

# LABCAR-OPERATOR 5.4.4 – What's new

## LABCAR-OPERATOR 5 at a glance...

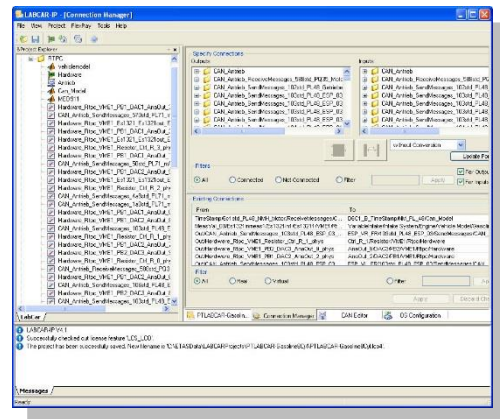
✓	Modular and open software for interactive in-lab testing of ECUs by means of the LABCAR testing system.
✓	Individually configurable user interface for experiment design and control
✓	Open interfaces for automated testing
✓	Easily interfaces with standard ECU development tools (MATLAB®/Simulink®, INCA)



## LABCAR-IP (Integration Platform)

In the Integration Platform of LABCAR-OPERATOR you can:

- import behaviour models from different design tools (Matlab/Simulink, ASCET or just C code) into one project
- configure the I/O hardware modules
- connect between these modules
- generate code for the simulation target
- define OS settings for real-time simulation
- configure CAN, LIN and FlexRay bus simulations
- Configure Rest bus simulation for AUTOSAR v4.3.0 using Network module

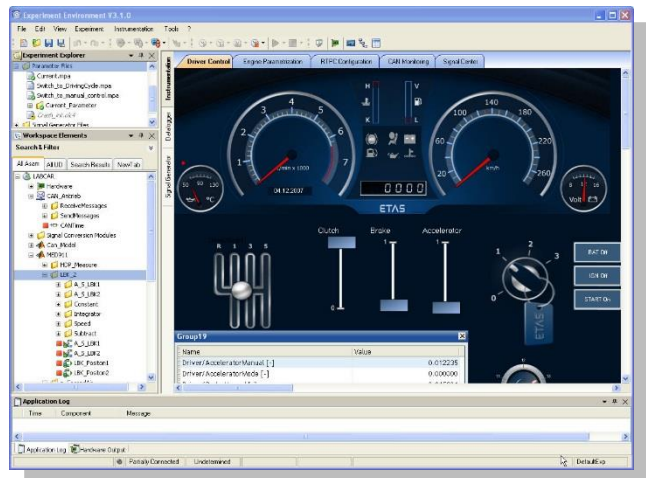


## LABCAR-EE (Experiment Environment)

The re-designed Experiment Environment introduced with LABCAR-OPERATOR 4 and INTECRIO 3 is designed for configuring (instrumentation, parameterization etc.) and executing experiments.

The experiment environment offers the following possibilities:

- Clear access to all parameters and measure variables in the "Workspace Elements" window.
- Creation of instrumentations for displaying measure variables and for modifying parameters of the running experiment
- Signal conversion and sensor/actuator modeling
- Tracing signal paths
- Data recording with the Datalogger
- Define stimulation patterns and stimulate inputs with the Signal Generator



## New Features in Versions 5.4.x of LABCAR-IP (Integration Platform)

### New in LABCAR-IP 5.4.4

✓	Support of AUTOSAR Network module with CAN/CAN-FD
✓	Support of Windows 10 (LTSC version 1507)
✓	Support of INCA 7.2.6
✓	Support of RTPC 6.3.1
✓	Support of new I/O boards

### New in LABCAR-IP 5.4.3

✓	Support of new Simulink versions
✓	Support of Windows 10 (basic support – minor limitations)
✓	Support of INCA 7.2.4 and 7.2.5
✓	Support of ASCET 6.4.2
✓	Support of RTPC 6.3.0
✓	Support of new I/O boards
✓	Enhanced features of existing I/O boards
✓	NIF enhancements

### New in LABCAR-IP 5.4.2

✓	Support of Simulink R2015b and 2016a
✓	Support of Windows 10 (basic support – minor limitations)
✓	Support of EB tresos® Busmirror® 4.10.2
✓	Support only up to ASCET 6.2.1
✓	Support of ARXML 4.2.x in NIC (only basic CAN features)

### New in LABCAR-IP 5.4.1

✓	Support of CAN-FD ISO/Non-ISO mode
✓	Support ES5300.1-B, ES5350.1, ES5372.1 and ES5392.1

## New in LABCAR-IP 5.4.0

✓	Support FlexRay™ diagnostic target user modules (TUMs)
✓	Support EB tresos® Busmirror® 4.9.x, 4.10.x
✓	Support MATLAB® Simulink® 2015a
✓	Support ES4452.1, ES4455.2, ES4457.1, ES5321.1, ES5338.1 and ES5385.1
✓	Support Windows 8.1 64-bit
✓	Memory usages increased up to 4GB
✓	Increase of elements within one LABCAR module
✓	Limit of ports within one LABCAR project eliminated

### **Improvements and Enhancements in LABCAR-IP V5.4.4**

- Support of AUTOSAR Network module with CAN/CAN-FD  
now LABCAR supports RBS of AUTOSAR v4.3.0 ARXMLs with CAN/CAN-FD using newly introduced Network module. The AUTOSAR PDUs, triggering and End-to-End protection (profiles 5 and 6) are supported.
- Support of Windows 10  
a basic support of Windows 10 is continued. LCO-IP and CEE works fine and the compatibility verified using Windows 10 LTSB version 1507 released by Microsoft in 2015. It is observed that on Windows 10 CB version 1511 that RTIO editor does not work but this is solved if User upgrades to CB version 1607.
- Support of INCA 7.2.6  
now LABCAR supports INCA 7.2.4, 7.2.5 and 7.2.6 version additionally to INCA 7.1.10.
- Support of RTPC 6.3.1  
the new RTPC comes with an updated Debian Version to be compliant with recent developments and I/O boards etc.
- Support of new I/O boards
  - ES5398.1 Fault Insertion Board (40-CH)
    - The ES5398.1 Fault Insertion Board enables fault simulation in real time for 40 ECU channels.

### **Improvements and Enhancements in LABCAR-IP V5.4.3**

- Support of new Simulink versions  
now LABCAR also supports upto R2016b, additionally R2015aSP1 is supported
- Support of Windows 10  
a basic support of Windows 10 is continued. LCO-IP works fine while sporadic problems with RTIO-Editors are encountered. In such cases the user has to reopen the RTIO again. Further the CEE does not execution triggered recordings as expected under specific conditions.

- Support of ASCET 6.4.2  
introduction of ASCET 6.4.2 support based on the features set as known from ASCET 6.2.1.
- Support of new INCA versions  
now LABCAR supports INCA 7.2.4 and 7.2.5 version additionally to INCA 7.1.10.
- Support of RTPC 6.3.0  
the new RTPC comes with an updated Debian Version to be compliant with recent developments and I/O boards etc.
- Support of new I/O boards
  - ES5436 Current Source Load Board (48-CH):
    - Board for the ES5300 housing with 48 software controllable current sources with a load up to 150 mA. Can be use for Pull-up/down and H- Bridge load application.
  - Flexible FPGA V3.0
    - Support of floating point
    - Bugfix „NAN“ Call ID: 552659
  - ES5321 °CA Measurement
    - Feature Enhancement, requires update with HSP, LCO, RTPC.
    - Rail pump functionality (similar as ES5340)
- Enhanced features of existing I/O boards  
more SENT channels on ES5340 boards
- NIF enhancements  
it is now possible to start network communication independently from start simulation.

## Improvements and Enhancements in LABCAR-IP V5.4.2

- With LABCAR-IP V5.4.2 the support of Simulink® R2015b and 2016a is introduced. As the underlining code generation of Simulink® Models realized by the Simulink® Coder from The MathWorks changed the handling of inlined workspace variables this lead to a different access structure in the Experiment Environment and via automation API (ASAM XiL). Formerly the inlined workspace variables were accessible via model structure while now all inlined workspace variables are found in the artificial structure/folder "GlobalParameters".
- With LABCAR-IP V5.4.2 a basic support of Windows 10 is introduced. LCO-IP works fine while sporadic problems with RTIO-Editors are encountered. In such cases the user has to reopen the RTIO again.
- The new FlexRay™ diagnostic target user modules (TUMs) introduced as Addons from Elektrobit with EB tresos® Busmirror® V4.10.2 will be available for LABCAR users as well. Therefore a new column within the LABCAR FlexRay™ editor (LCO-NIF) will be introduced. All elements which support these new TUMs will be enabled for selection within the new introduced column.
- With LABCAR-IP V5.4.2 a support of ASCET has been limited to 6.2.1 for use as plant modelling system. LABCAR-IP V5.4.2 support of ASCET
  - V6.0.1 HF3 + HF8 + HF10
  - V6.1.3HF5
  - V6.2.0HF1
  - V6.2.1HF3

This also means that usage of ASCET is no more possible with Windows 10, as only ASCET 6.3.0 and newer support Windows 10.

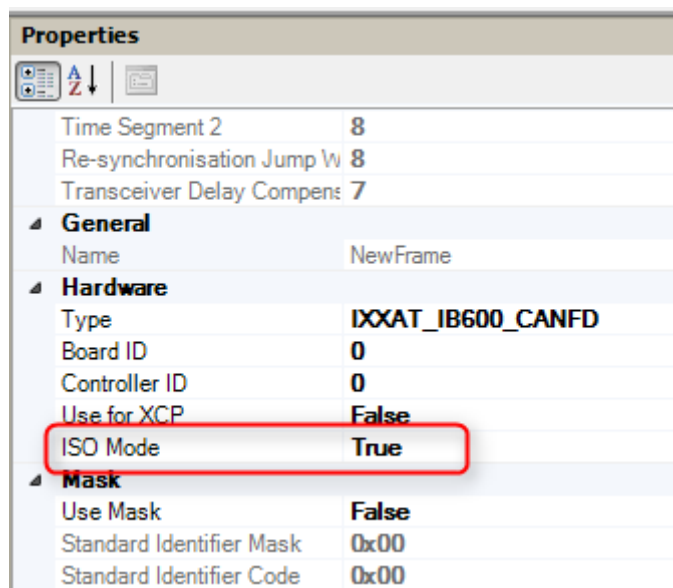
- Support of ARXML 4.2.x in NIC additionally to the already supported ARXML version 4.1.x and 3.2.x with the same feature set (only basic CAN features, no enhanced AUTOSAR communication features!).



- **NOTE:** Please create a backup copy of your LCO project before starting the migration assistant to migrate your LCO project to V5.4.2 – this is important as the migration from V5.4.1 to V5.4.2 is an in place copy which overwrites the initially selected project with the new version of the project.

### Improvements and Enhancements in LABCAR-IP V5.4.1

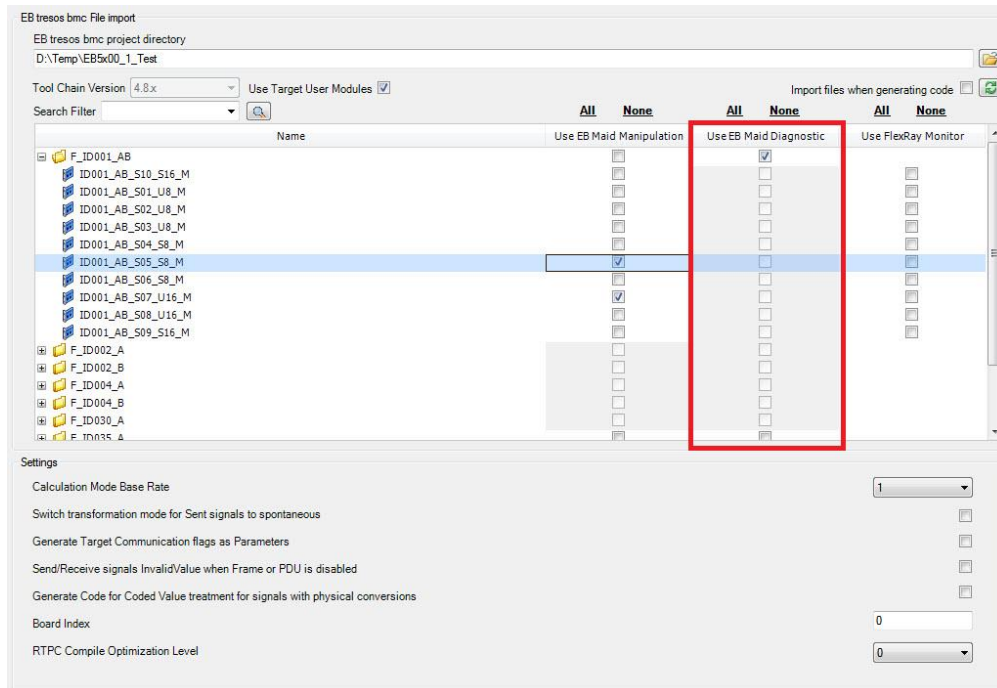
- With LABCAR-IP V5.4.1 the load and build time of projects is considerably improved. Amongst others this is achieved by implementing a lazy load mechanism for connections. This means that the connections in the Connection Manager are not updated before the Connection Manager is opened.
- After general CAN-FD support was added with LABCAR-OPERATOR V5.3.1 the officially released CAN-FD ISO mode is now also supported. Within the buses properties it can be configured which of the 2 specifications shall be used.



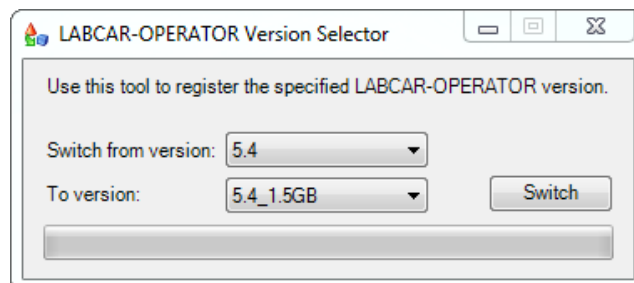
- LABCAR-OPERATOR now also supports the new cards ES5372.1 - Carrier Board for ES4455 Load boards and ES5392.1 - High Current Switch Board (6-CH).

### Improvements and Enhancements in LABCAR-IP V5.4.0

- The new FlexRay™ diagnostic target user modules (TUMs) introduced as Addons from Elektrobit with EB tresos® Busmirror® V4.10.1 will be available for LABCAR users as well. Therefore a new column within the LABCAR FlexRay™ editor (LCO-NIF) will be introduced. All elements which support these new TUMs will be enabled for selection within the new introduced column.



- With LABCAR-IP V5.4.0 the maximum possible used memory (RAM) will be increased up to 4GB. In case of instabilities a fall-back LABCAR-IP will be available where the maximum memory consumption is limited to 1.5GB. Switching between this 2 versions is handled via the "LABCAR-OPERATOR Version Selector".

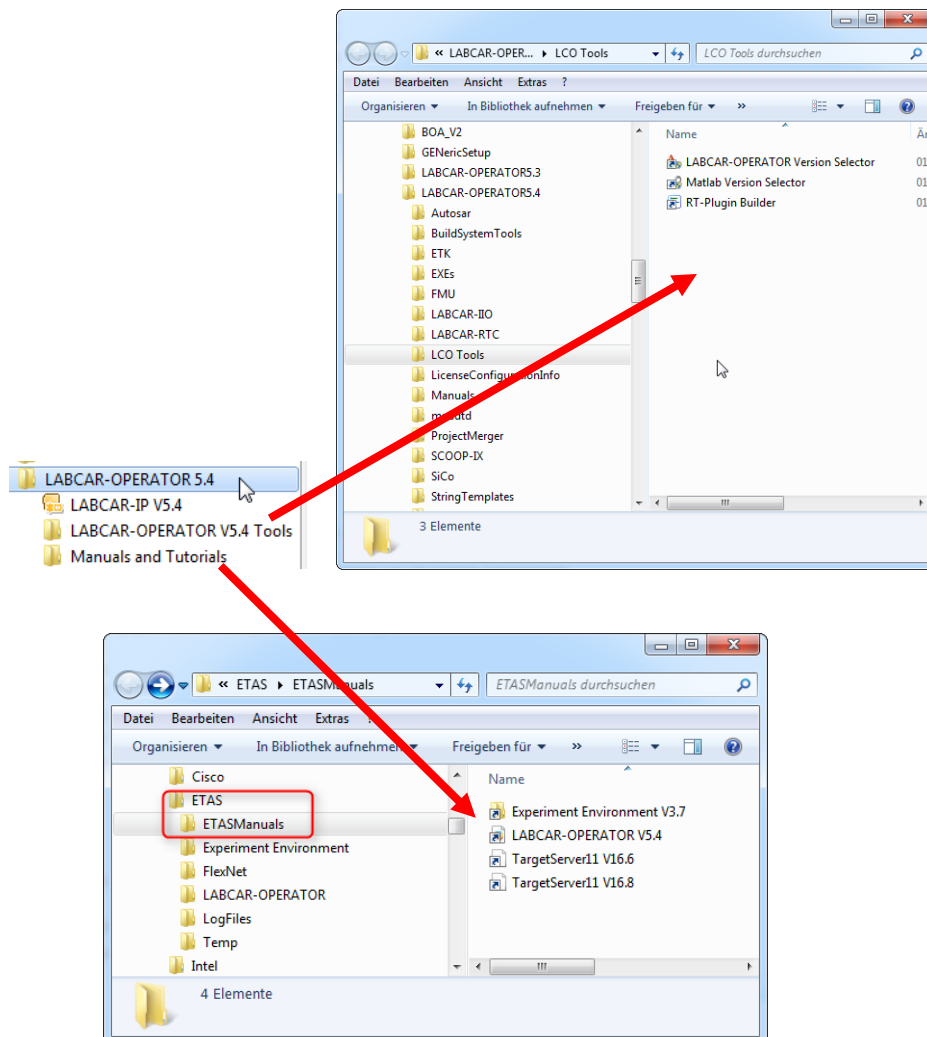


- Within LABCAR modules a maximum number of measurements and parameters in total exist. Until LABCAR-OPERATOR V5.3.1

the limit was set to 32768 elements. This limit will be increased now up to 1073741824 elements.

- Within a LABCAR project a maximum number of ports (in/out) in total existed. Until LABCAR-OPERATOR V5.3.1 the limit was set to 29108 ports within the whole project. This limit is eliminated now.
- Windows 8.1 specifics

Since windows 8.1 comes with the so called "Tiles" instead of the standard start menu the look will also change for Windows 7.



Notes: This restructuring of the start menu was also done for the Common Experiment Environment. The Uninstall link can be accessed via "Control Panel" => "Programs and Features".

## Bug fixes in LABCAR-IP V5.4.4

EHI #	Title
572733	FlexRay rest bus signal values will not transmitted by restarting the simulation in CEE
576735	LCO Code Generation bug for ES4440 c module
575744	LCO5.3.1/6 - LCO5.4.3: NIC code generation review

## Bug fixes in LABCAR-IP V5.4.3

EHI #	Title
531047	LABCAR 5.4.0: Image Files cannot be Loaded at API Usecase
564323	LCO5.4.2: Build mit Matlab 2016a und LCO 5.4.2 nicht möglich - Build with R2016a and LCO 5.4.2 fails
565840	LCO5.4.2: Unable to read HWX File
567533	LCO 5.4.2: CAN-FD frames cannot be received correctly with a CAN controller when "STT" feature is activated
568955	LCO 5.4.2 / EE 3.7.2 with INCA 7.2.4 HF1: EE crashes when ECU measurement raster is full
553938	Using LABCAR-IP API causes LABCAR to exit without warning when COM object holder exits
556902	Frage zu LCO 5.3.1/3 CAN Datentypen
558900	OS Settings messed up after change of target name
559608	LCO5.4.1: CAN SendType OnChange for Multiplexed signals
568349	LCO 5.4.3.190 Beta (Build 12894): Project migration from LCO V5.4.x -> LCO V5.4.3 with x=[0,1,2] not consistent/ not acceptable
569038	LABCAR 5.4.3: HWX Implementation in LCO does not work as expected
569889	LCO 5.4.3 Beta (Build 13159): Cannot create 64 bit SIGNED Signals in LABCAR-NIC
547823	LCO5.3.1/6: Pseudoaddress in rtpc.lpi are removed
315179	LCO 5.0.1: Update Processes always necessary in OS Configuration after Update ASCET Modules in LABCAR-IP

## Bug fixes in LABCAR-IP V5.4.2

EHI #	Title
467802	LCO5.3.1: Migration error with CAN project
538521	EE V3.7.0: Address map fails for 0, Change xxx_ConstantValue impossible after play Script
540532	LCO 5.3.1/6: Wrong HWC settings not detected leading to strange errors during init phase
540648	LCO5.3.1 EE3.5.1 Signalgenerator: long waiting times during adding segments in signal editor
540982	LCO 5.3.1 und LCO 5.4.1: How does LCO detect "correct CAN-FD frames"?

EHI #	Title
467802	LCO5.3.1: Migration error with CAN project
541015	LCO 5.3.1 und LCO 5.4.1: Wrong Signal length 64bit in CAN-FD Frame ISOx_Airbag_01_Req_FD instead of 512bit as described in DBC
541627	UUT selection incorrect for BWM_solitaere.arxml file
542260	LCO 5.4.1 - Rebuild required although project was not changed
542677	[Documentation Call] LCO 5.4.1: Zahlendreher in LABCAR-OPERATOR_V5.4.1_Whats_new -> LCO V3.5.1 statt LCO V5.3.1
542688	LCO 5.4.1: Non CAN-FD Frames (both Standard and Extended) are wrongly detected as CAN-FD Frames by LABCAR-NIC
543388	Transfer of scaling data out of arxml File not correct

### Bug fixes in LABCAR-IP V5.4.1

EHI #	Title
514920	LCO5.3.1: Error when saving wrong Calibration/Parameters is not displayed
520020	LCO5.3.1HF4: Migration from LCO 5.1.2 with API error: Failed to finish migration of 'Update LIN Connections'
522154	LCO 5.3.1 NIF: Single Shot Flexray Nachricht senden
522708	LCO5.4.0: error during build because of slprj directory is not a directory
527979	LCO 5.4.0/1: CAN Messages with Frame Send Type "cyclicAndSpontanX" cannot be deactivated when containing signals with Send Mode „On Change" if connected to a permanently changing model value
528269	Cycle Time Inport not working correctly - resolution is 1 second
532304	LCO5.2.1: Enumerations data types not supported in Simulink models

### Bug fixes in LABCAR-IP V5.4.0

EHI #	Title
434152	LCO 5.2.1: Save in CAN Module does not update definitions for mc_module files
439446	LCO 5.3.0: Failure to launch LCO V5.3.0 if you were not the original installer
449178	LCO 5.3.0: Error while opening Matlab (R2013a- 64b)
462531	LCO 5.3.1: API Import of vemox model fails
465995	LCO 5.3.1: freezes during simulink model import
467476	LCO 5.3.0: Documentation FMU definition co-simulation and model exchange is wrong
468841	LCO 5.3.1: No error message shown when user creates two LIN Frames with the same Name or ID (leads to trouble in scheduling)
468843	LCO 5.3.0/1: Error Messages using A2L in LABCAR-FIL - ETAS_ODX_HANDLING is not a valid key in the current block of type "if_data"

EHI #	Title
469336	LCO 5.3.1: Update Bit is not correctly imported from arxml-File (AR 3.2.2) LABCAR-IP -> frame is missing
470772	LCO 5.3.1: Bypass with ES910 not working for a FiL Simulation with MED17.1.8 - 'ES910 (ETKC 0x0) Error: RTIO driver locked'
471276	LCO 5.2.1: Simulink error during compiling the project: extract bits block
475247	LCO 5.3.1/2: RTIO editor open fails
476929	LCO 5.3.1/2: EE Registry key missing
477666	LCO 5.3.1: Documentation about new GUI of NIF
479528	LCO 5.3.1: IP CAN Module Out of Memory Exception during code generation
481200	LCO 5.3.1: API Call ConnectionManager.Load(..) is not throwing an exception anymore in case of missing connections
481209	LCO 5.3.1: Using EB tresos Busmirror 4.10.x in LABCAR-NIF
490351	LCO 5.3.1/3: Build Error with external MATLAB Simulink model due to missing file - Error using load. Unable to read file 'LCO_WorkSpaceVariables.mat'. No such file or directory
501192	LCO 5.4.0 Beta (Build 2618): FlexFPGA project no more usable after migration due to SIGSEGV error after Init Task has been completed

## New Features in Versions 3.7.x of LABCAR-EE (Experiment Environment)

### New Features in LABCAR-EE 3.7.4



Forward Compatibility across refresh version of RTPC starting from v6.3.1

### New Features in LABCAR-EE 3.7.3



New FlexRay Instruments

### New Features in LABCAR-EE 3.7.2



Support INCA 7.2.2

### New Features in LABCAR-EE 3.7.1



Support INCA V7.2.1



ASAM XiL API V2.0.1 – Support of Signal Generator creation



ASAM XiL API V2.0.1 – Support of sti 2.0 file format including DATA, RANDOM and LOOP segments (functional range comparable to CEE API)



ASAM XiL API V2.0.1 – Support of sti 2.0 file format including DATA, RANDOM and LOOP segments (functional range comparable to CEE API)

### New Features in LABCAR-EE 3.7.0

✓	Multiple Monitor support of Layers
✓	ASAM XiL API V2.0.1 – MA (Model Access) port
✓	Repetitions of Data Logger runs
✓	Support Windows 8.1 64-bit

### Improvements and Enhancements in LABCAR-EE V3.7.4

- Forward Compatibility across refresh version of RTPC starting from v6.3.1 to ease the use of different RTPC refresh versions for simulation

### Improvements and Enhancements in LABCAR-EE V3.7.3

- New FlexRay Instruments to ease the use of FlexRay TUMs.

### Improvements and Enhancements in LABCAR-EE V3.7.2

- INCA V7.2.2 can now be used. However be aware that INCA V7.2.0 and V7.2.1 are explicitly not supported.

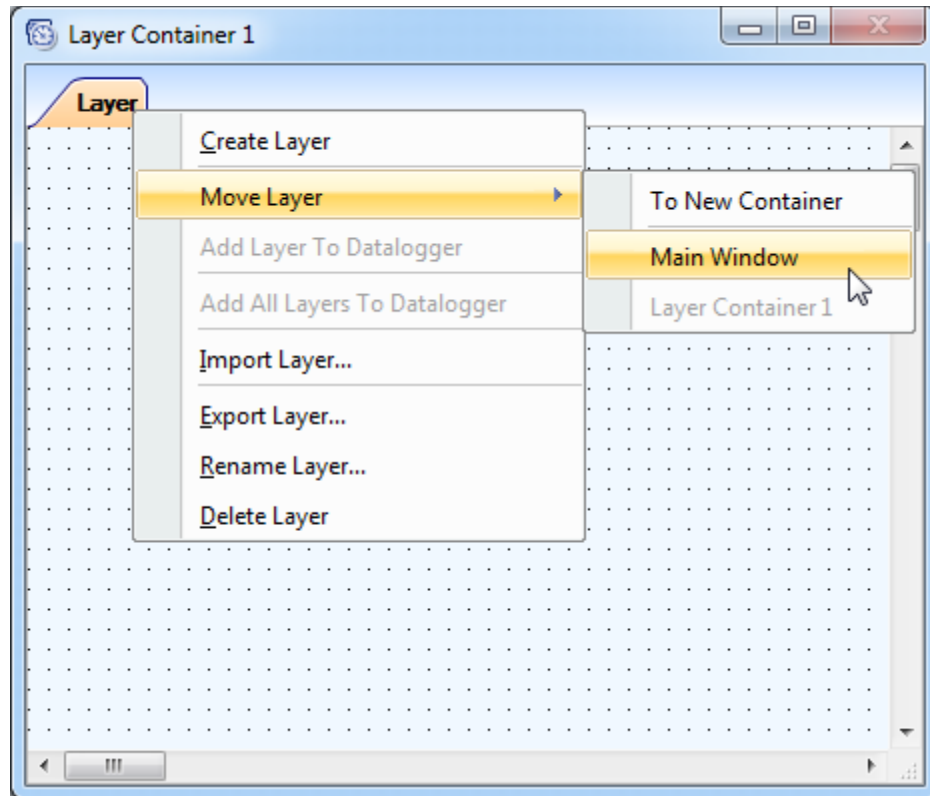
### Improvements and Enhancements in LABCAR-EE V3.7.1

- INCA V7.2.1 can now be used. However be aware that INCA V7.2.0 is explicitly not supported
- ASAM XiL API V2.0.1 – Support of Signal Generator creation
- ASAM XiL API V2.0.1 – Support of sti 2.0 file format including DATA, RANDOM and LOOP segments (functional range comparable to CEE API)



## Improvements and Enhancements in LABCAR-EE V3.7.0

- Multiple Monitor support of Layers



On each layer you can find a new context menu called „Move Layer“. Via this context menu you can create up to 6 layer container which can be moved to any available display. The window position of each container will be stored within your experiment and will be restored while loading it. If the display is not available where the container was located the last time the container will be moved back to the main screen during experiment load.

- Repetitions of Data Logger runs

Available Dataloggers

Name	Active	State	Rec. Time	Automatic Restarts	Current Restart
✓ New Datalogger 1	<input type="checkbox"/>	▶ Off	-	5	0

Editable Automatic Restart Count which can be set if an valid StartTrigger and StopTrigger is set. Otherwise this option is off.

Shows the current restarts. Stays at 0 for the first run

The "Automatic Restarts" feature is always coupled to a valid StartTrigger condition including a specified post trigger time or a valid StopTrigger condition. Without this the new option will be disabled and show a tooltip with further informations.

Note: We highly recommend that you use this feature only with "Auto Increment" file numbering enabled. Without this option the file will be continuesly overwritten. Therefore only the last recording will be available on hard disk afterwards.

### Bugs fixed in LABCAR-EE V3.7.4

EHI #	Title
436049	Association completion window should not appear if association has failed

### Bugs fixed in LABCAR-EE V3.7.3

EHI #	Title
563327	EE Interface Changes requested: Unability to see shortened names in CAN-Monitor

### Bugs fixed in LABCAR-EE V3.7.2

EHI #	Title
530571	LCO5.3.1/4 EE3.5.1/2 CAN GUI No Trigger color

### Bugs fixed in LABCAR-EE V3.7.1

EHI #	Title
369896	MDF Channel Import breaks with error
526780	LCO 5.3.1/4: SignalMeasurement in Experiment Environment via COM-Interface > Wrong value object type

### Bugs fixed in LABCAR-EE V3.7.0

EHI #	Title
312132	CEE 3.3.0: Software crash using EE 3.3.0
350605	CEE 3.3.1: CAN Configuration causes DTC instrument to spew errors
369896	CEE 3.3.2: MDF Channel Import breaks with error
388296	CEE 3.4.1: parameter files DCM 1.1 error message when using existing file name
462938	CEE 3.4.2: Connect leads to L1 interface error with EE 3.4.2
490699	CEE 3.5.1/1: Problem with Snapping in EE - Values below 1.0 no more possible
497700	CEE 3.5.1/2: Fixed Maps not usable with LABCAR-CCI - Exception: Der Objektverweis wurde nicht auf eine Objektinstanz festgelegt.