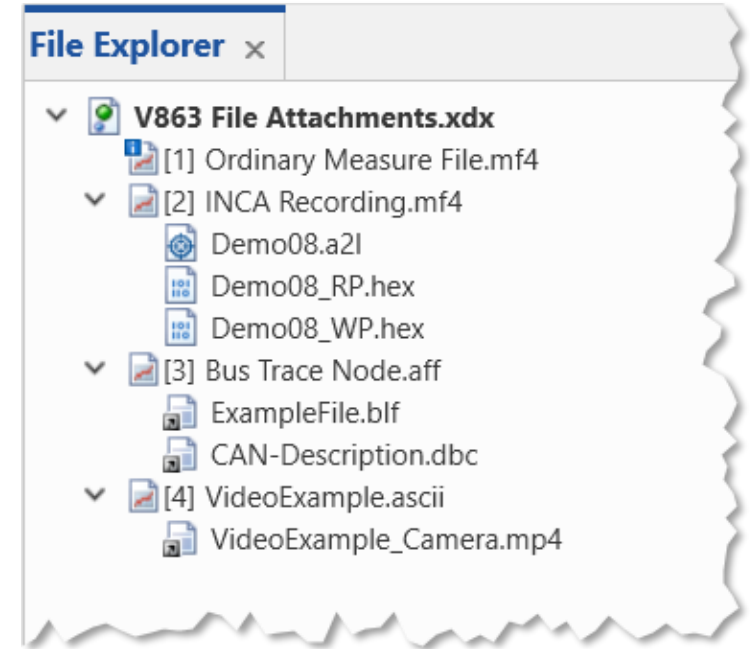

Notes:
- Support is limited to MAT files of version V5 and V7.3 created with ATI Vision.
- Performance of MDA when using MAT files might be low, as such files do not support features like e.g. ASAM Standard indexing.

MDA V8.6.3 – What's New

Files, Formats & Data Types: Representation and handling of measure file attachments (V8.6.3)

– The representation of measure files and their attachments or referenced files has been improved

– In the File Explorer of MDA V8.6.3
  besides sub-nodes for file attachments (like A2L, HEX),
  now referenced files (e.g. to BLF, DBC, video files)
  are listed as well
– Additionally a configuration export from MDA includes
  also attachments and referenced files
  in the exported archive file (ZDX format)

File Explorer ×

- ⌄ 💡 **V863 File Attachments.xdx**
  - 📄 [1] Ordinary Measure File.mf4
  - ⌄ 📄 [2] INCA Recording.mf4
    - ⚙ Demo08.a2l
    - 📄 Demo08_RP.hex
    - 📄 Demo08_WP.hex
  - ⌄ 📄 [3] Bus Trace Node.aff
    - 📄 ExampleFile.blf
    - 📄 CAN-Description.dbc
  - ⌄ 📄 [4] VideoExample.ascii
    - 📄 VideoExample_Camera.mp4

Note:
- The overlay icon indicates when a file is referenced.

MDA V8.6.3 – What's New
Version Overview for MDA V8.6.3 (December 2022)

– Functional Enhancements (MDA V8.6.3)

– Files, Formats & Data Types (MDA V8.6.3)

– **Usability Improvements (MDA V8.6.3)**

- – More intuitive usage of the 'Add or Replace' dialog for file mapping
- – Definition of a signal time offset by graphically shifting a signal
- – Signal with a bit mask of 1-bit are added by default to a Boolean strip in the oscilloscope
- – Replace a signal directly in an instrument via context menu entry

MDA V8.6.3 – What's New

Usability Improvement: More intuitive usage of the 'Add or Replace' dialog for file mapping (V8.6.3)

– To simplify usage and understanding the appearance
of the 'Add or Replace' dialog was reworked

– The dialog appears when a measure file is added
while the configuration has signals in no-match
state from a previously removed measure file

– The 'Add or Replace' dialog allows the user
to choose whether a new file
  – is added (without resolving no-match signals)
  – shall replace another file

Outlook
– In a subsequent MDA release the reworked dialog
will used as basis for a device mapping dialog

MDA V8.6.3 – What's New
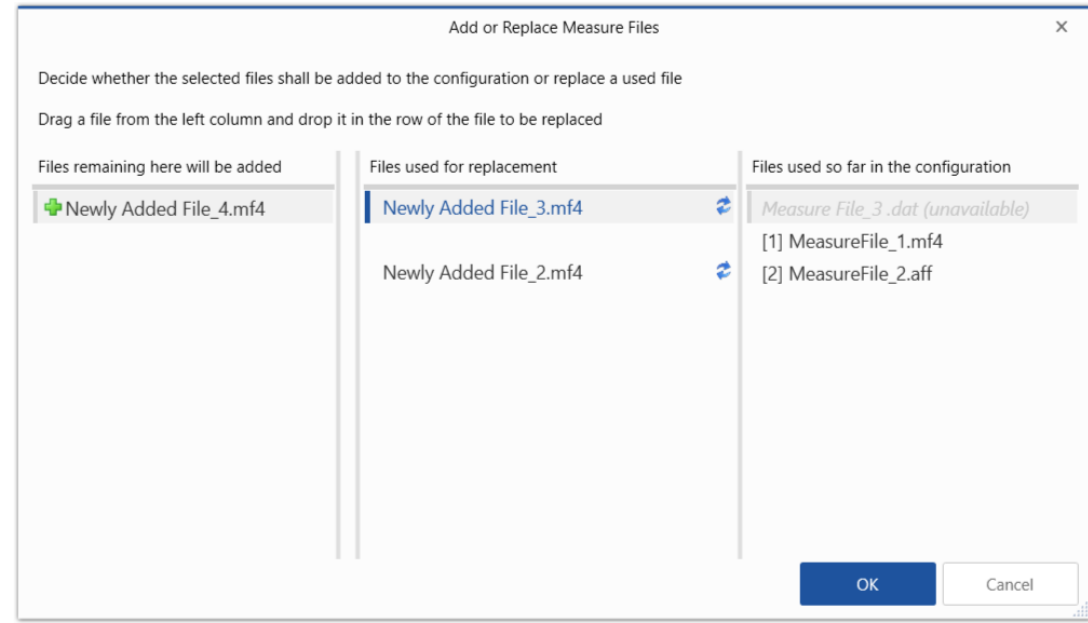
Usability Improvement: Definition of a signal time offset by graphically shifting a signal (V8.6.3)

– Defining a time offset is easy with MDA V8
– While pressing the SHIFT key, a signal curve is moved using with the left mouse button
– After releasing the mouse, a dialog allows to decide whether the time offset shall be applied either for the measure file, or just for the signal
– In case of a signal time offset, MDA automatically
  – creates a calc. signal with the respective offset
  – and replaces all instances of the original signal by the time shifted calculated signal
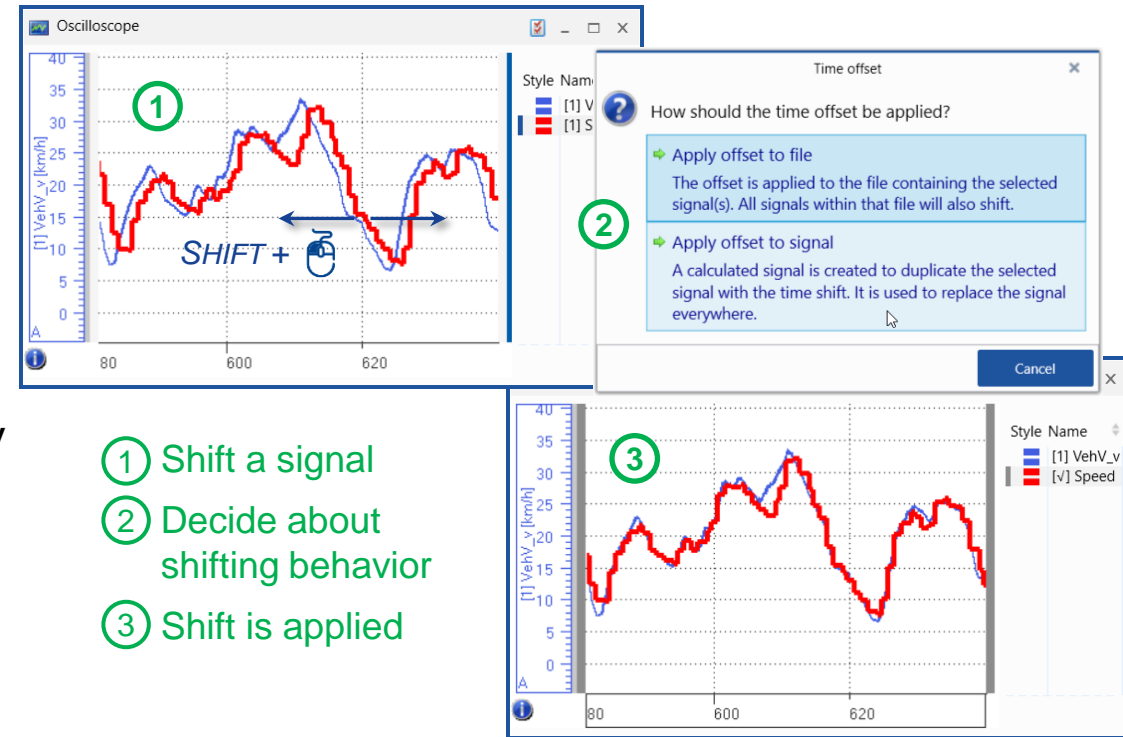
① Shift a signal
② Decide about shifting behavior
③ Shift is applied

Notes:
- Replacement of the original signal by the shifted calc. signal is done in all instruments, and for input signals of calc. signals.
- In case time offsets are set for a measure file and for a signal from this file, the shift of signal is the sum of both offsets.
- As a signal individual time offset is handled by an offset of a calc. signal, the original signal and the calculated signal can be used independently. This means, the user must ensure to select the correct signal when e.g. exporting measure data into a measure file.
- To reset a signal individual time offset, replace the shifted calculated signal 'everywhere' by the original signal, and delete the calculated signal.

MDA V8.6.3 – What's New

Usability Improvement: 1-Bit signal are added by default to a Boolean strip in the oscilloscope (V8.6.3)

– To reduce configuration efforts when adding a signal to an oscilloscope, MDA selects the most appropriate display based on the signal data type
– MDA V8.6.2 assigns every signal which allows just two states (i.e. with a 1-bit implementation data type) by default to a Boolean strip
– This includes 1-bit enumeration signals
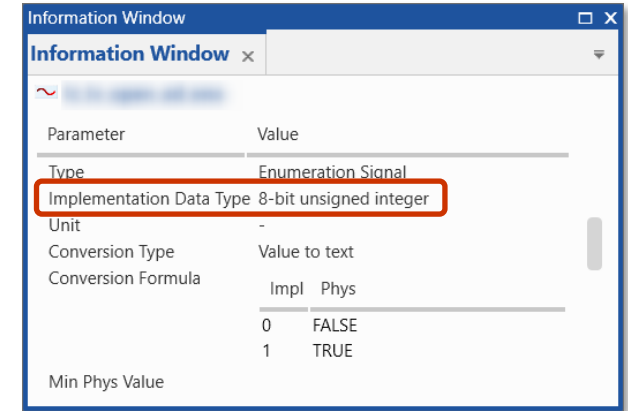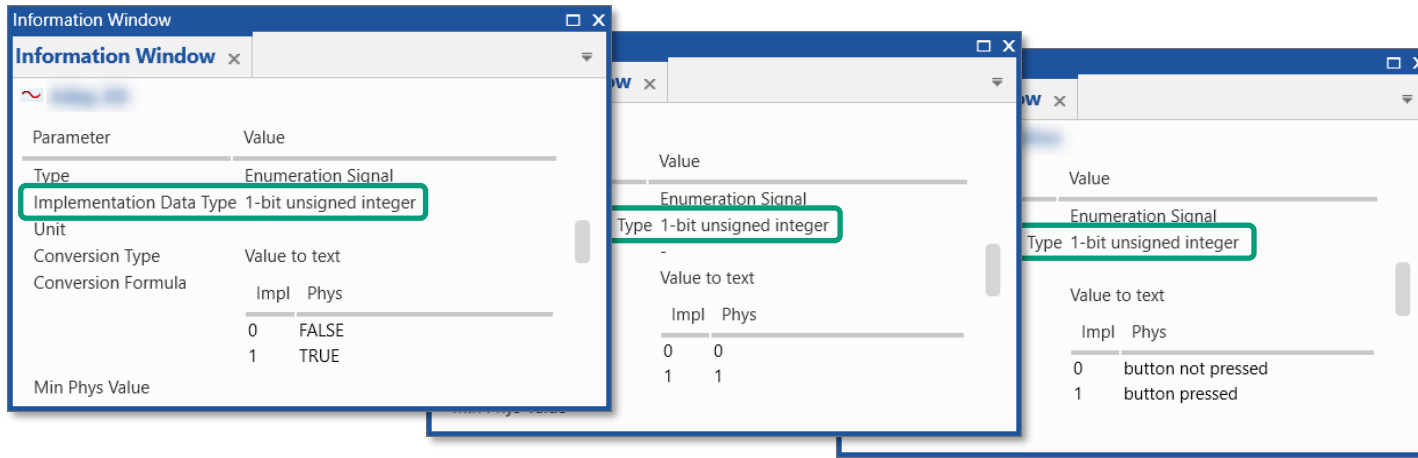
Will be added to an analog strip

Will be assigned to a Boolean strip by default

Note:
-   If for a signal a signal specific handling is already defined (e.g. "Treat as Boolean") this overrides the default handling based on the data type.

MDA V8.6.3 – What's New

Usability Improvement: Replace a signal directly within an instrument via context menu entry (V8.6.3)

– A quick replacement of a signal in an instrument
  is possible by means of a new context menu
– The signal settings of the original signals are applied
  for the replacement signal

– The context menu entry is available for all instrument
– In the subsequent dialog, the new signal can be selected
– The user can choose whether the replacement
  shall be done only in the present instrument,
  or "everywhere" where the original signal is used
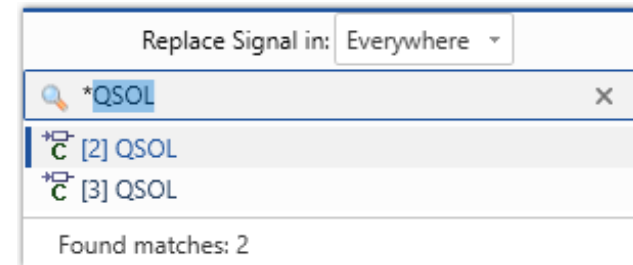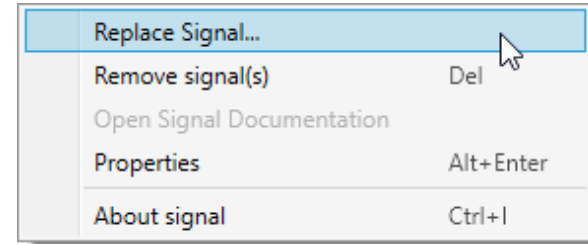
Notes:
- GPS Map instrument provides separate entries for a replacement of the longitude resp. the latitude signal.
- "Everywhere" includes the replacement of the signal in all instruments as well as the input signal of a calculated signal.

MDA V8.6.2 – What's New

Functional Enhancements & Usability Improvements

Slides for MDA Release of September 2022

MDA V8.6.2 – What's New

Version Overview for MDA V8.6.2 (September 2022)

- **Functional Enhancements (V8.6.2)**
  - Exporting a configuration and files assigned to it
  - Low Pass Filter comparable to ECU implementation

- **Files, Formats & Data Types (V8.6.2)**
  - 'MdfConvert.exe' enables resampling of time stamps
  - Support of MAT files saved in ATI Vision dialect
  - More user-friendly handling of time units in 'MdfCombine.exe' and 'MdfConvert.exe'

- **Usability Improvements (V8.6.2)**
  - Enable to show and enter current time displayed in Table, Event List and Video instrument
  - More informative error messages in the File Explorer
  - Further small usability improvements

(Section names are hyperlinks)

Back to Version Selection

- **Functional Enhancements (MDA V8.6.2)**

  - Exporting a configuration and files assigned to it
  - Low Pass Filter comparable to ECU implementation

- Files, Formats & Data Types (MDA V8.6.2)

- Usability Improvements (MDA V8.6.2)

MDA V8.6.2 – What's New

Functional Enhancements: Exporting a configuration and files assigned to it (V8.6.2)

- To create easily and quickly a ready-to-use package of a configuration and its assigned files, MDA V8.6.2 provides an Export functionality
- The export file gets automatically zipped (file extension ZDX)
- The export progress is shown in the progress view

- To load the exported file again:
  - Use the Import button and select the exported file
  - Define a location for the extraction of the ZDX file
  - Then MDA will do the rest

- To export only a subset of instruments or with just an extract of the measure file:
  Create a copy of the configuration, reduce its contents as desired, optionally replace the original measure file by an extracted one, and finally trigger the export
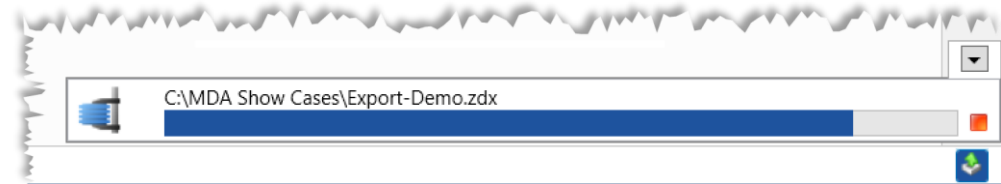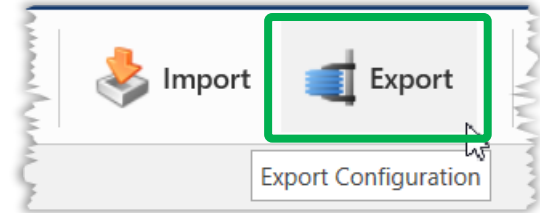
Notes:
- Only a saved configuration can be exported, therefore MDA forces to save the configuration before the export.
- Some file types referenced in measure files do not get exported, e.g. external video files.
- Import of a zipped export file will be done automatically into a new configuration. Import is limited to export files created with the same or an older MDA version.

MDA V8.6.2 – What's New

Functional Enhancements: Low Pass Filter comparable to ECU implementation (V8.6.2)

– To identify the actual signal behavior, overlaying noise must be eliminated from the recorded signal
– Two filter functions are offered in MDA V8.6.2 Calculated Signals:
   – "Low Pass Filter 1st order" (also known as 'PT1 filter')
      • Cutoff specified by frequency
      • General purpose PT1 implementation
      • Works independent of input sample rate
   – "Low Pass Filter ASCET Library"
      • Cutoff specified by time constant
      • Emulates optimized ECU implementation
      • Works for limited range of input sample rate only
      • Same results as with INCA/MDA V7 Low Pass Filter
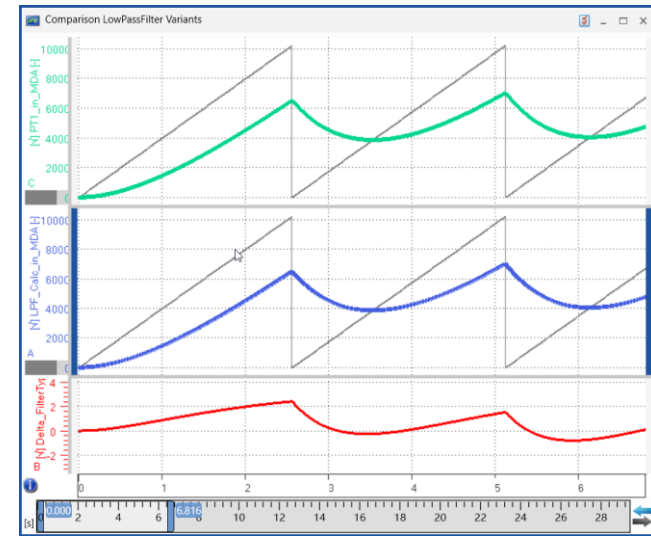
PT1 filter
(cutoff frequency)

ECU comparable
Low Pass Filter
(time constant)

Difference

Notes:
- The new "Low Pass Filter ASCET lib" assumes a constant sample rate. The behavior depends on the time constant and the actual sample rate. If the sample rate and time constant are in the same dimension this will cause overshoots.
- MDA V8's "Low Pass Filter (PT1)" emulates a first order low pass filter which is independent from the sample rate.
- When importing a calc. signal using the low pass filter of INCA, the new filter function is used for the conversion into a calc. signal in MDA V8.

– Functional Enhancements (MDA V8.6.2)

– **Files, Formats & Data Types (MDA V8.6.2)**

  – 'MdfConvert.exe' enables resampling of time stamps
  – Support of MAT files saved in ATI Vision dialect
  – More user-friendly handling of time values in 'MdfCombine.exe' and 'MdfConvert.exe'

– Usability Improvements (MDA V8.6.2)

MDA V8.6.2 – What's New

Files, Formats & Data Types: 'MdfConvert.exe' enables resampling of time stamps (V8.6.2)

– Command line tool 'MdfConvert.exe' supports measure file format conversion as well as extraction of subsets of signals and time range
– The new version installed together with MDA V8.6.2 offers a new argument 'resampling'
 – An equidistant time channel can be defined
 – For new time stamps without an original sample the last available sample is used ('last sample mode', also known as 'constant interpolation')

Notes:
- 'MdfConvert.exe' is installed by default in *%ProgramFiles%\ETAS\MDA8.6\McdCore.*
- Supported arguments and options are shown when entering 'mdfconvert --help'.
- 'MdfConvert.exe' can process the same file formats as supported in MDA V8.
- Event signals are excluded in resampling mode.
- External file attachments like video files, or internal attachments like A2L or Hex files, are excluded from the resampled file.
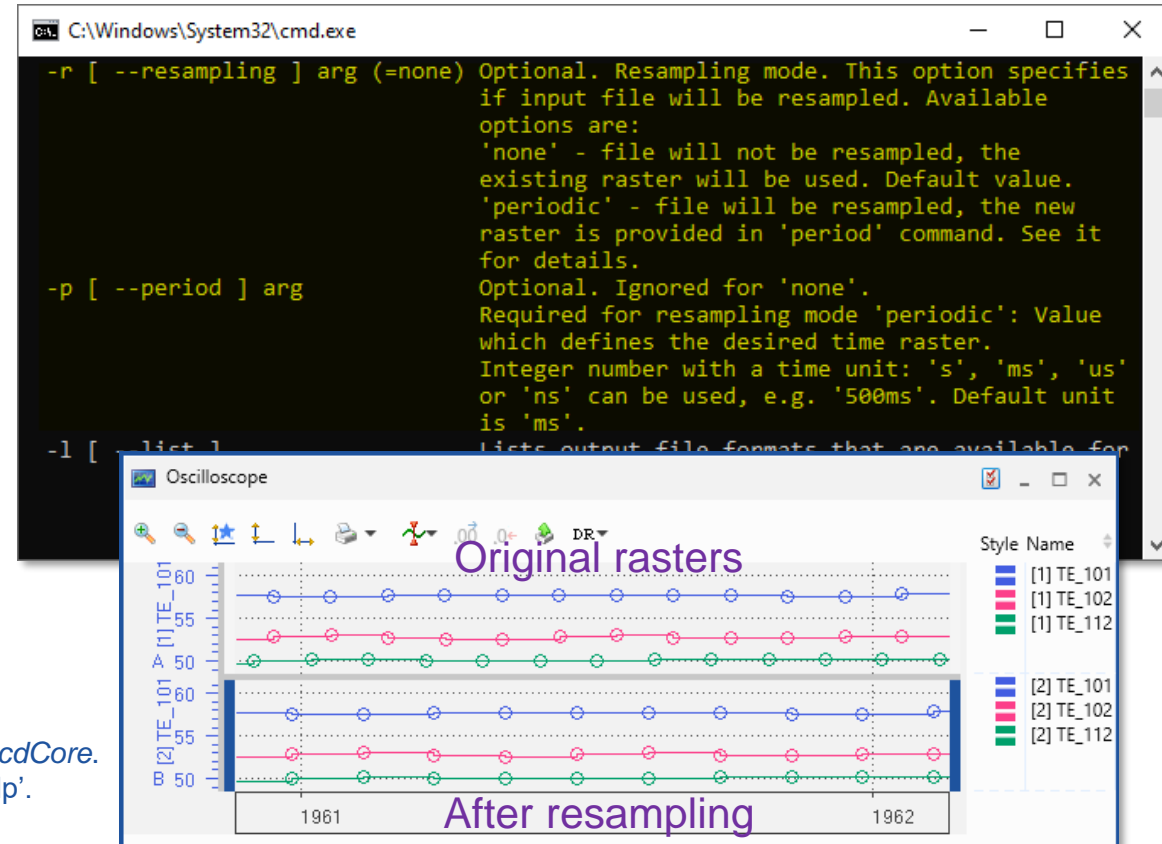
MDA V8.6.2 – What's New

Files, Formats & Data Types: Support of MAT files saved in ATI Vision dialect (V8.6.2)

– MATLAB® file format is widely used, but also a broad range of format variants exists
– MDA V8.6.2 can read and write one specific dialect,
  namely MAT files created with ATI Vision
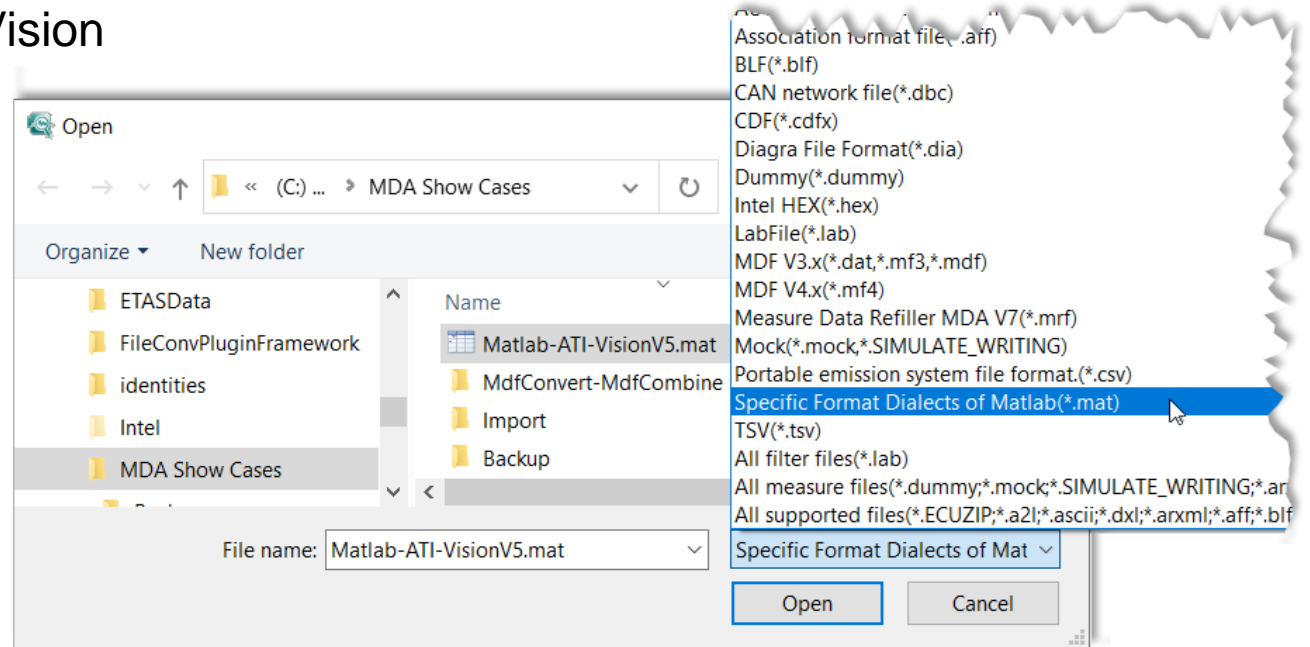
Notes:
- Support is limited to MAT files of version V5 created with ATI Vision.
- Performance of MDA when using MAT files might be low, as such files do not support features like e.g. ASAM Standard indexing.

MDA V8.6.2 – What's New

Files, Formats & Data Types: Time values in 'MdfCombine.exe' and 'MdfConvert.exe' (V8.6.2)

- More comfortable definition of time values in 'MdfCombine.exe' and 'MdfConvert.exe' by support of a time unit
- Integer values can be used plus the time unit, e.g. just 's' for seconds, or 'ms' for milli-seconds

- MdfCombine.exe
  - Supported for 'GapThreshold' and 'FixedGap'
  - Without time unit the value is used in nanoseconds
- MdfConvert.exe
  - Supported for 'Start', 'End', and 'Period' argument
  - Without time unit the value is handled as seconds resp. as milliseconds for 'Period' argument

Note:
- Basic functionality of 'MdfCombine.exe' is described on page 91.


```
C:\Windows\System32\cmd.exe                                              —    □    ×
--start arg                    Start time, used as a filter to extract only a range
                               of signals data from source file to output file. If
                               omitted, starting point will be set to the begin of
                               source file. Could be used together with --end
                               option.
                               Integer number with unit: 's', 'ms', 'us' or 'ns'
                               can be used, e.g. '500ms'. Default unit is 's'.
--end arg                      End time, used as a filter to extract only a range
                               of signals data from source file to output file.
                               Should be greater then the start time. If omitted,
                               end point will be set to the end of file. Could be
                               used together with --start option.
                               Integer number with unit: 's', 'ms', 'us' or 'ns'
                               can be used, e.g. '500ms'. Default unit is 's'.
```



```
C:\Windows\System32\cmd.exe                                              —    □    ×
-t [ --gapThreshold ] arg      Optional. Mandatory if 'gap' set to 'reduce'.
                               For combination mode 'merge': If gap between
                               measure files is more than this value, then
                               all such gaps will be reduced to 'fixedGap'.
                               Ignored for combination mode 'append'.
                               Integer number with unit: 's'. 'ms', 'us' or
                               'ns' can be used, e.g. '500ms'. Default unit
                               is 'ns'.
-f [ --fixedGap ] arg          Optional. Mandatory if 'gap' set to 'reduce'.
                               For combination mode 'merge': Value of maximum
                               gap between measure files after reducing gaps
                               (see 'gapThreshold' option).
                               For combination mode 'append': Defines the gap
                               between appended files.
                               Integer number with unit 's'. 'ms', 'us' or
                               'ns' can be used, e.g. '500ms'. Default unit
                               is 'ns'.
```

MDA V8.6.2 – What's New

Version Overview for MDA V8.6.2 (September 2022)

– Functional Enhancements (MDA V8.6.2)

– Files, Formats & Data Types (MDA V8.6.2)

– **Usability Improvements (MDA V8.6.2)**

  – Enable to show and enter current time displayed in Table, Event List and Video instrument

  – More informative error messages in the File Explorer

  – Further small usability improvements:

    – Re-ordering of boolean signals by means of drag&drop

    – Size of 'Quick Switch Window' is persisted

    – 'Close' or 'Export' a configuration accessible from MDA V8's Home Page

MDA V8.6.2 – What's New

Usability Improvement: Show and enter current time in Time Slider Bar in several instruments (V8.6.2)

- For the table, event list and video instrument the Time Slider Bar allows a more direct and faster entering of the point in time to be displayed
- Just click into the blue tool tip and enter the time value
- Alternatively, CTRL+B can be used to switch to edit mode
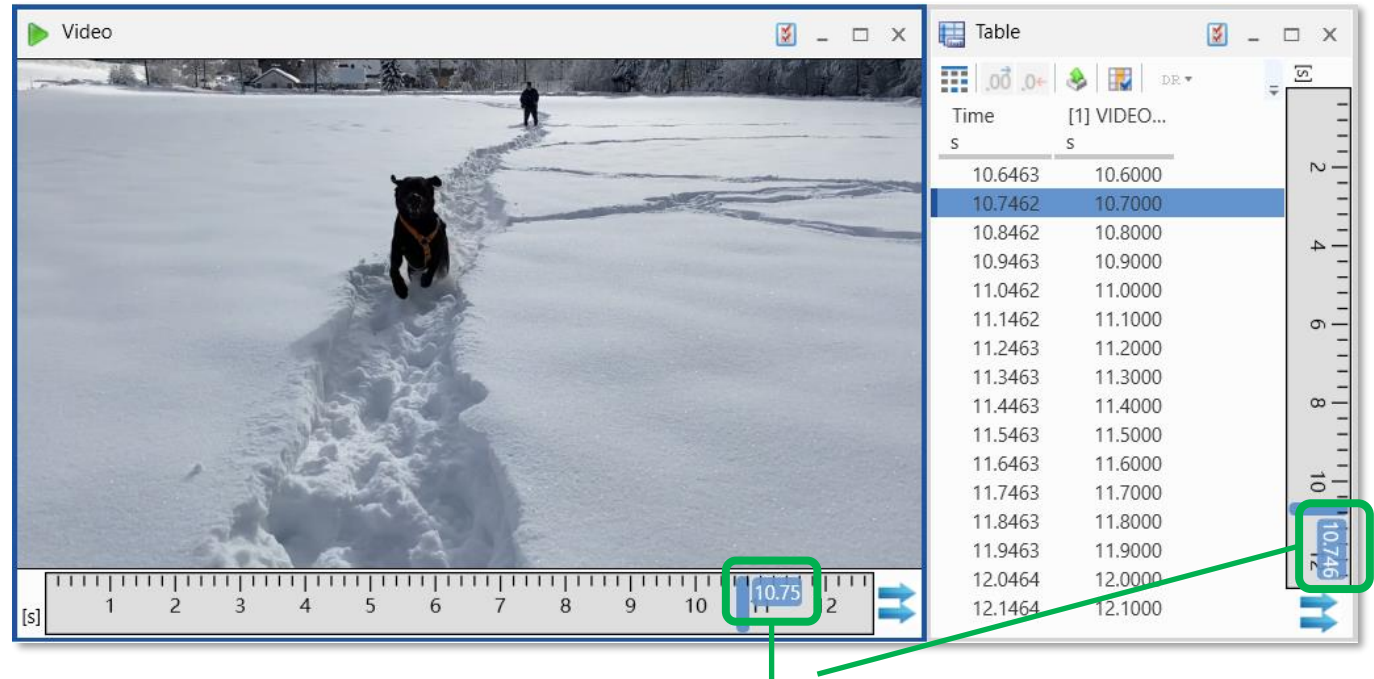
Indication of the point in time displayed in the instrument

Notes:
- Behavior of time slider bar depends on the capability of the instrument:
  If the instrument can display only one point in time (like in the video instrument), or a fixed time range (like in a table or the event list) a single bar appears.
  For instruments which can show an arbitrary range of time (like an oscilloscope, scatter plot, statistics, GPS map) a time range with two bars is shown.
- Precision of the time information shown in time slider bar is done automatically based on several aspects like total time range, size of the bar, and others.

MDA V8.6.2 – What's New

Usability Improvements: More informative error messages in the File Explorer (V8.6.2)

– When loading a file into MDA, it might be detected that the file can not be loaded as desired
– In such cases the user is informed by an improved tooltip about the issue,
   which shall help the user to solve the problem
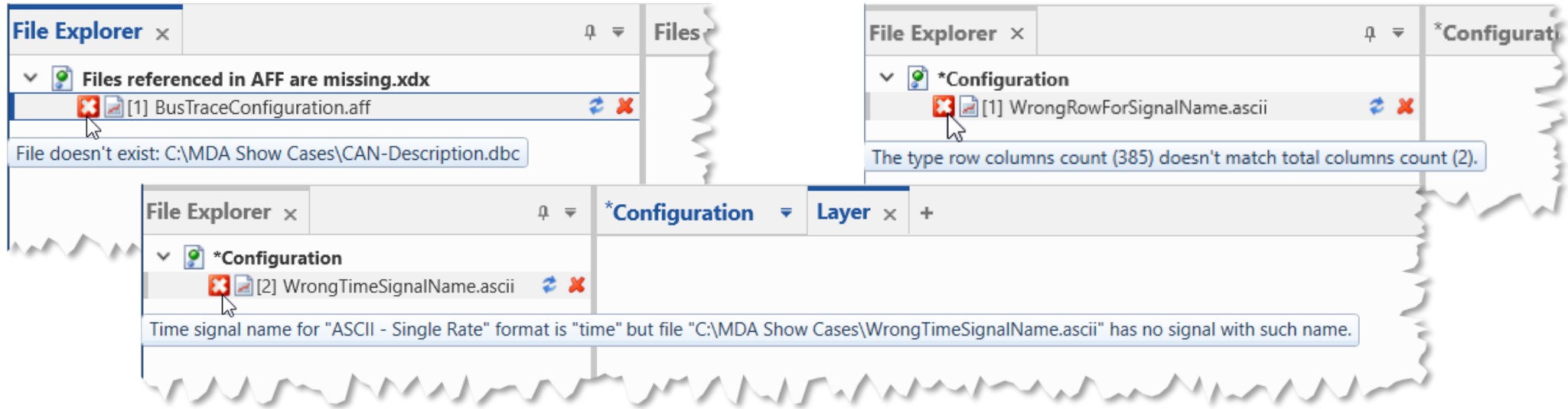
Notes:
- Not all possible root causes can be detected clearly by MDA, especially for measure files in a textual file format.
  For such files it is recommended to check the INI file versus the example ASCII format description, and against the structure of the actual measure file.
- In case you have an example with a misleading error message, please contact the ETAS support team.

MDA V8.6.2 – What's New

Further Usability Improvements (V8.6.2)

– Simple **re-ordering of Boolean signals** by means of Drag&Drop
  – Newly added Booleans signals are always inserted at the default position at the bottom

– Access to a specific section in the online documentation
  – In the Time Offset window a new icon exits which gives direct access to the respective section in the online documentation

– To switch to another layer or instrument, the Quick Switch Window is provided. To make reading of lang names easier, now its adapted size is persisted

– MDAs Home Page includes additional entries for Closing and for Exporting of a configuration
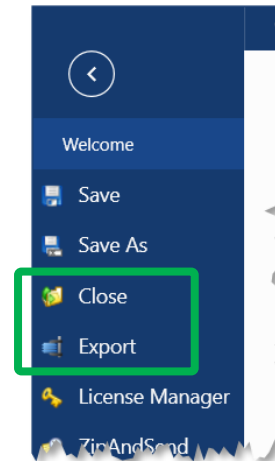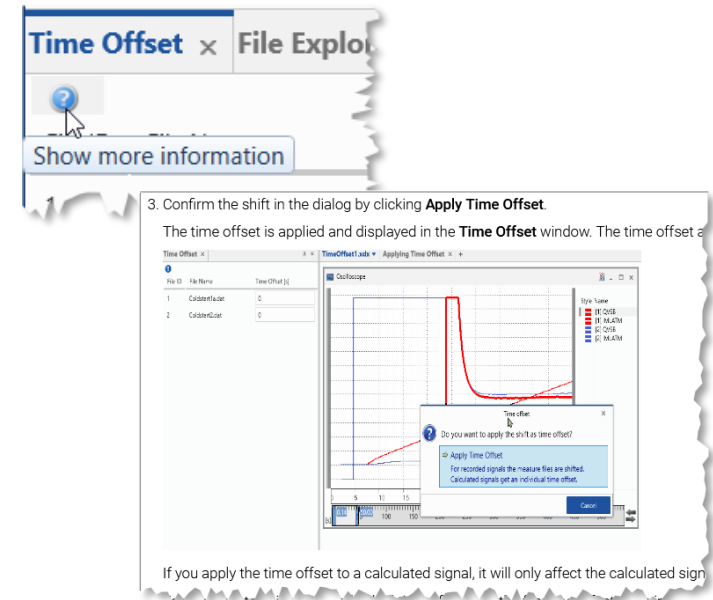
MDA V8.6.1 – What's New

Functional Enhancements & Usability Improvements

Slides for MDA Release of June 2022

MDA V8.6.1 – What's New

Version Overview for MDA V8.6.1 (June 2022)

ETAS

o **Functional Enhancements (V8.6.1)**
  - Import of files assigned to a configuration
    Import of layers and instruments from MDA V8 configuration files (XDX)
  - 'Notifications' window for errors and warnings

o **Files, Formats & Data Types (V8.6.1)**
  - Enhancements for 'MdfCombine.exe' to append MDF files more flexibly

o **Usability Improvements (V8.6.1)**
  - Time offset definition by graphically shifting a signal curve in the oscilloscope
  - Further small usability improvements

o **Miscellaneous (V8.6.1)**
  - Engineering add-on: Connecting MDA V8 to an ASAM ODS server

(Section names are hyperlinks)

MDA V8.6.1 – What's New

Version Overview for MDA V8.6.1 (June 2022)

– **Functional Enhancements (MDA V8.6.1)**

  – Import of files assigned to a configuration
    Import of layers and instruments from MDA V8 configuration files (XDX)
  – 'Notifications' window for errors and warnings

– Files, Formats & Data Types (MDA V8.6.1)

– Usability Improvements (MDA V8.6.1)

– Miscellaneous (MDA V8.6.1)

MDA V8.6.1 – What's New

Functional Enhancements: Import of files, layers and instruments from XDX configurations (V8.6.1)

– Easier reuse of objects from an XDX configuration
– Import functionality was extended to enable selection of
  – Files assigned to the import configuration (measure files, CDF files, LAB files)
  – Layers & instruments including assigned signals
– The selected objects are added to the active configuration
– Algorithm for mapping of signals to available files is handled as in case of Copy & Paste between configurations
– Functionality allows to clone views for multiple measure files

Notes:
- Only configurations can be imported which were created with the same or older MDA V8 versions.
- Already supported import behaviors for Calculated Signals and Display Name Rule Sets have not changed. See "Import of Display Name Rule Sets..." on page 100.
- Files already loaded in the target configuration are skipped, time offsets for measure files are ignored.
- Configuration objects with the same name get an increment added to make the names unique.

MDA V8.6.1 – What's New
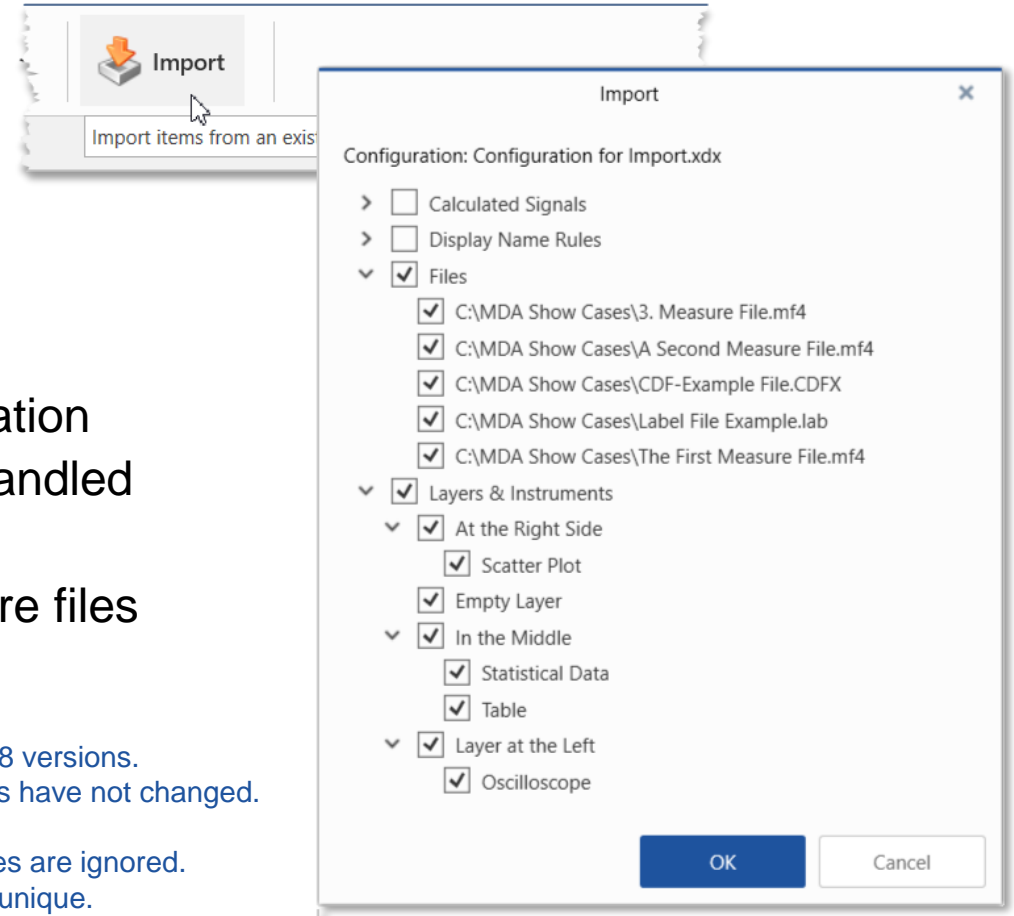
Functional Enhancements: 'Notifications' window for errors and warnings (V8.6.1)

– For a better overview and more comfortable handling
  a new docking window named 'Notifications' is implemented
– It lists all errors and warnings which occurred so far
– A highlighted message in the status bar indicates
  when a new entry was added
– By clicking the message in the status bar, the user
  can trigger to open the Notifications window
– With 'Clear All' the entries are removed
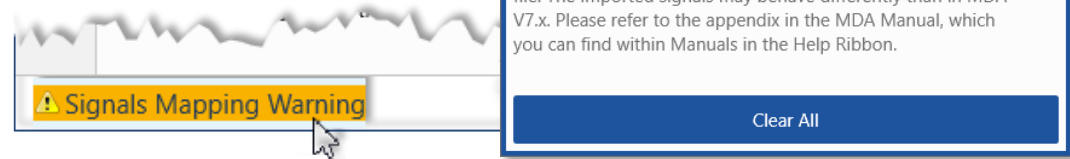
Notes:
- Messages are also added to the MDA log file.
- To open the Notifications windows without having a status bar message, use the Show/Hide dropdown list in the View ribbon.

MDA V8.6.1 – What's New

ETAS

– Functional Enhancements (MDA V8.6.1)

– **Files, Formats & Data Types (MDA V8.6.1)**

– Enhancements for 'MdfCombine.exe' to append MDF files more flexibly

– Usability Improvements (MDA V8.6.1)

– Miscellaneous (MDA V8.6.1)

MDA V8.6.1 – What's New

Files, Formats & Data Types: Appending of MDF files by means of 'MdfCombine.exe' (V8.6.1)

- Existing command line tool 'MDFcombine.exe' allows to combine multiple measure files into one
- There are now two options available
  - With 'Merge' the contents of the separate files are combined strictly chronological, overlapping files can't be merged
  - By means of 'Append' the order of the files can be defined independently from the original chronology
- Source signals which have the same name and setup (device, raster, data type, etc.) are combined to one signal in the new measure file
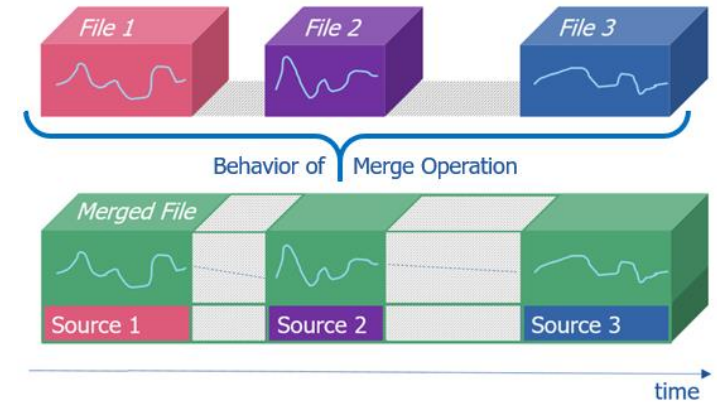
Notes:
- 'MdfCombine.exe' is installed by default in *%ProgramFiles%\ETAS\MDA8.6\McdCore*.
- Supported arguments and options are shown using: 'mdfcombine --help'.
- All source files must have the same file format, namely MDF V3.x or V4.x.
- Event signals and file attachments (like A2L or HEX files) are excluded from the combined file.
- When combining measure files the references to video files (*.mp4) are not updated.
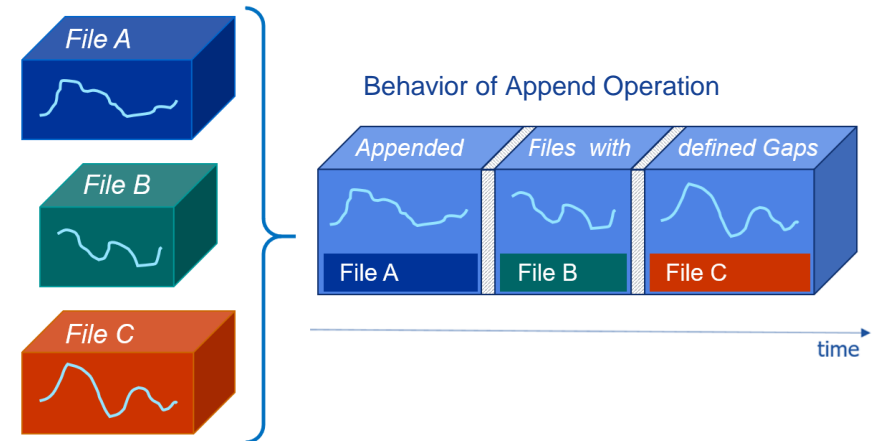
MDA V8.6.1 – What's New

ETAS

– Functional Enhancements (MDA V8.6.1)

– Files, Formats & Data Types (MDA V8.6.1)

– **Usability Improvements (MDA V8.6.1)**

  – Time offset definition by graphically shifting a signal curve in the oscilloscope
 – Further small usability improvements

– Miscellaneous (MDA V8.6.1)

[Back to MDA V8.6.1 Overview](#)

MDA V8.6.1 – What's New

Usability Improvement: Time offset definition by graphically shifting a signal curve (V8.6.1)

– Time alignment of measure files can be done easily
  by moving a signal curve with the left mouse button
  while pressing the SHIFT key simultaneously
– In a dialog the time offset can be confirmed
  – If a signal from a measure file is shifted,
    it is handled as a time offset for the file
  – If a calculated signal is shifted, the time offset
    is applied to the calculated signal only
– A time offset affects the complete configuration
  – All instruments and calculations are updated
  – Time offsets are applied when exporting a file

① Shift signal
② Confirm shift
③ Shift is applied
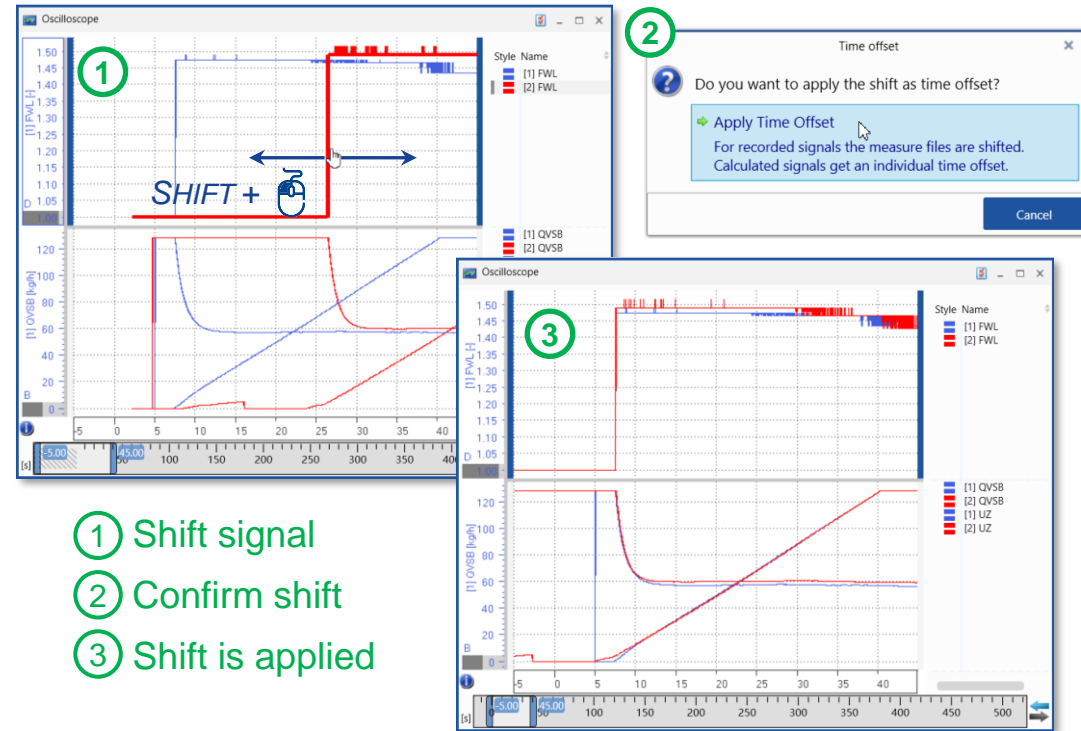
Notes:
- A file time offset affects all signals and depending calculated signals. The offset of a calc. signal is the sum of its individual offset and the file time offset.
- To shift an individual signal: First, create a calculated signal, then shift the calculated signal, and finally replace all instances of the recorded signal by the shifted calculated signal (can be done in the Configuration Manager).
- To remove a time offset, reset the offset value in the Time Offset docking window resp. in the Time Offset field in the Output Options of the calculated signal.

MDA V8.6.1 – What's New

ETAS

Further Usability Improvements (V8.6.1)

– **More entries** in the list **of recently used configurations**

– When using **INSERT** signals are added **to the active strip** of an oscilloscope
  – Only possible if the signal type fits to the active strip, and strip supports multiple signals

– More direct **access to define the visible columns** in an oscilloscope
  – Right-click on the header row in the signal list

– Non-modal window with the list of supported hotkeys (CTRL+F1)
  – Window can be kept open and does not prevent working in MDA
  – User can easily see and learn the hotkeys
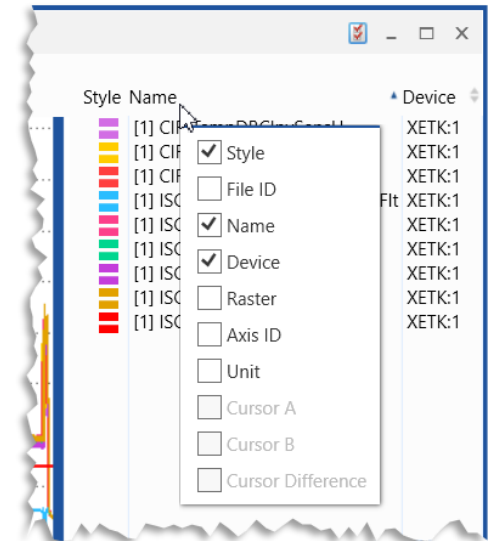
ETAS

– Functional Enhancements (MDA V8.6.1)

– Files, Formats & Data Types (MDA V8.6.1)

– Usability Improvements (MDA V8.6.1)

– **Miscellaneous (MDA V8.6.1)**

 – Engineering add-on: Connecting MDA V8 to an ASAM ODS server

MDA V8.6.1 – What's New

ETAS

Miscellaneous: Engineering add-on for connecting MDA V8 to an ASAM ODS server (V8.6.1)

- The increasing number of measure files requires an intelligent and reliable storage
- The storage should allow to retrieve specific signals from different origins without loading the files
- ASAM ODS standard defines such an approach which can be realized as an ODS database

- MDA V8's component MCD Core is used as abstraction layer for the database and file access
- In MDA V8.6.1 the MCD Core can connect to and communicate with an ODS database
- MDA gets the data of the desired signals from the ODS database and allows to use these like signals from an ordinary measure file

↕ Data & Communication Handling
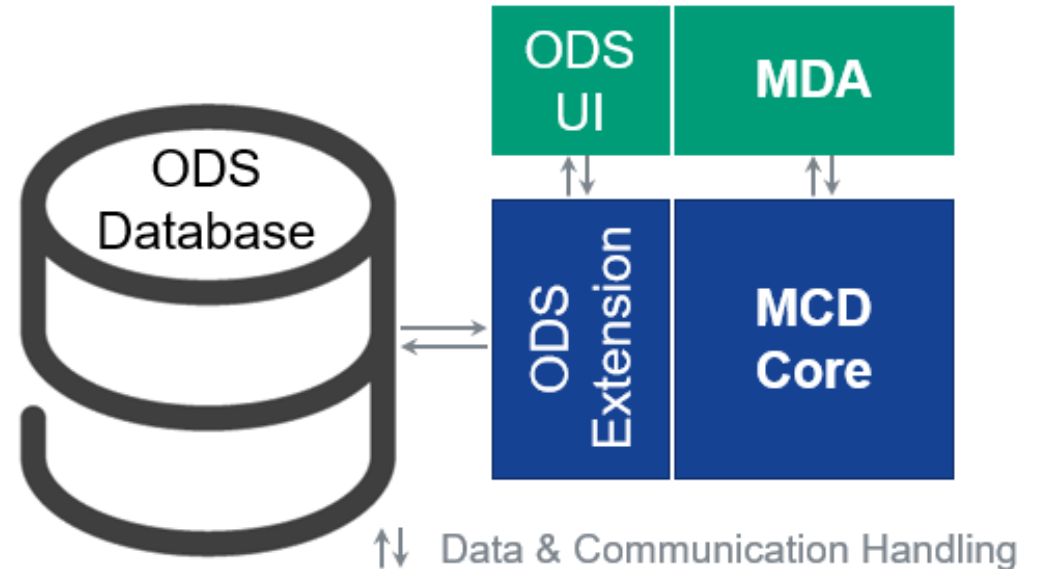
Notes:
- Supported database format is limited to ODS 6.
- ASAM ODS support is an MDA V8 add-on. It is available on demand and needs to be customized for the communication and the structure of the ODS database.

MDA V8.6.0 – What's New

Version Overview for MDA V8.6.0 (March 2022)

o **Functional Enhancements (V8.6.0)**
- – Import of Display Name Rule Sets from MDA V8 configuration files (XDX)

o **Files, Formats & Data Types (V8.6.0)**
- – Filtering in Variable Explorer based on label files (LAB)
- – Modified interpretation of DBC files for signals with verbal values
- – Extension for textual measure file formats for more flexible time channel handling

o **Usability Improvements (V8.6.0)**
- – Automatic search for files which belong to a configuration
- – Global hotkey to replace single measure files easily

o **Miscellaneous (V8.6.0)**
- – Enhancements for MCD Core API *'BasicMeasureFileAccess'*

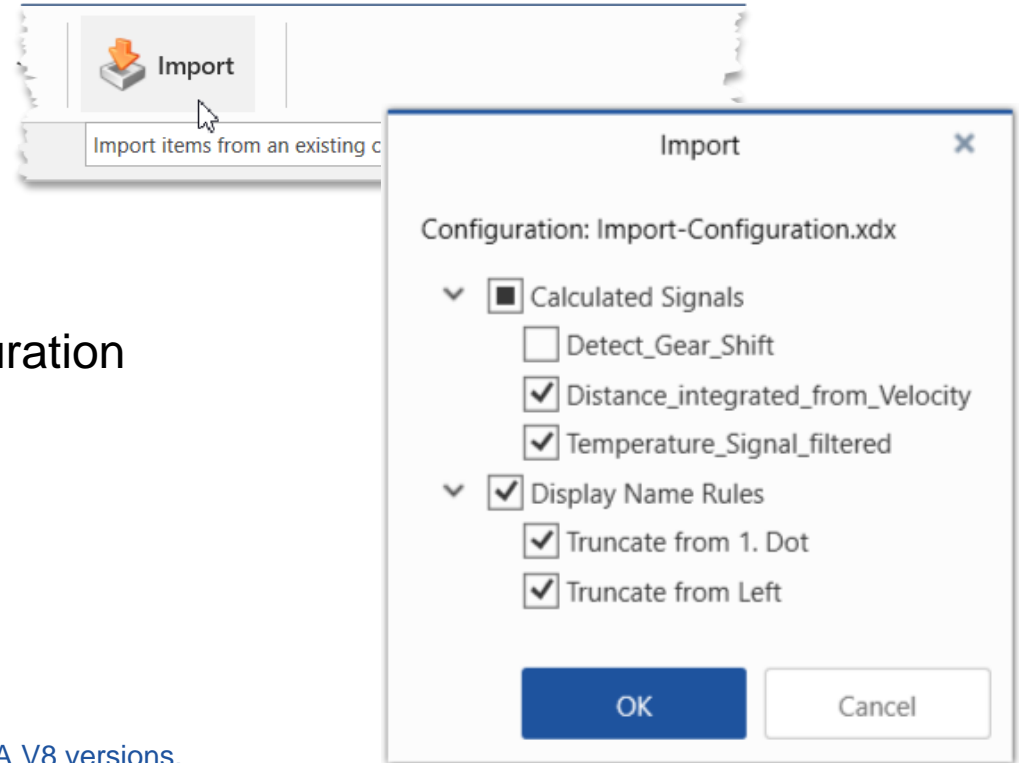(Section names are hyperlinks)

Back to Version Selection

- **Functional Enhancements (MDA V8.6.0)**
  - Import of Display Name Rule Sets from MDA V8 configuration files (XDX)

- Files, Formats & Data Types (MDA V8.6.0)

- Usability Improvements (MDA V8.6.0)

- Miscellaneous (MDA V8.6.0)

Functional Enhancements: Import of Display Name Rule Sets from MDA V8 configuration files (V8.6.0)

– Easier reuse of Display Name Rule Sets

– Import functionality for an XDX file was extended

– In the extended import dialog of MDA V8.6.0
the user can select Display Name Rule Sets
and Calculated Signals

– The selected objects are added to the active configuration

– Moreover Copy & Paste Display Name Rule Sets
between configurations is supported

Import

Import items from an existing c

Import ✕

Configuration: Import-Configuration.xdx

∨ ◼ Calculated Signals
☐ Detect_Gear_Shift
☑ Distance_integrated_from_Velocity
☑ Temperature_Signal_filtered
∨ ☑ Display Name Rules
☑ Truncate from 1. Dot
☑ Truncate from Left

[OK] [Cancel]

Notes:
- Only configurations can be imported, which were created with the same or older MDA V8 versions.
- Import behavior for Calculated Signals from an XDA configuration, or an XCS file has not changed.
- Imported Rule Sets are added at the end of the list shown under 'Rules Sequence' and activated by default after the import.
- If a Rule Set with the same name exists already, the name of newly imported Rule Set is made unique by appending a number.
- MDA does not check whether Rule Sets have overlapping target signal groups. 'Apply To' can be used to specify the target signals.

MDA V8.6.0 – What's New

ETAS

– Functional Enhancements (MDA V8.6.0)

– **Files, Formats & Data Types (MDA V8.6.0)**

  – Filtering in Variable Explorer based on label files
  – Modified interpretation of DBC files for signals with verbal values
  – Extension for textual measure file formats for more flexible time channel handling

– Usability Improvements (MDA V8.6.0)

– Miscellaneous (MDA V8.6.0)

Back to MDA V8.6.0 Overview

MDA V8.6.0 – What's New

Files, Formats & Data Types: Filtering in Variable Explorer based on label files (V8.6.0)

– To quickly select all relevant signals from measure files MDA V8.6.0 can read label files (LAB) and use these for filtering in the Variable Explorer
– Label files are added to the configuration and are listed in the File Explorer
– In the Variable Explorer a new category 'Custom Filter(s)' is provided
– Filtering via label files is done in the same manner as filters in other categories
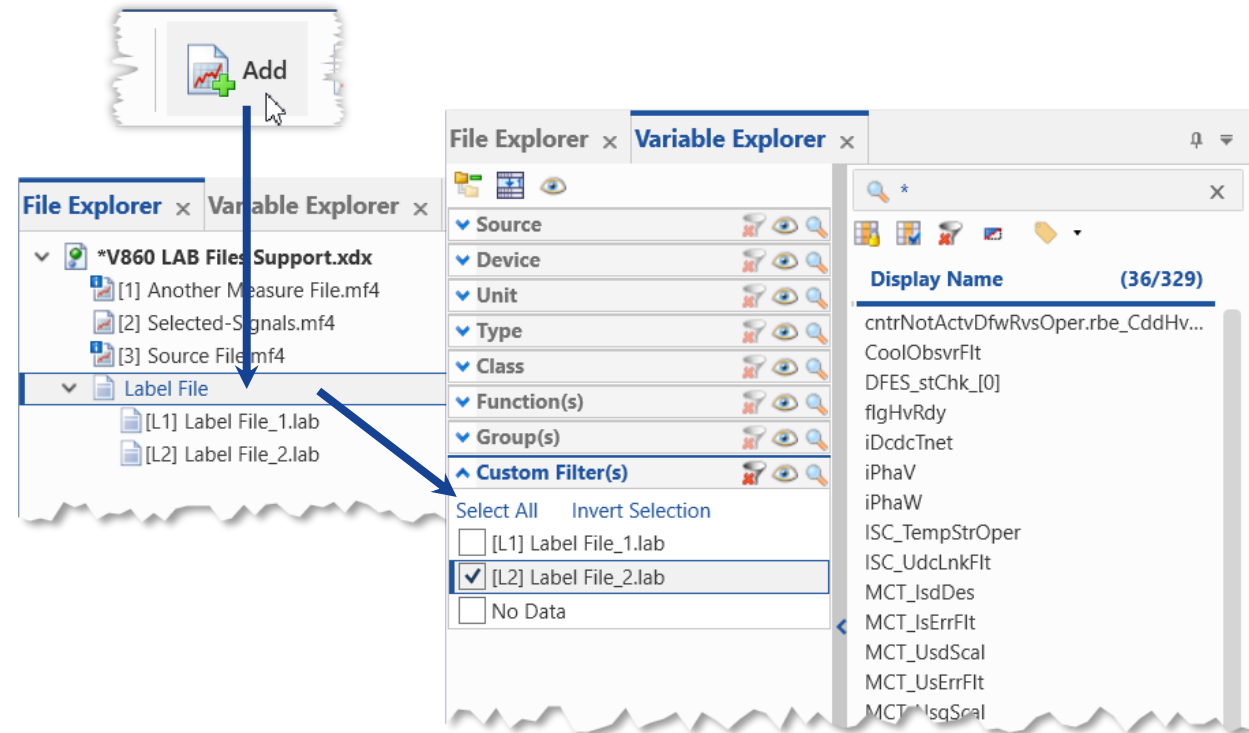
Notes:
- Supported label file format versions are LAB V1.0 and LAB V1.1.
- 'No Data' entry in category 'Custom Filter(s)' identifies signals which are not part of any label file.
- For better overview File Explorer shows separate blocks for different file types, like measure files, and label files.
- References to the label files are stored in the configuration. If a label file cannot be found a missing symbol will be shown.
- To quickly refresh the (changed) contents of a label file, simply remove the label file and then use the UNDO (CTRL+Z) functionality.
- Already since MDA V8.5.1, label files can be created from the Configuration Manager by selecting an instrument, layer or configuration node.

Files, Formats & Data Types: Bus Trace add-on – Modified interpretation of DBC files (V8.6.0)

– To display physical values for signals of a BLF file a description file (e.g. CAN DBC) is needed

– But CAN DBC files don't provide a clear definition for enumeration signals (i.e. verbal values only)

– Now in MDA V8.6.0 the same approach as in INCA is used to differentiate enumerations from STATUS_STRING_REFs:
If the numerical conversion is 'ident' (phys = impl) the signal is interpreted as enumeration

Notes:
- Support of BLF files in MDA requires the CAN Bus Trace add-on.
- STATUS_STRING_REFs have a combined conversion with one numerical and one verbal part.
- Interpretation as Enumeration or STATUS_STRING_REF has several consequences:
  (1) the kind of axis displayed in the oscilloscope, and (2) definition of a calculated signal
  (for enumeration signals usage of the RAW() function is required).
- To show a numeric axis for a signal which is interpreted as enumeration the data representation can be changed to 'decimal'.

MDA V8.6.0 – What's New
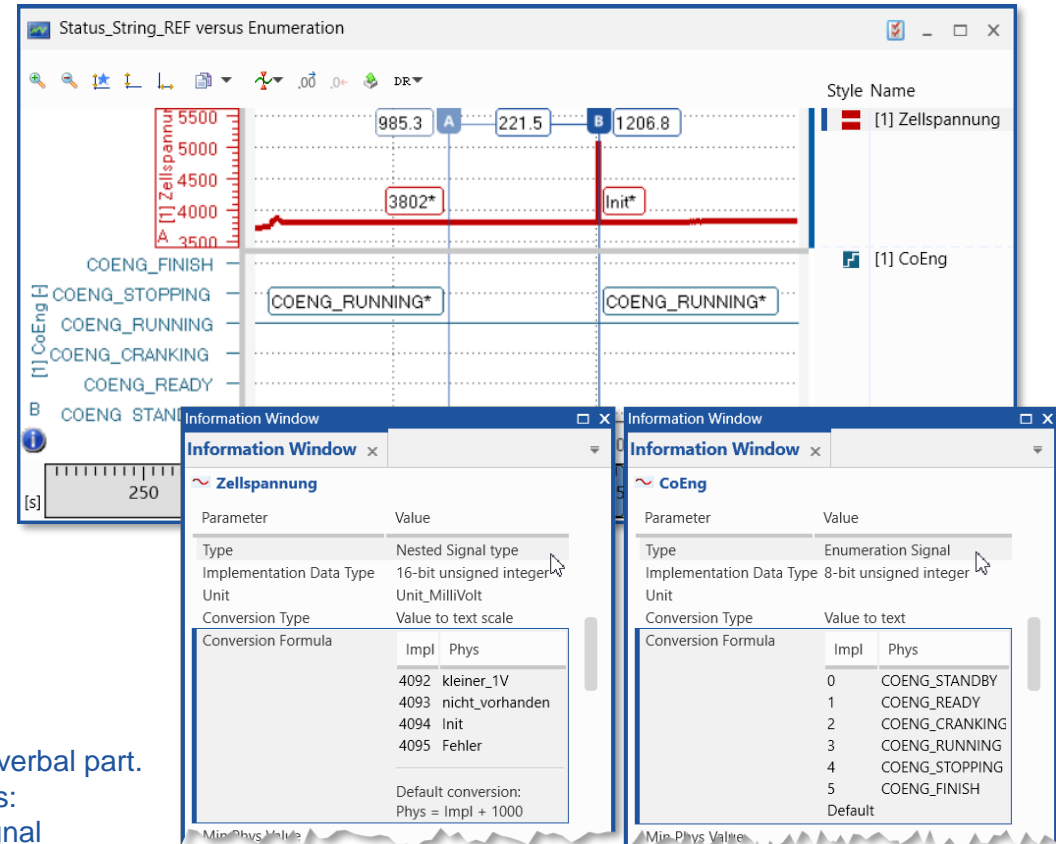
Files, Formats & Data Types: Extension for textual measure file formats (V8.6.0)

– Time channel information is supported more flexibly
for textual measure file formats in MDA V8.6.0
– Now also absolute time channels without date
information are supported by the 'timeFormat' option

Important

– Absolute time channels without date information
must not exceed 24 hours, otherwise time stamps
can not be interpreted correctly.
If needed either use a relative time channel or a file
format with combined date and time information

Notes:
- MDA does not prevent loading files with absolute time information exceeding 24 hours, but a wrong overall file duration will be shown (e.g. in the time slider bar).
- For details how to use the new options see example file 'exampleAsciiFormat.ini' at
  %ProgramData%\ETAS\MDA\8.6\CorePlugins\Etas.TargetAccess.Targets.MeasureFile.Formats.AsciiConfigurable
- Existing INI files from a former MDA installation need to be copied into the new folder used by MDA V8.6 for INI files.
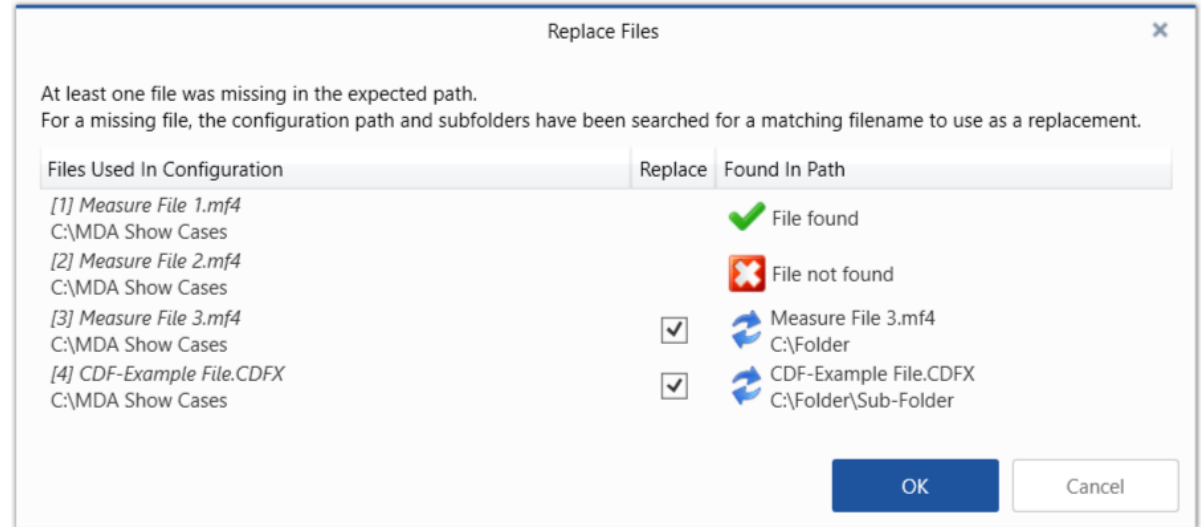
MDA V8.6.0 – What's New

ETAS

– Functional Enhancements (MDA V8.6.0)

– Files, Formats & Data Types (MDA V8.6.0)

– **Usability Improvements (MDA V8.6.0)**

  – Automatic search for files which belong to a configuration
  – Global hotkey to replace single measure files easily

– Miscellaneous (MDA V8.6.0)

MDA V8.6.0 – What's New

Usability Improvement: Automatic search for files which belong to a configuration (V8.6.0)

- To facilitate the use and exchange of configurations MDA V8.6.0 performs an automatic search for files* referenced in the configuration
  - First MDA tries to load the original file from the referenced absolute path
  - Then MDA continues the search for a file with the same name in the folder from where the configuration is opened, and the sub-folders
- Auto-search results are shown in a dialog
- There the user can confirm or reject every located file

Replace Files ×

At least one file was missing in the expected path.
For a missing file, the configuration path and subfolders have been searched for a matching filename to use as a replacement.

Files Used In Configuration	Replace	Found In Path
[1] Measure File 1.mf4 C:\MDA Show Cases		✔ File found
[2] Measure File 2.mf4 C:\MDA Show Cases		❌ File not found
[3] Measure File 3.mf4 C:\MDA Show Cases	☑	🔁 Measure File 3.mf4 C:\Folder
[4] CDF-Example File.CDFX C:\MDA Show Cases	☑	🔁 CDF-Example File.CDFX C:\Folder\Sub-Folder

OK   Cancel

* Notes:
- Auto-search includes measure files and CDF files, but not LAB files.
- The first file which is found will be proposed, even if there would be another file with the same name but in another sub-folder.
- If no file can be found at all, the file will be listed in the Configuration Manager as a 'missing' file (❌)
- Auto-search is limited to a maximum of 3 seconds.

MDA V8.6.0 – What's New

Usability Improvement: Global Hotkey to replace single measure files easily (V8.6.0)

– To facilitate a file replacement the former behavior was modified
  – MDA V8.6.0 checks whether there is just one file* loaded
  – If so, the Replace icon in the ribbon gets enabled, as well as the hotkey (CTRL+Shift+R) to trigger the replace operation for the referenced file
– After selection of the new file, no further user interaction is needed
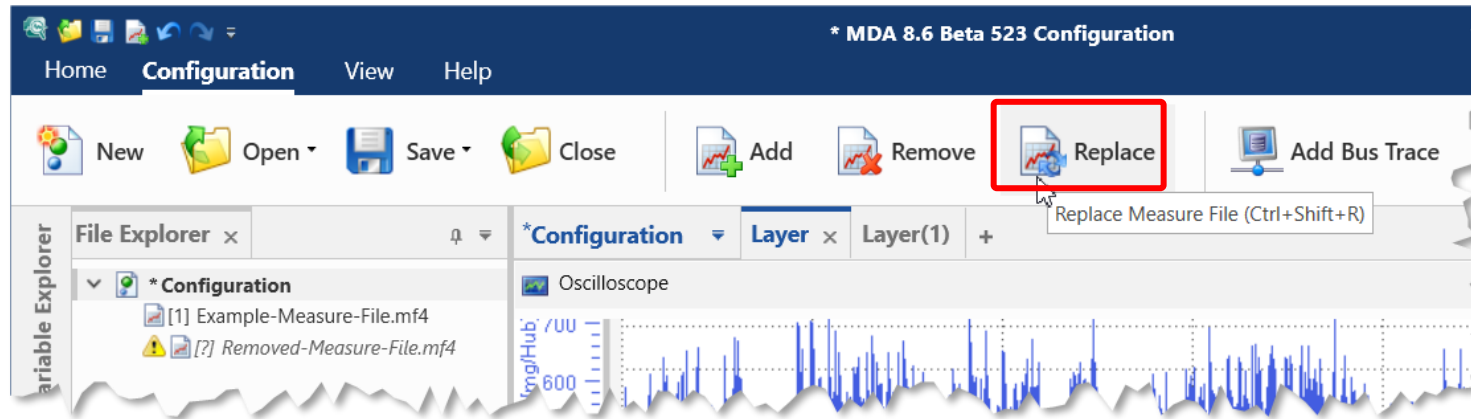
* Notes:
- Replace operation supports measure files, as well as CDF files, but not LAB files.
- If the configuration contains more than one (available) file, the file to be replaced must be selected in the File Explorer.
- Entries in the File Explorer for removed files indicated by *[?]* are ignored, i.e. such entries do not block but also do not support the global replace operation.
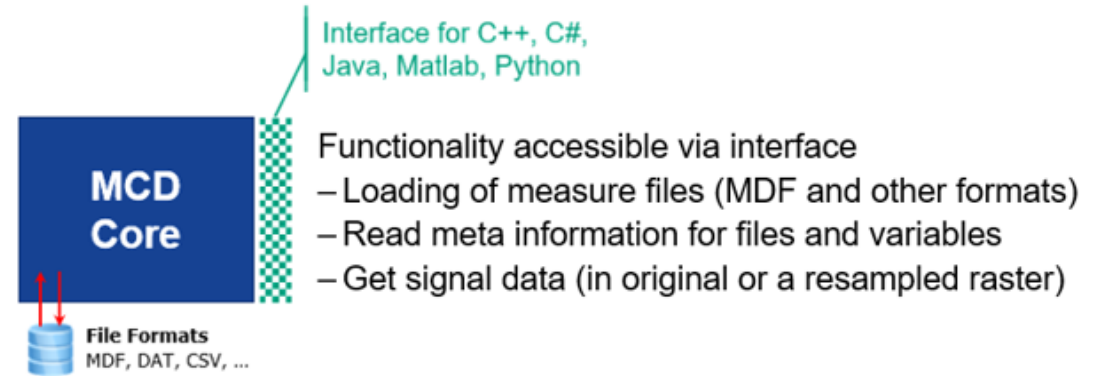
– Functional Enhancements (MDA V8.6.0)

– Files, Formats & Data Types (MDA V8.6.0)

– Usability Improvements (MDA V8.6.0)

– **Miscellaneous (MDA V8.6.0)**

    – Enhancements for MCD Core API *'BasicMeasureFileAccess'*

MDA V8.6.0 – What's New

Miscellaneous: Enhancements for MCD Core API provided via Software Development Kit (V8.6.0)

– The existing MCD Core API (available as SDK*) can be used in two variants

– Besides the 'general' API a so-called *'BasicMeasureFileAccess'* offers a better abstraction, and is therefore easier-to-use

– Two new functionalities have been introduced in the *BasicMeasureFileAccess*:

  – Additional meta information is available, namely the conversion formula, the signal data type, and the respective parameters

  – Signal values can be requested in a merged raster, i.e. time stamps of different rasters are merged and for the missing time stamps constantly interpolated values are provided

– Languages supported by the MCD Core API are: C++, C#, Java, Python and Matlab

Interface for C++, C#, Java, Matlab, Python

MCD Core

File Formats
MDF, DAT, CSV, ...

Functionality accessible via interface
– Loading of measure files (MDF and other formats)
– Read meta information for files and variables
– Get signal data (in original or a resampled raster)

* Note:
- MCD Core API is offered as Software Development Kit (SDK) on demand.

Thank you
for using MDA V8.6