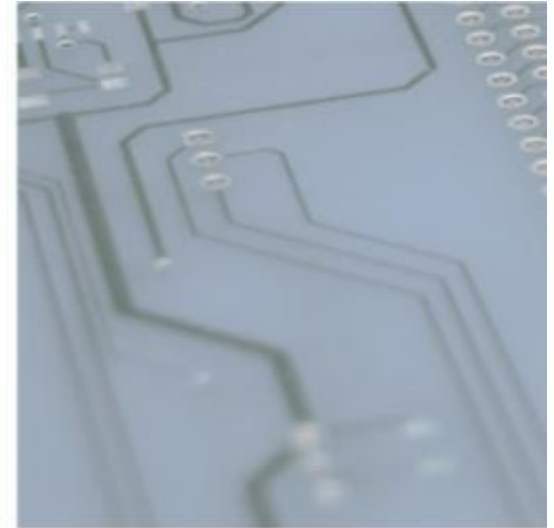


# Diagnosis

XCP

Integration in  
CanEasy

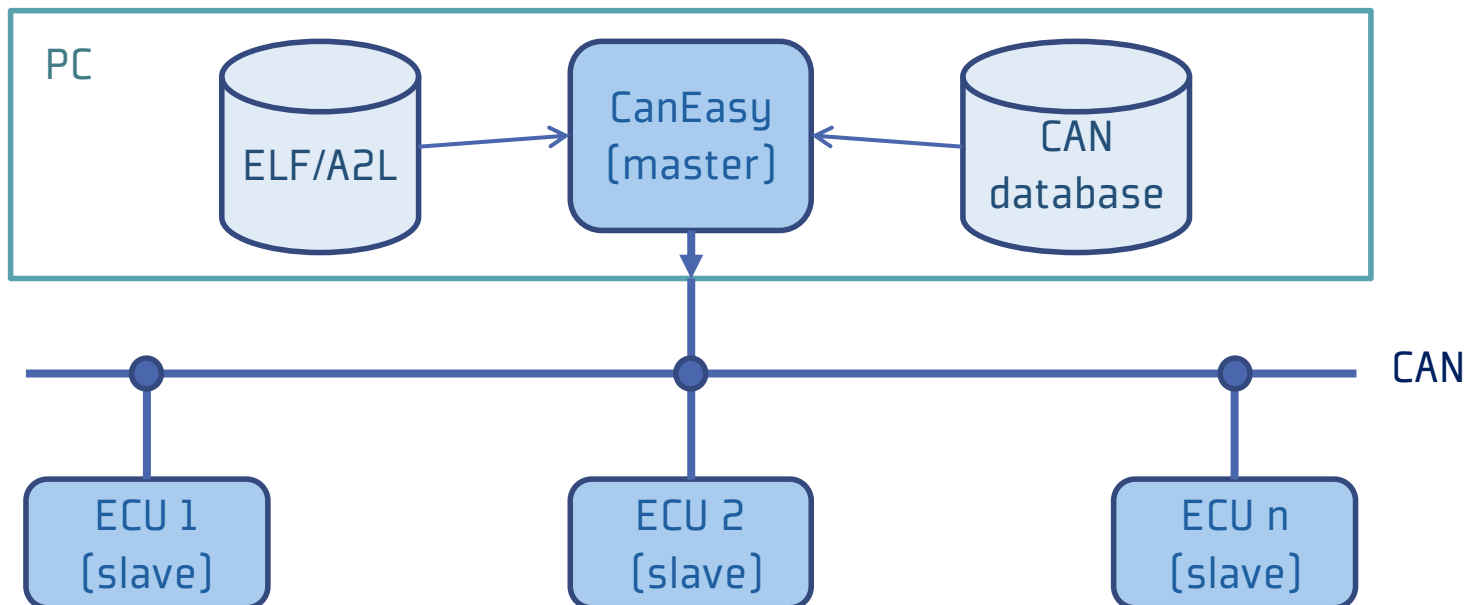


Frank Nikolai

- XCP
    - CanEasy integration
    - Create a configuration
    - Create Variable Database
    - Import input files
    - Monitor input files
    - Add variables
    - Modify variables
    - Read/Write variables
    - ECU variables in Signal Monitor, Plot and Trace
  
  - Outlook
-

# XCP: CanEasy integration

- XCP in CanEasy
  - Works as XCP master
  - Generalizes data (independent from source, e.g. CAN, XCP, ...)
  - Provides auto-formatted data

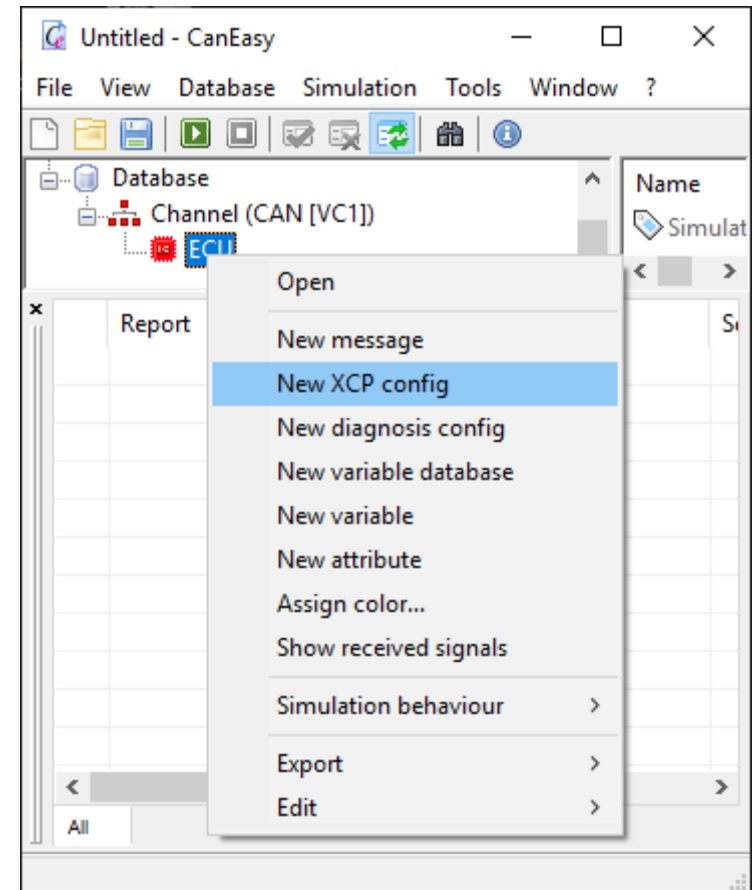


# XCP: CanEasy integration

- Steps to do:
  - Add a XCP configuration to an ECU knot
  - Add input files (ELF / DWARF2, A2L) as source for the variable database
  - Monitor input files and reload on change
  - Import variables from input files
  - Use common CanEasy features to view and manipulate imported variables

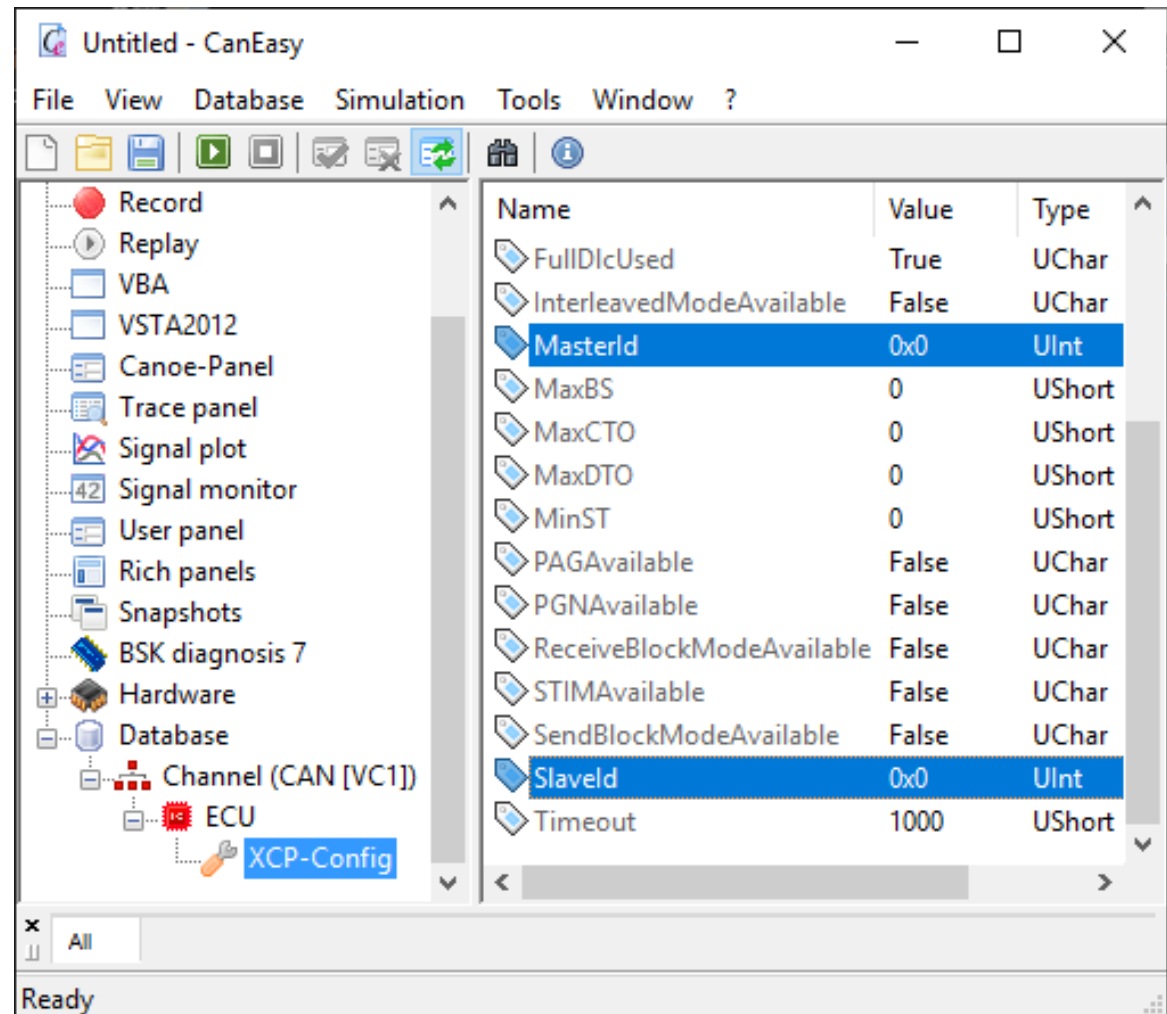
# XCP: Create a configuration

- Select ECU
- Add new XCP configuration



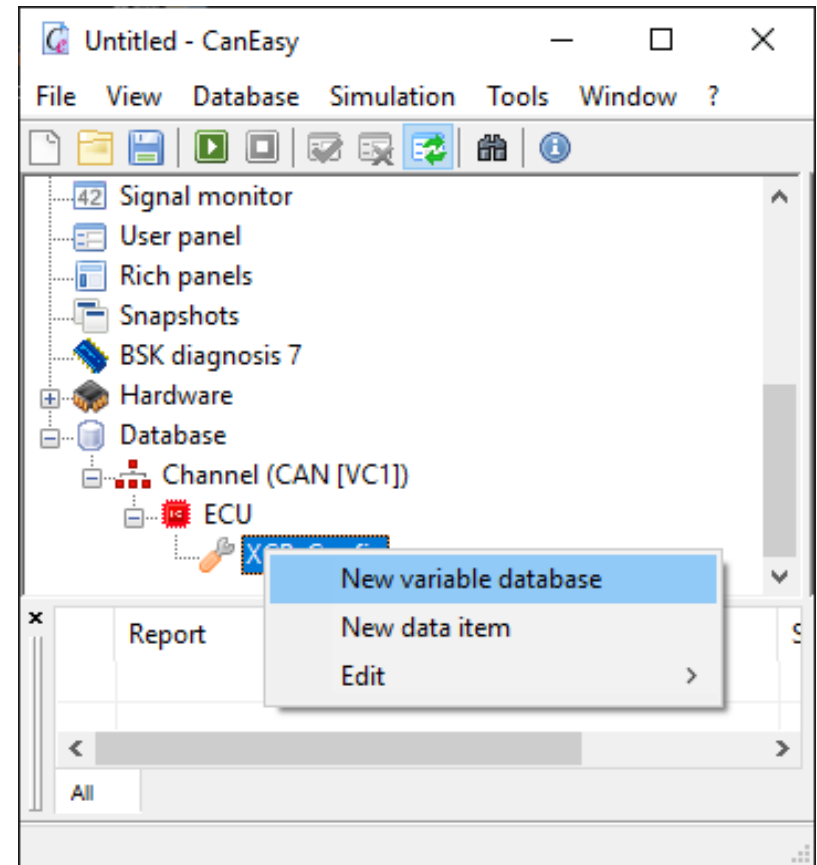
# XCP: Create a configuration

- Select XCP configuration
- Set Master ID
- Set Slave ID



# XCP: Create Variable Database

- Select XCP configuration
- Add new Variable Database

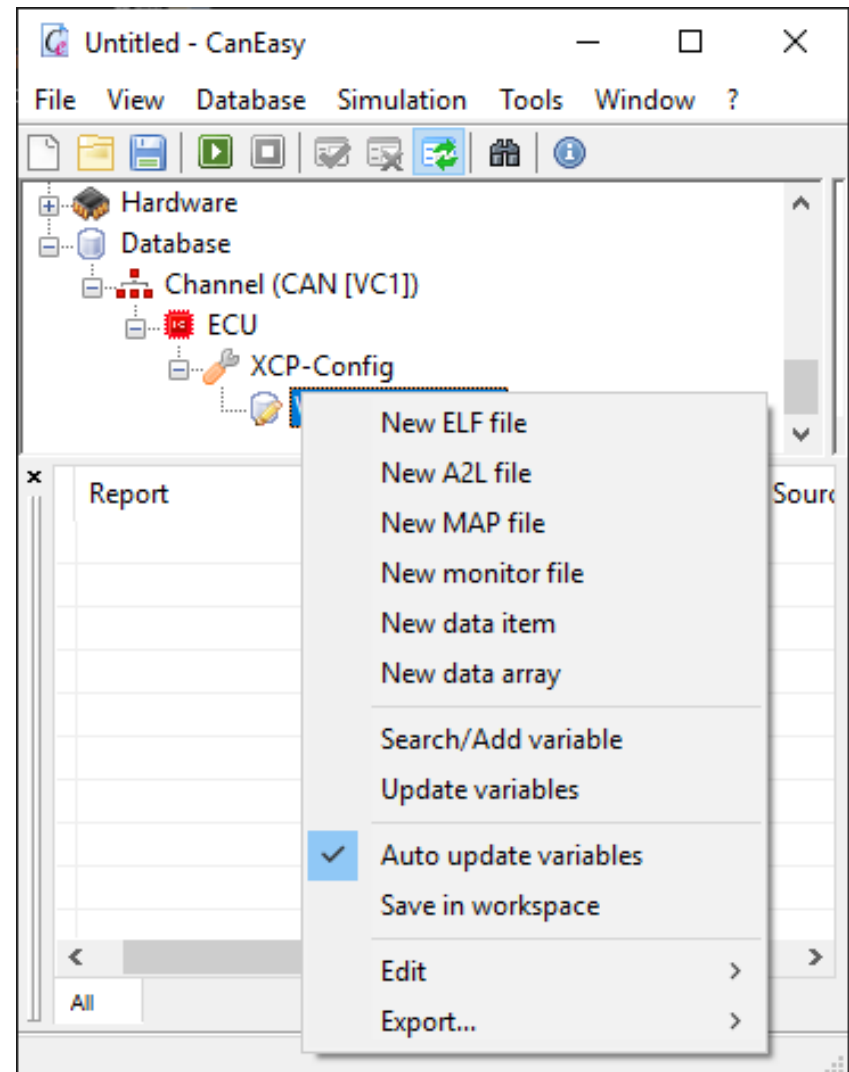


# XCP: Import input files

- Select variable database
- Import new ELF file

## Alternatives:

- Import an A2L file
- Import a MAP file  
(as an ELF file)

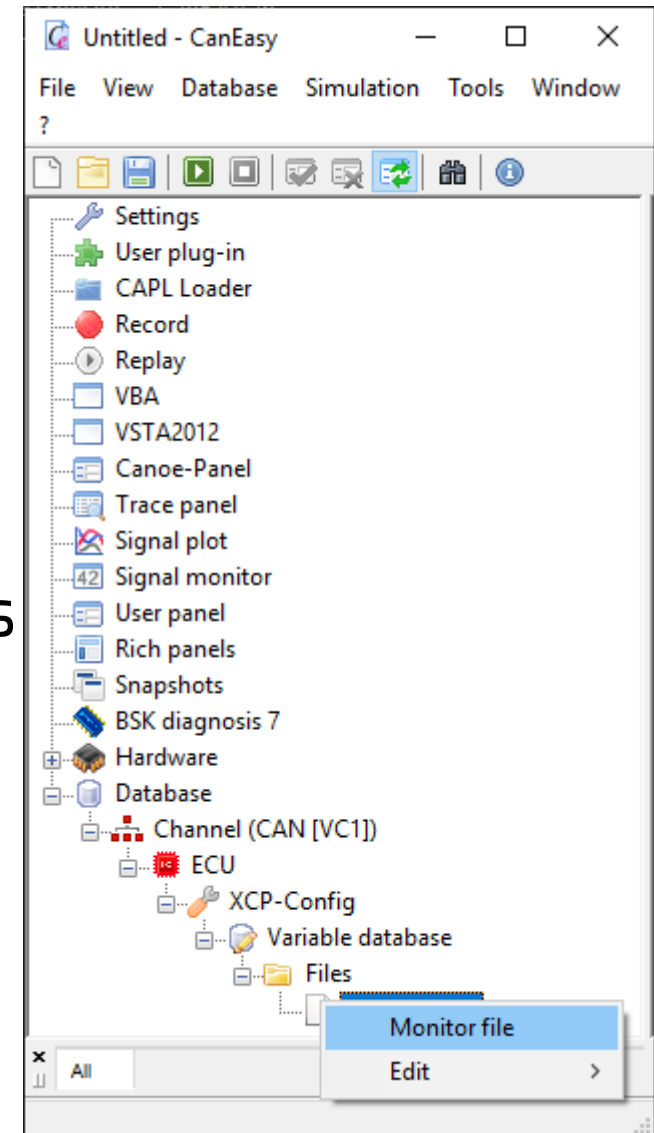


# XCP: Monitor input files

- Select input file
- Activate file monitoring

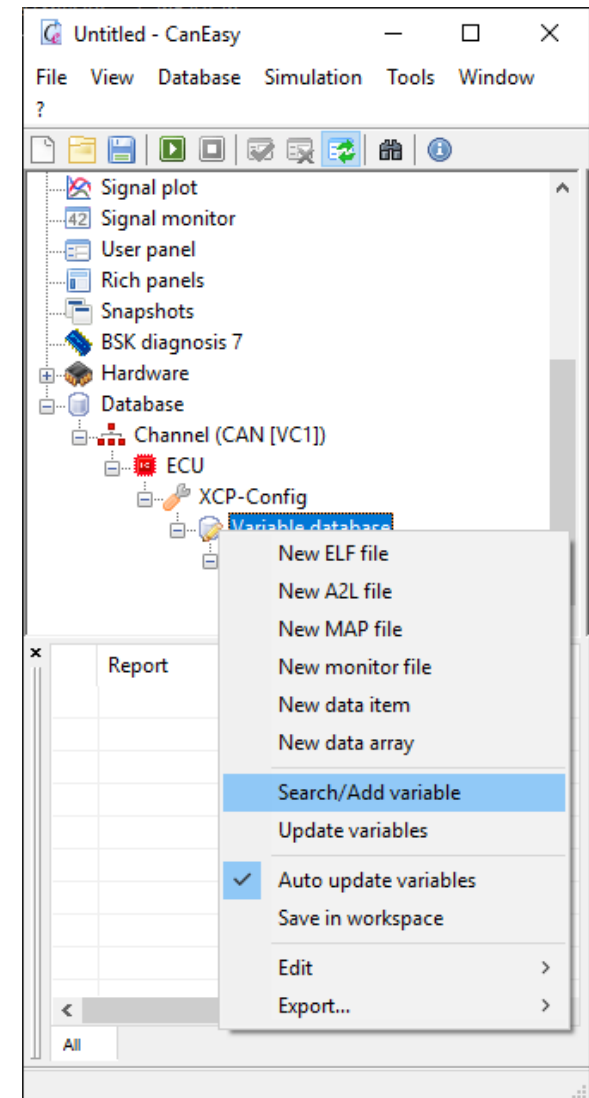
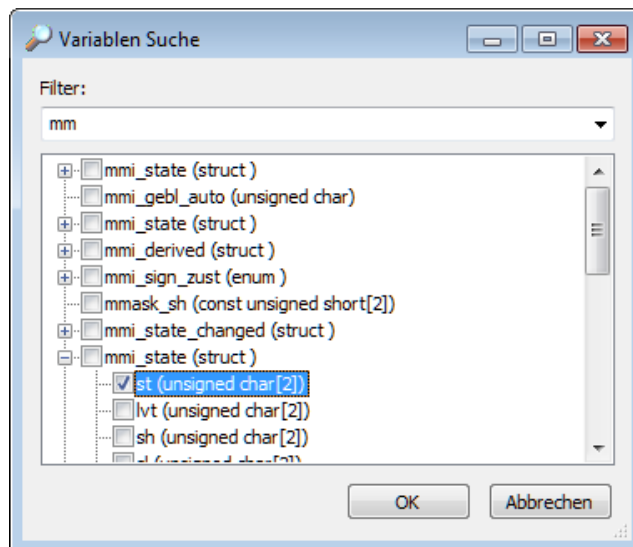
## File Monitoring:

- CanEasy can monitors input files
- Changed files are reloaded automatically
- Variable data is updated automatically



# XCP: Add variables from ELF file

- Select Variable Database
- Search for a variable
- Select variable(s)

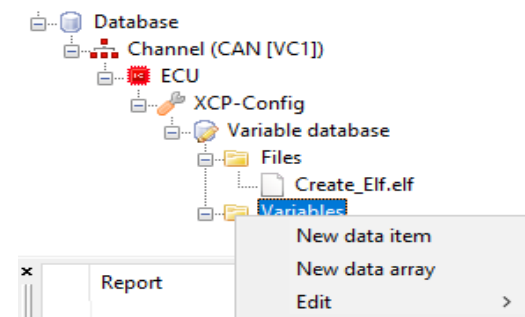
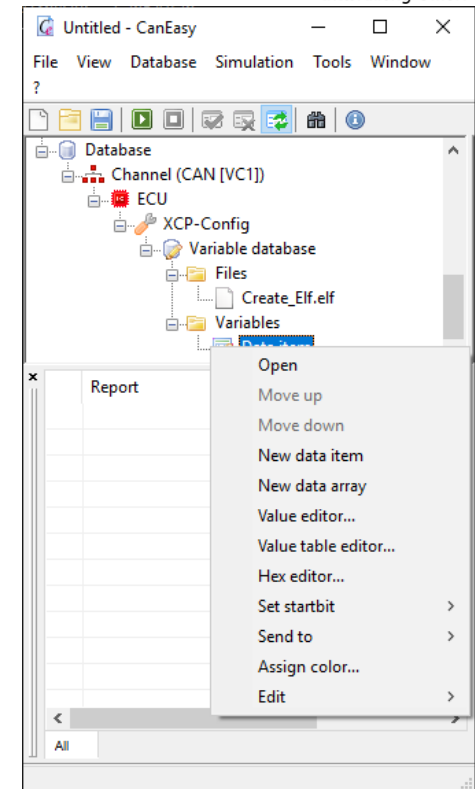


# XCP: Add variables manually

- Select the place where to add the new variable
- Add new data element  
(single element of specific type)

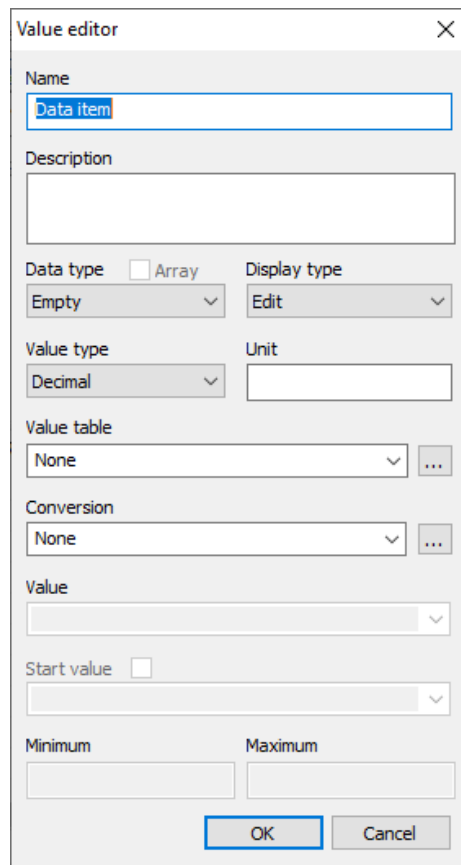
or

- Add new data segment  
(array of specific type)



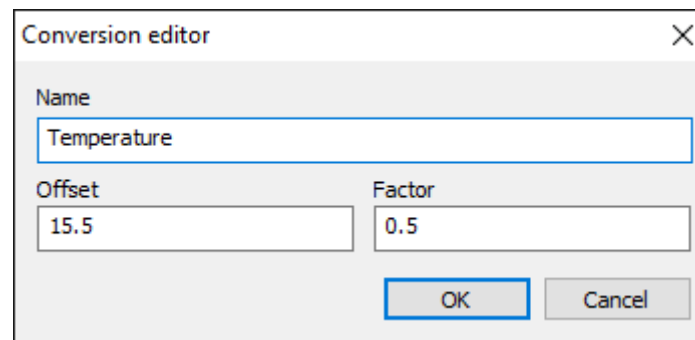
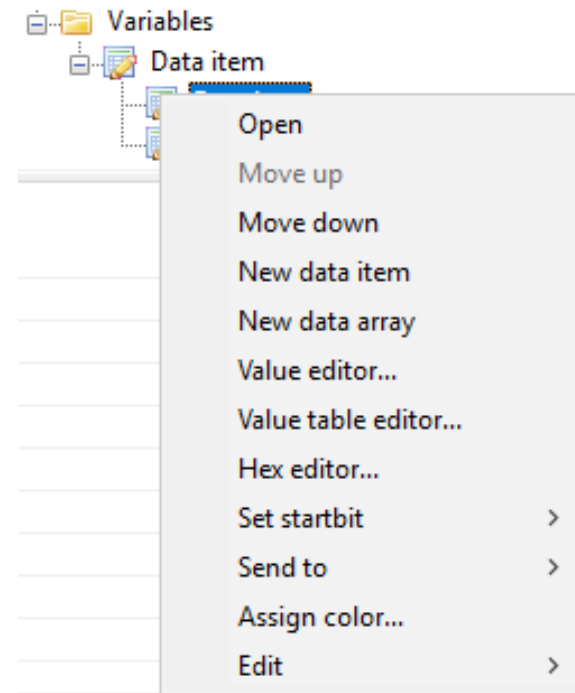
# XCP: Modify variables via editor

- Select a variable
- Use value editor



The Value editor dialog box is used to configure a data item. It contains the following fields and options:

- Name:** A text field containing "Data item".
- Description:** A large text area.
- Data type:** A dropdown menu set to "Empty". An ☐ **Array** checkbox is located next to it.
- Display type:** A dropdown menu set to "Edit".
- Value type:** A dropdown menu set to "Decimal".
- Unit:** An empty text field.
- Value table:** A dropdown menu set to "None" with a three-dot menu button to its right.
- Conversion:** A dropdown menu set to "None" with a three-dot menu button to its right.
- Value:** A text field.
- Start value:** A checkbox and a text field.
- Minimum:** A text field.
- Maximum:** A text field.
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

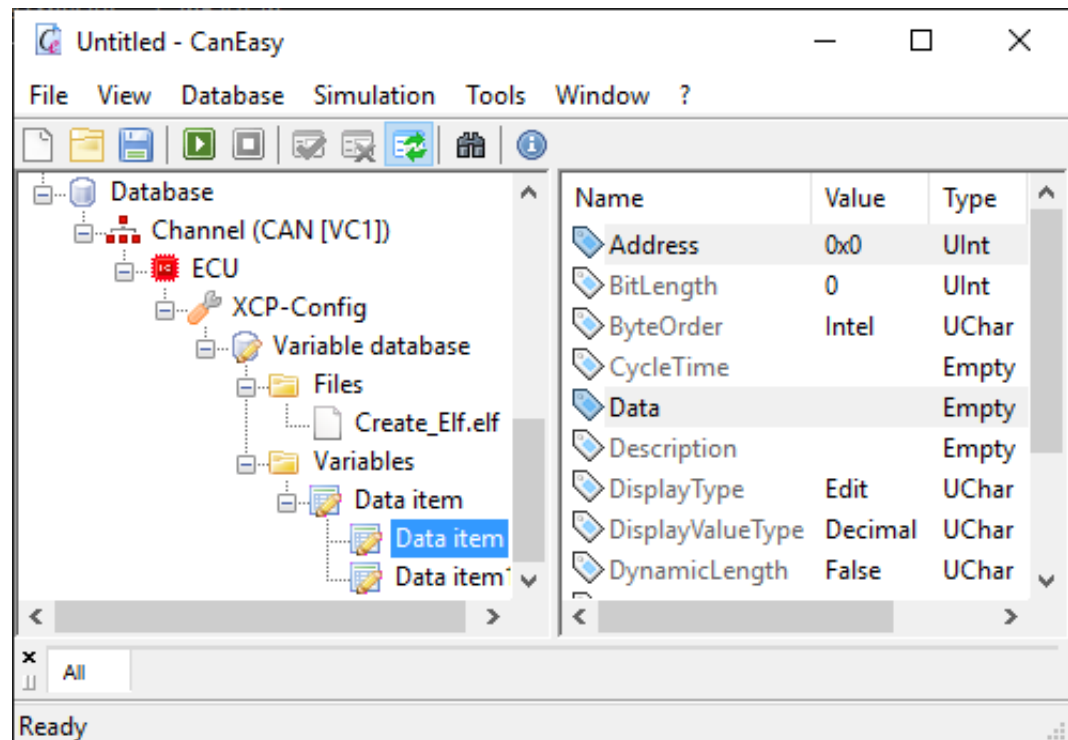


The Conversion editor dialog box is used to define conversion parameters for a variable. It contains the following fields and options:

- Name:** A text field containing "Temperature".
- Offset:** A text field containing "15.5".
- Factor:** A text field containing "0.5".
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

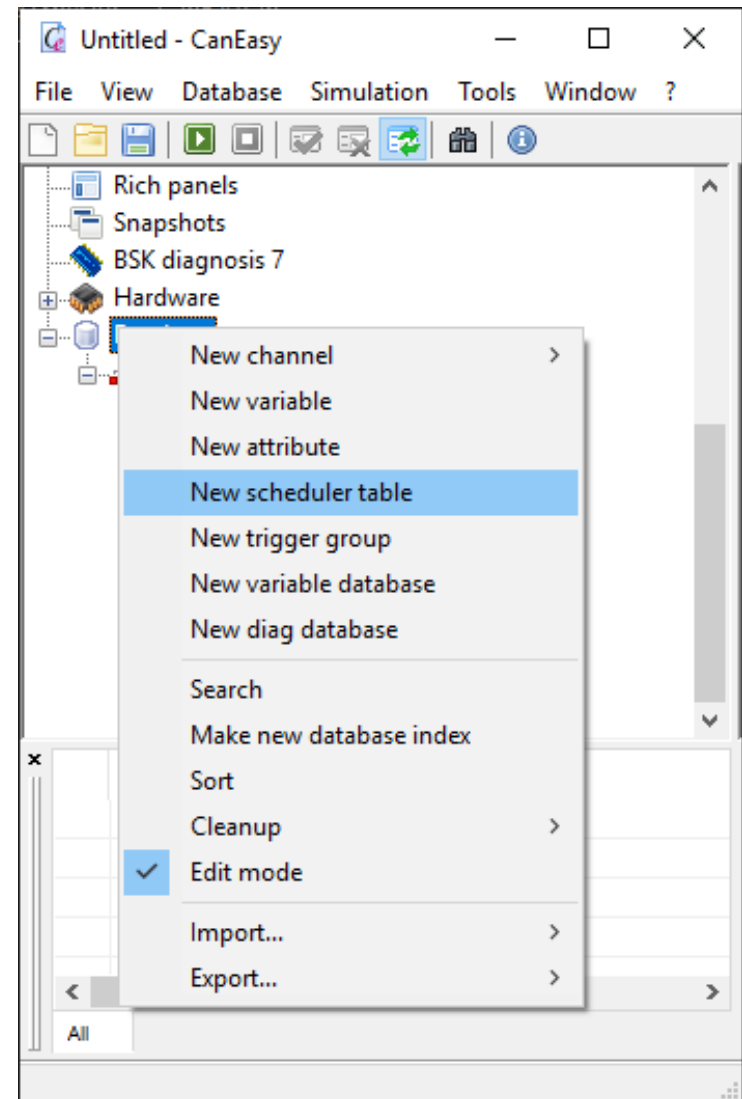
# XCP: Modify variables manually

- Select a variable
- Modify attributes on the right side



# XCP: Read variables

- Select Database
- Add scheduler table



# XCP: Read variables

- Select scheduler table
- Add new entry for Diag: data read
- Use the variable name [adds correct reference automatically]

Alternative:

- Copy reference of variable [select variable, press CTRL+C]
- Paste reference in table entry

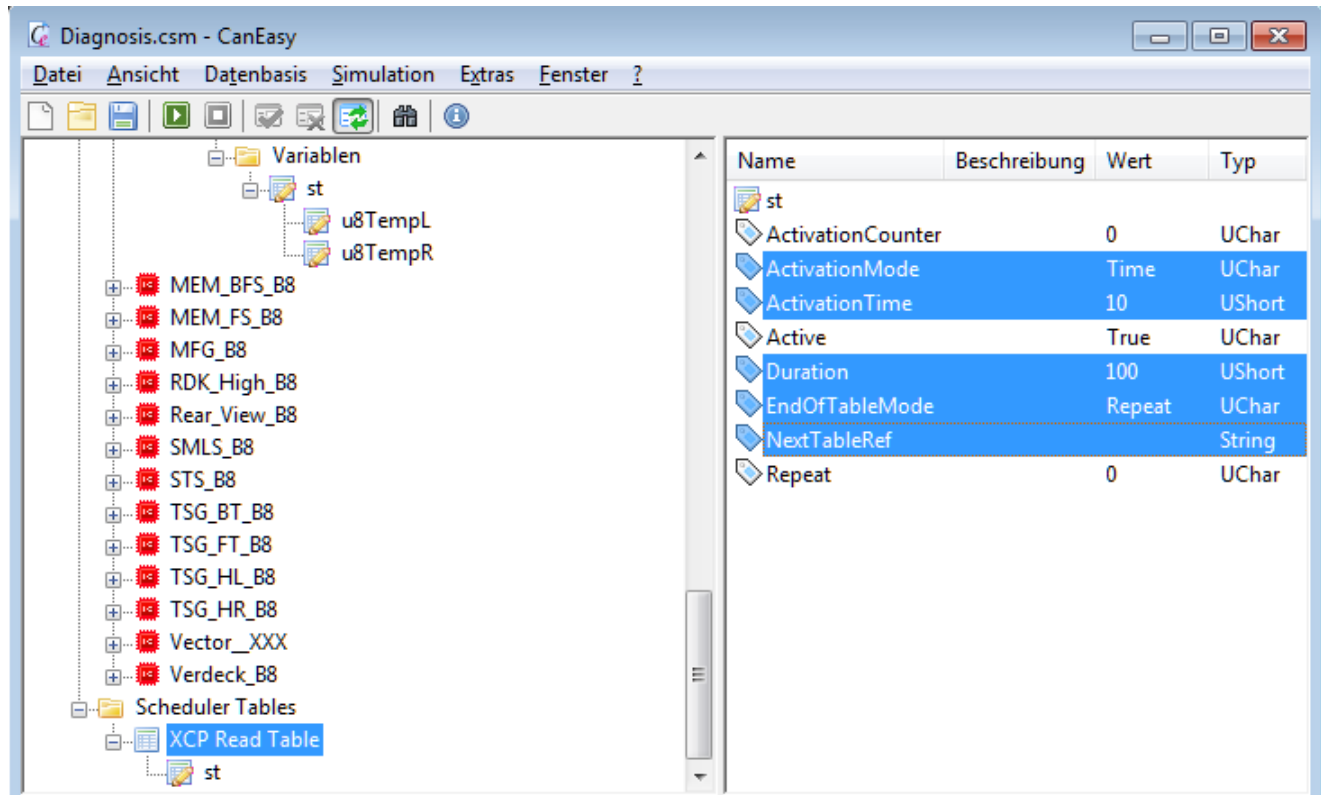
The screenshot shows the CanEasy software interface. The main window displays a tree view of the XCP-Config. The 'Variable database' folder is expanded, showing 'Files' (Create\_Elf.elf) and 'Variables' (Data item, Data item1, Data item1). The 'Schedule tables' folder is also expanded. A context menu is open over the 'Schedule tables' folder, showing options like 'Execute', 'New table action', 'Export...', 'Active', 'Move up', 'Move down', and 'Edit'. The 'New table action' option is selected, and a sub-menu is open showing 'Condition', 'Diag', 'Execute VBA macro', 'Execute VSTA method', 'Execute application', 'Execute formula', and 'Group'. The 'Diag' option is selected, and another sub-menu is open showing 'Data read' and 'Data write'. The 'Data read' option is selected.

Below the main window, a smaller window titled 'XCP.csm - CanEasy' is visible. It shows a table with the following data:

Name	Wert	Typ	Be
Active	True	UChar	
Duration	0	UShort	
ErrorText		String	
Highlight	20	UChar	
Reference	//DB/Channel:B8_KCAN/Node:Ki...	String	
Repeat	0	UChar	

# XCP: Read variables

- Select XCP read table
- Modify attributes on the right side

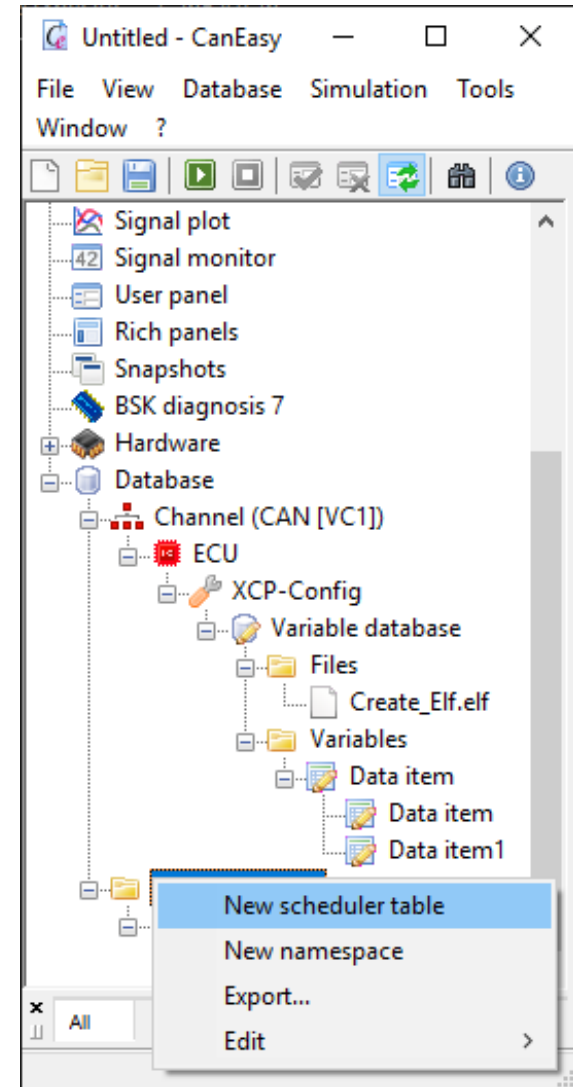


The screenshot shows the CanEasy software interface with the 'Diagnosis.csm - CanEasy' window. The left pane displays a tree structure of variables, including 'Variablen', 'st', 'u8TempL', 'u8TempR', and a list of memory addresses (MEM\_BFS\_B8, MEM\_FS\_B8, MFG\_B8, RDK\_High\_B8, Rear\_View\_B8, SMLS\_B8, STS\_B8, TSG\_BT\_B8, TSG\_FT\_B8, TSG\_HL\_B8, TSG\_HR\_B8, Vector\_XXX, Verdeck\_B8). The 'Scheduler Tables' folder is expanded, showing the 'XCP Read Table' selected. The right pane displays a table of attributes for the selected table.

Name	Beschreibung	Wert	Typ
st			
ActivationCounter		0	UChar
ActivationMode		Time	UChar
ActivationTime		10	UShort
Active		True	UChar
Duration		100	UShort
EndOfTableMode		Repeat	UChar
NextTableRef			String
Repeat		0	UChar

# XCP: Write variables

- Select scheduler tables
- Add a new scheduler table

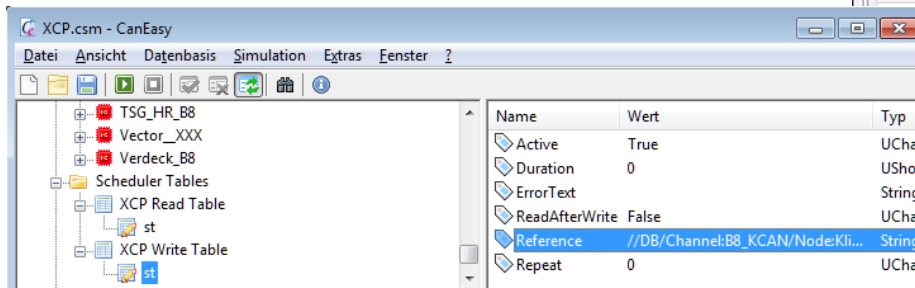
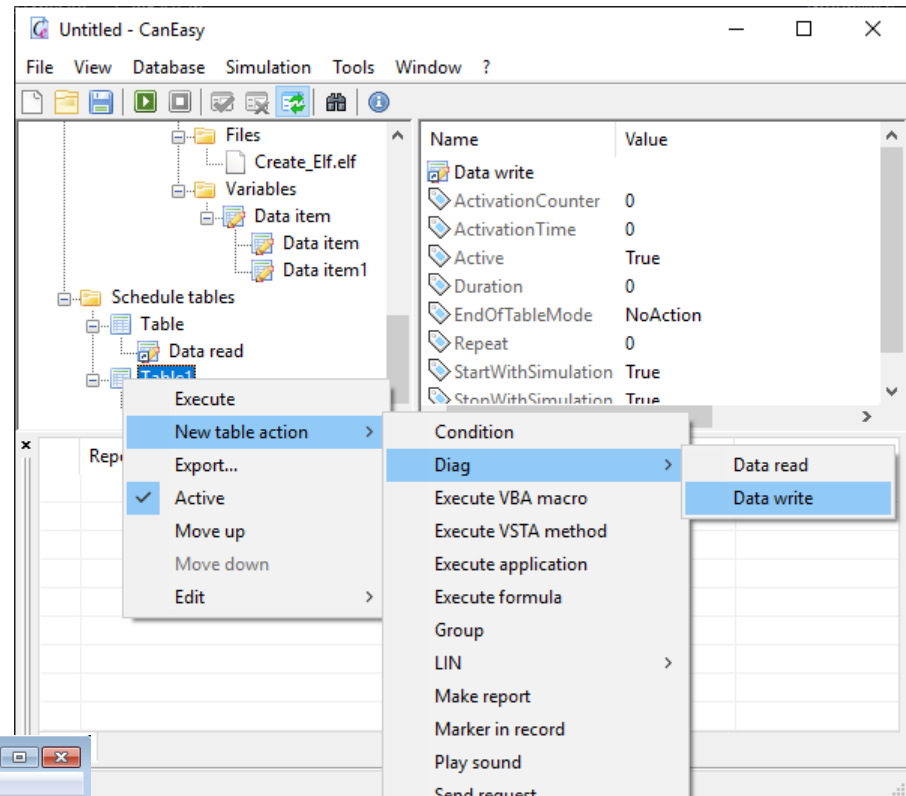


# XCP: Write variables

- Select scheduler table
- Add new entry for XCP:  
data write
- Use the variable name  
(adds correct reference  
automatically)

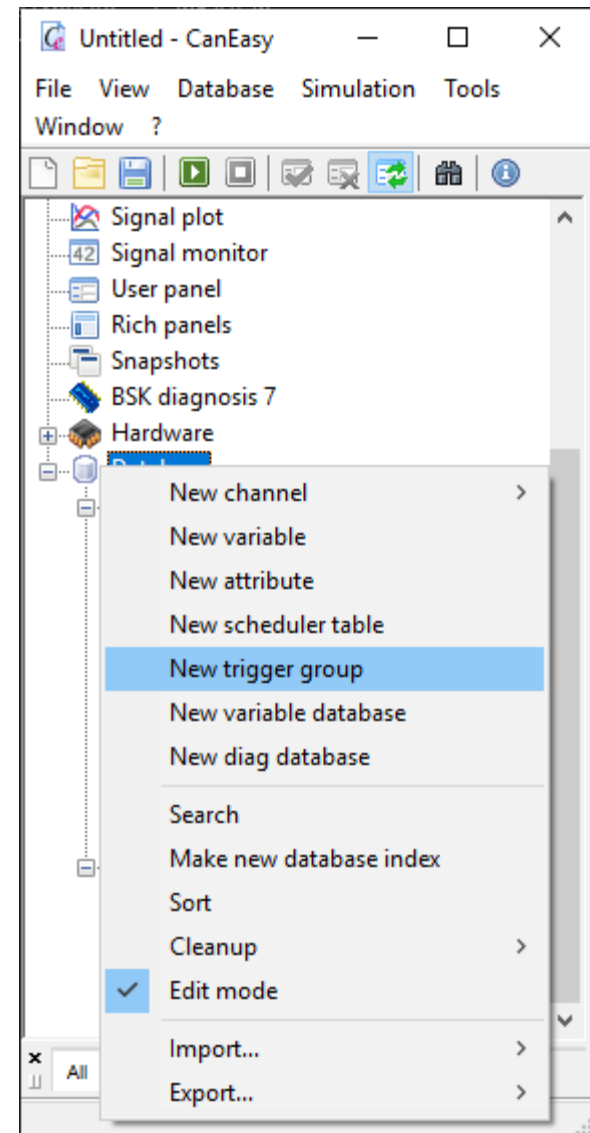
Alternative:

- Copy reference of variable  
(select variable, press CTRL+C)
- Paste reference in table entry



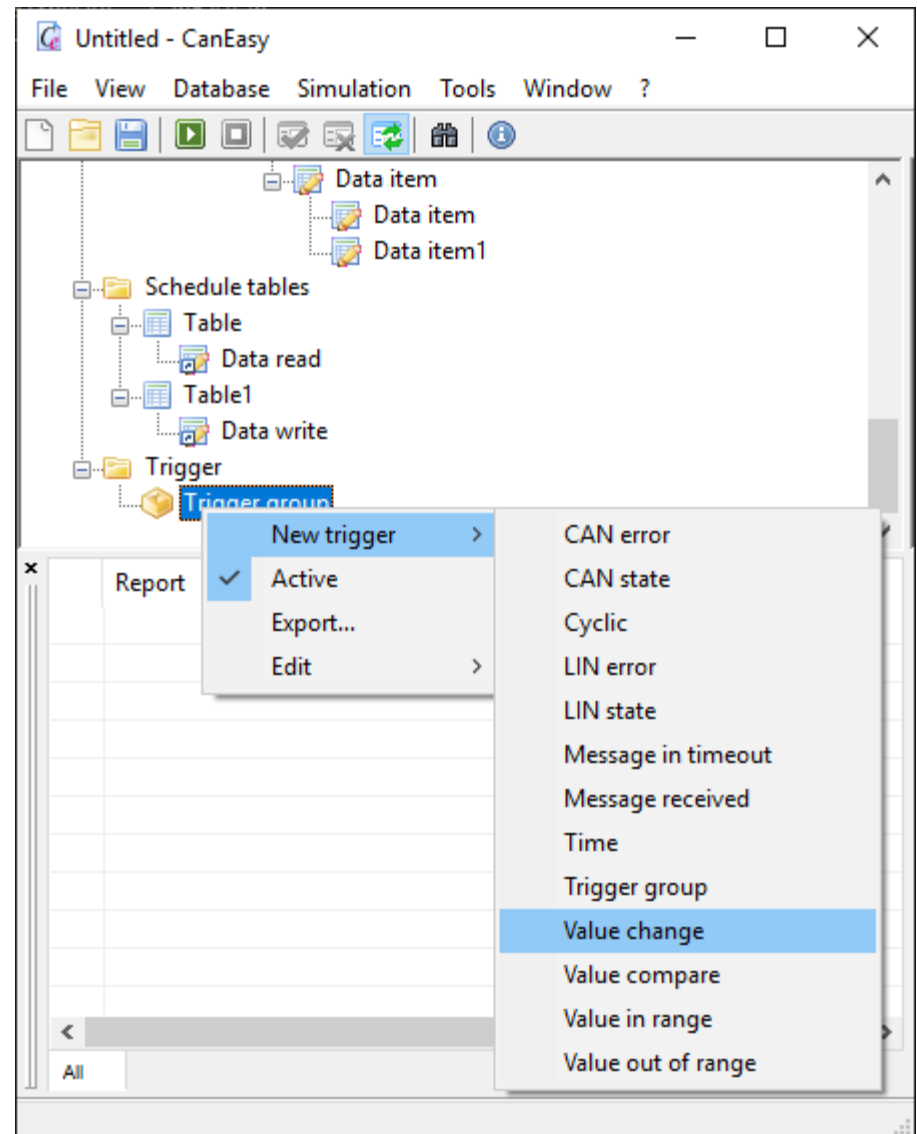
# XCP: Write variables

- Select database
- Add new trigger group



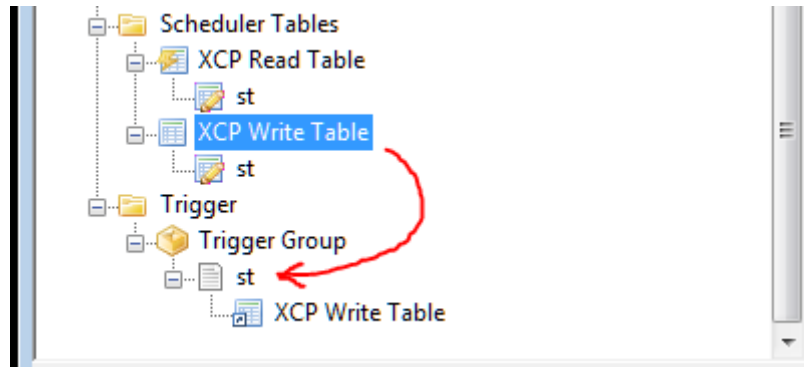
# XCP: Write variables

- Select trigger group
- Add new entry  
'on value change'



# XCP: Write variables

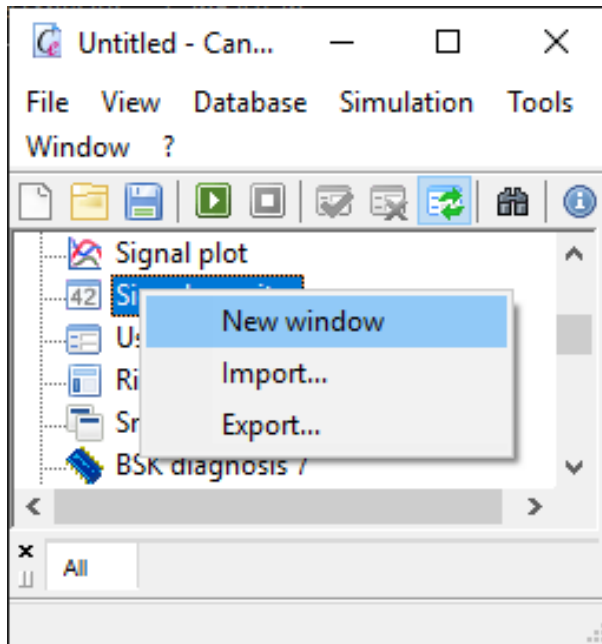
- Drag and drop schedule table onto trigger group entry



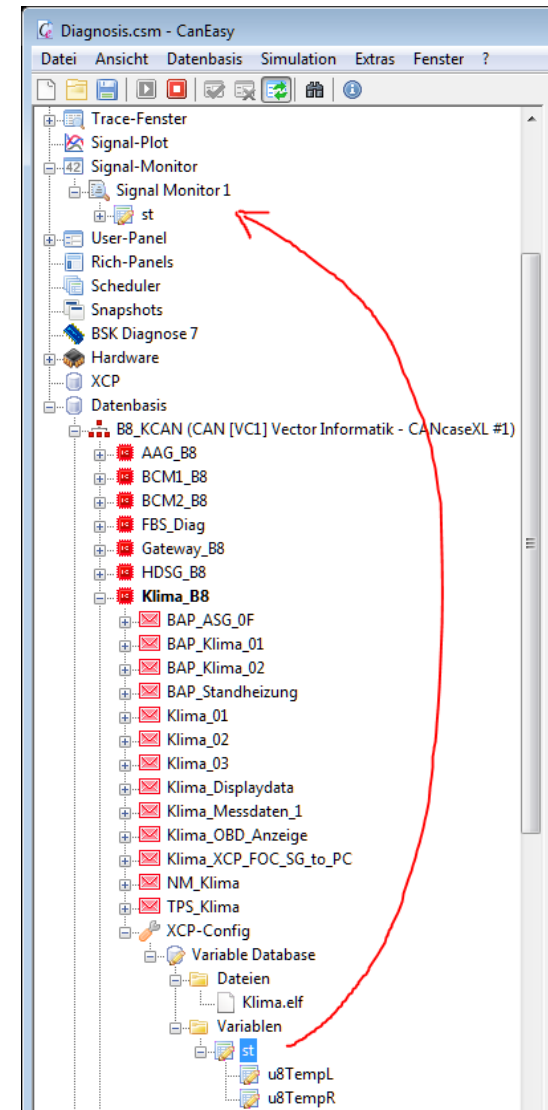
- Link will be created with name of schedule table

# XCP: ECU variables in Signal Monitor

- Create new Signal Monitor

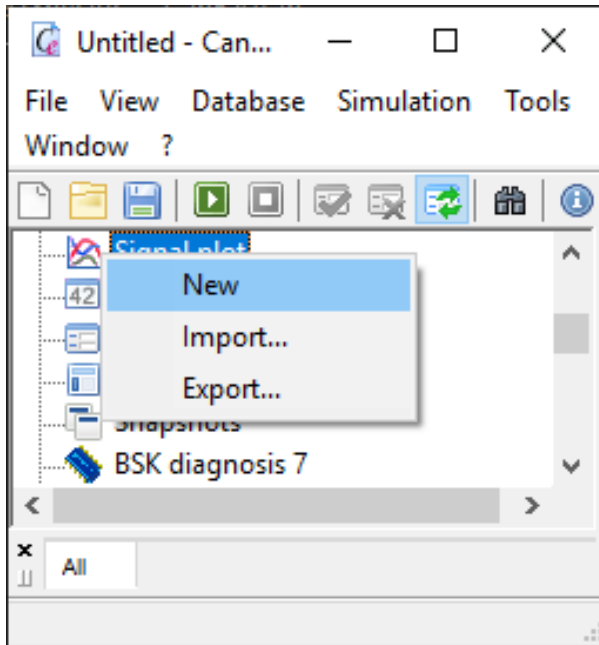


- Drag and drop a variable onto Signal Monitor

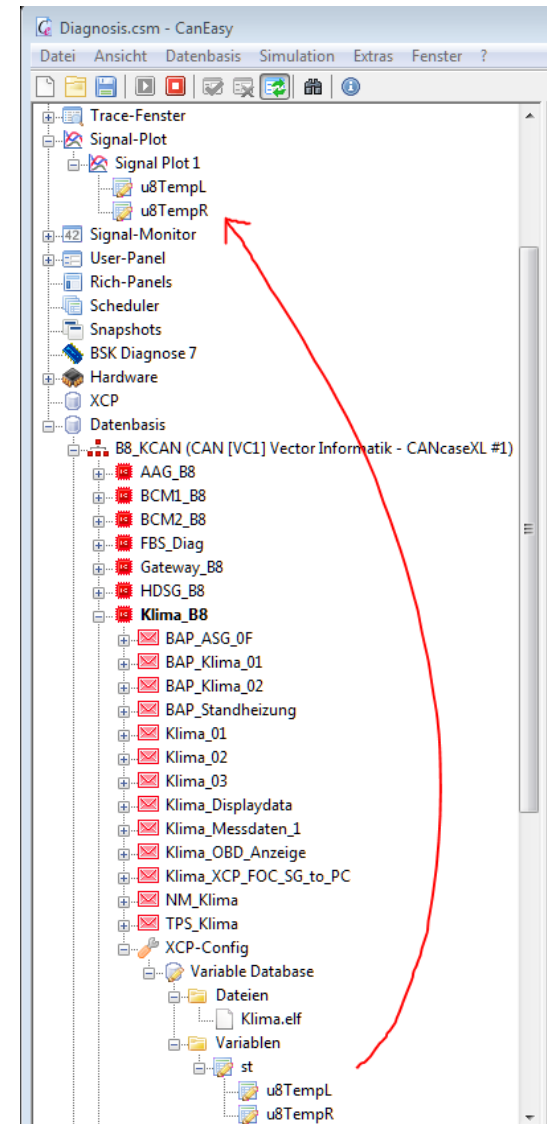


# XCP: ECU Variables in plot

- Create new Signal Plot

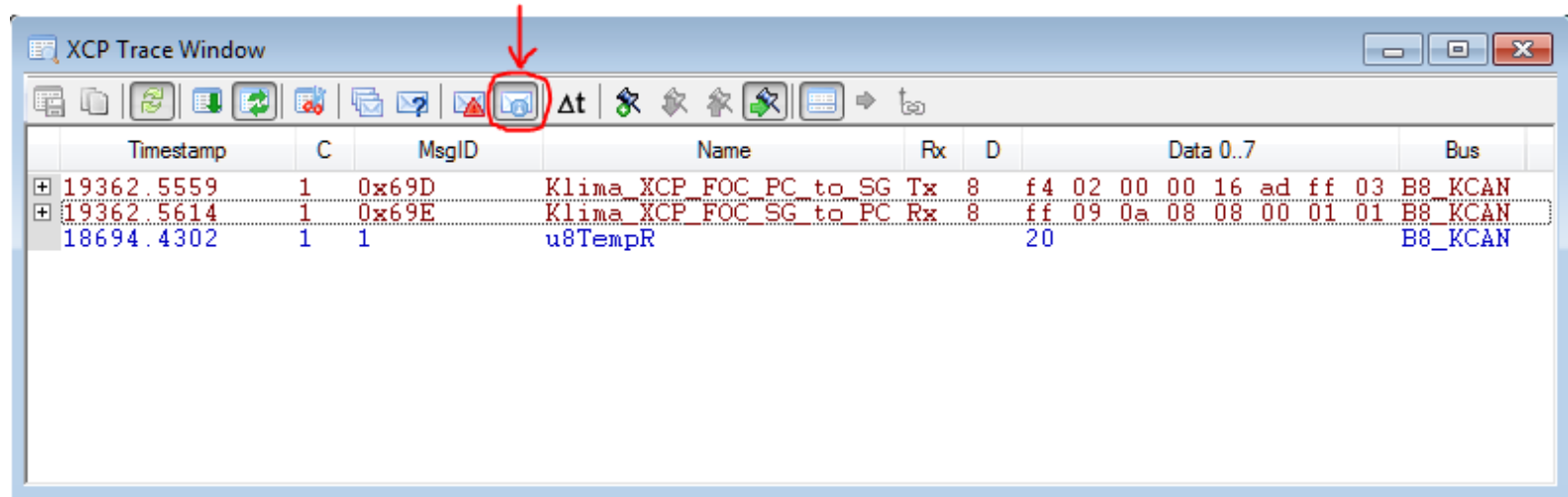


- Drag and drop a variable onto Signal Plot



# XCP: ECU Variables in Trace

- Trace windows can display ECU variables
- Additional information option has to be enabled



- Filtering of ECU variables is not supported

## Already available:

- Read/write variables
- Import A2L files
- Import MAP files
- Import ELF files

## Planned:

- DAQ lists
- ECU flashing
- Import MAP files

Thank you for your attention!

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