

# **INCA-FLOW V4.18: What's New**

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### Overview

## **New functionalities:**

- Support of Vector CANape

## New methods:

- MDF Add header data

## **Extension of methods:**

- Visualization
- Configure SI Button
- Message Window
- Excel read
- ASCMO ODCM Next Experiment
- Start Stimulus generator

## **Other improvements:**

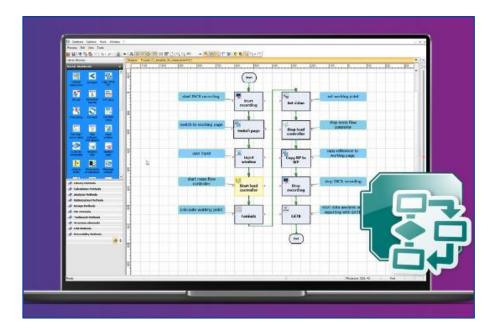
- CAN Interface
- Model Interface
- Using environment variables in process
- Standalone process

## New Functionalities Support of Vector CANape

#### Motivation

 Non-INCA user can also benefit of the functionalities offered by INCA-FLOW

- Support the application tool Vector CANape
- The same scripts are (re-)usable among the measure and calibration tools supported



## New Methods MDF add header data

| 📕 Edit MDF add head                            | der data parameters       | ĩ                         | ? X     |
|--|---------------------------|---------------------------|---------|
| Modifies mdf header (<br>Press F1 for details, | data.                     |                           |         |
| Parameter                                      | Value                     | Method properties         |         |
|  |                           |                           | ~       |
| Filename                                       | D:\measure\measureTest.mf | 4 Measurement elements    |         |
| Comment  | CommentLine1CommentLine2  |                           | ~       |
| Append comment                                 | FALSE                     | Calibration elements      | ~       |
| User   | UserName                  | User-defined elements     |         |
| Company  | CompanyName               |                           | ~       |
| Project  | ProjectName               |                           |         |
| Vehicle  | VehicleName               |                           |         |
|  | Information Wi            | ndow                      |         |
|  |                           |                           |         |
|  | Information               | Window ×                  |         |
|  | 🗟 [1] meas                | ureTest.mf4 🔗             |         |
|  | Parameter                 | Value                     | Default |
|  | File Name                 | [1] measureTest.mf4       |         |
|  | File Path                 | D:\measure                |         |
|  | File Format               | MDF 4.0                   |         |
|  | Start Time                | 2024-10-23T10:28:50+02:00 |         |
|  | User                      | UserName                  |         |
|  | Company                   | CompanyName               | User Co |
|  | Vehicle                   | VehicleName               | Comme   |
|  | Project                   | ProjectName               | Comme   |
|  | Reference Pa              | 2                         | Comme   |
|  | Working Pag               | 10                        |         |
|  | File indexing             | •                         |         |

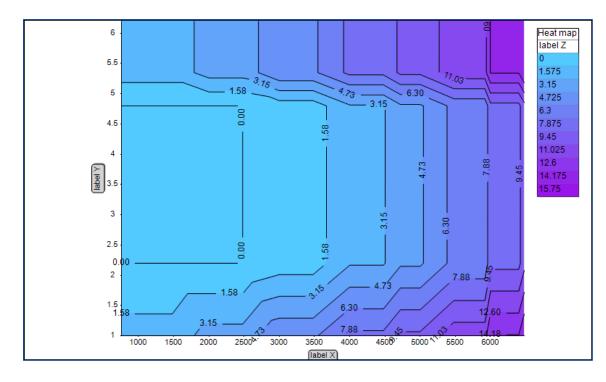
#### Motivation

The customer wants to add/overwrite the header data to an existing MDF file

- Implemented the new method "MDF add header data" to modify existing MDF meta data
- Currently, this is only possible for MDF4 files, that already have container for the respective data fields, e.g. already written by INCA or other tools. New data can only be set for MDF3 files



## Extension of Methods Visualization: New contour diagram (Heat map)



#### Motivation

 $\circ$  The customer needs a new diagram type for the

"Visualization" method: contour diagram

#### Solution

 $\circ$  Added the new diagram type to "Visualization"

## Configure SI button: New parameters to set button style for on/off state

| 🔚 Edit Configure Sl                           | button parameters      | ? ×                                    |
|---|------------------------|--|
| Configure user-defin<br>Press F1 for details. | ed buttons in the stan | dalone-interpreter (compact mode).     |
| Parameter                                     | Value                  | Method properties                      |
| Button no. (0 - 9)                            | 0                      | Measurement elements                   |
| Enabled                                       | TRUE                   | v                                      |
| Toggle element                                | button0                | Calibration elements                   |
| Off value                                     | 0                      | User-defined elements                  |
| On value                                      | 1                      | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
| Button text (off)                             | Off                    |  |
| Font (off)                                    |                        |  |
| Text color (off)                              |                        |  |
| Background color (off)                        | FFFFF00                | -                                      |
| Button characteristic                         | Jog Switch             | -                                      |
| Button text (on)                              | On                     |  |
| Font (on)                                     |                        |  |
| Text color (on)                               | FF0000FF               |  |
| Background color (on)                         | FF00FF00               |  |
|   | ·                      | <u>O</u> K <u>C</u> ancel              |

#### Motivation

 The customer needs to adjust the button styles in the standalone interpreter with "Configure SI button" to make it more visible, if the button is pressed or released.

## Solution

 Added parameters to "Configure SI button" for adjusting the button styles (text, font, color) for on and off state.



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## Extension of Methods

Message window: New parameter 'Window alignment' and automatic sizing

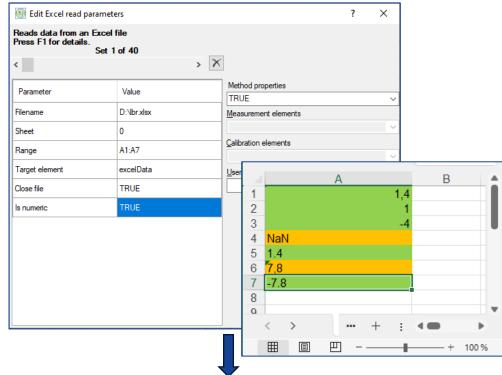
#### Motivation

- The customer wants more control for placing the message window on the desktop. The window should be placeable on desktop edge.
- The window should adjust its size to the content automatically, because the text may change at runtime and can come from multiple sources. The user does not want to resize and reposition the window manually.

- Added parameter "Window alignment" for docking the window on the edge of the desktop (current monitor). Setting the alignment will override the "Location (x,y)" parameter.
- o If the parameter "Size (width, height)" is not set, the window size will grow automatically to fit the content.



Excel read: Optional verification of numeric values



Position 0: Excel read: non-numeric values encountered: [0,3] = NaN, [0,5] = 7,8

#### Motivation

- The customer needs to verify, if the values read from
   Excel are numeric to reduce errors related to the handling
   of non-numeric data, and to simplify the data validation
   process.
- An additional parameter should be added to the "Excel read" method, to activate the verification and exit on F if it fails.

#### Solution

 Added the parameter 'Is numeric' to "Excel read" to verify the data after reading.

## ASCMO ODCM next experiment: Return experiment and block id

| 🐻 Edit ASCMO ODCM Next experiment parameters   |                              | rs                    | ?  | $\times$ |
|--|------------------------------|-----------------------|----|----------|
| Get the next experime<br>Press F1 for details. | ent from experiment plan     |                       |    |          |
| Parameter                                      | Value                        | Method properties     |    | ~        |
| Unique ID                                      | ODCM                         | Measurement elements  |    |          |
| Demand values                                  | speed load injection ignitio |                       |    | ~        |
| Current experiment ID                          | experimentID                 | Calibration elements  |    |          |
| Current block ID                               | blocktID                     | User-defined elements |    | · · ·    |
|  |                              | blocktID              |    | ~        |
|  |                              | -                     |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              |                       |    |          |
|  |                              | <u>о</u> к            | Ca | ancel    |

#### **Motivation**

 The customer wants to associate the measured data with the experiment/block id of ASCMO. But the method cannot get the current experiment/block id.

#### Solution

 $_{\odot}$  Added new parameters for "ASCMO ODCM next

experiment" to retrieve the current experiment and block id.

## Start stimulus generator: Option to abort if delay occurs

| 🔣 Edit Start stimu                                 | lus generator param                 | neters                | ?          | ×     |
|--|-------------------------------------|-----------------------|------------|-------|
| Starts the stimulus<br>Press F1 for details<br>Set | generator with the<br>s.<br>1 of 40 | _                     |            |       |
| <  | >                                   | ×                     |            |       |
| Parameter  | Value                               | Method properties     |            |       |
| Unique ID  | STIM                                | Measurement elements  |            | ~     |
| Stimulus vector                                    | stimData                            |                       |            | ~     |
| Time vector  | stimTime                            | Calibration elements  |            |       |
| Number of periods                                  | 0                                   | User-defined elements |            | Ť     |
| Calibration element                                | EGR                                 |                       |            | ~     |
| Wait   | FALSE                               |                       |            |       |
| Factor   | 1                                   |                       |            |       |
| Offset   | 0                                   |                       |            |       |
| Current stim. time                                 |                                     |                       |            |       |
| Current stim. value                                |                                     |                       |            |       |
| Current state                                      |                                     |                       |            |       |
| Delay threshold                                    | 10                                  | <u></u> K             | <u>C</u> a | ancel |

#### Motivation

- Sometimes the stimulus generator does not update the stimulus value. If it occurs, the test will be void and the customer must retest. The customer wants to detect the delay of the generator during the process execution and restart the recording immediately.
- A new optional parameter 'Delay threshold' is required. If the generator encounters the respective number of delays, it will abort with failure.

### Solution

 Added the parameter 'Delay threshold' to "Start stimulus generator".

## Other Improvements CAN interface: Native support of Vector drivers (vxlapi64.dll)

#### **Motivation**

• By adding the support for CANape automation, INCA-FLOW is able to access Vector CAN drivers without ETAS BOA.

#### Solution

o Implemented access to Vector CAN drivers via vxlapi64.dll.

## Model interface: Support of FMI 3.0

#### **Motivation**

The FMI 3.0 standard has been released in 2022.
INCA-FLOW should support the new model interface.
With FMI 3.0, arrays and matrixes are part of the standard.

#### Solution

 Implemented the new interface for FMI 3.0 according to the new standard.

|   | Model identifier      | FMI3  |
|---|-----------------------|---|
|   | Model file            | D:\BouncingBall_Fmi3.fmu  |
| / | Model settings        | · • • -   |
|   | Experiment start time | 0   |
|   | Experiment stop time  | 3   |
|   | Experiment step size  | 0.01  |
|   | Experiment tolerance  |   |
|   | Record measure file   | False   |
|   | Log file              |   |
|   | FMU properties        | { "ModelDescription": { "description": "This model calculates the trajectory, over time, of a |
|   | API version           | 3.0   |
|   | Model name            | BouncingBall  |
|   | Description           | This model calculates the trajectory, over time, of a ball dropped from a height of 1 m.      |
|   | Generation tool       | Reference FMUs (development build)  |
|   | Author                |   |

## Other Improvements Using environment variables in processes

#### Motivation

• For automation it is practical, to use environment variables *e.g.*, for specifying path names dynamically. This makes processes more generic and portable.

#### Solution

 Environment variables can now be used with this syntax: \$ENV%<NAME>, like \$ENV%TEMP. They do not appear in the userdefined elements list and must be input manually into method parameters, like ::\$ENV%RECORDINGPATH\measure.mf4

## Stand-alone executable: Optional deactivate breakpoints at export, speed up loading time

#### **Motivation**

- o Usually, breakpoints are used for process debugging. So, it makes no sense to export them with stand-alone processes.
- The loading of stand-alone processes takes much longer compared with the loading of processes in INCA-FLOW.

- Added an option for stand-alone exports, to export breakpoints, too (default).
- Changed the data format of *.si.cal* files. This decreases the file size to about 10 times and improves the loading time.





### For more information:

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