

Testing of Automotive Systems (Part I)

Module 10 –On-site exercise 1

David Ludwig , Magna Steyr

Lab Exercise overview

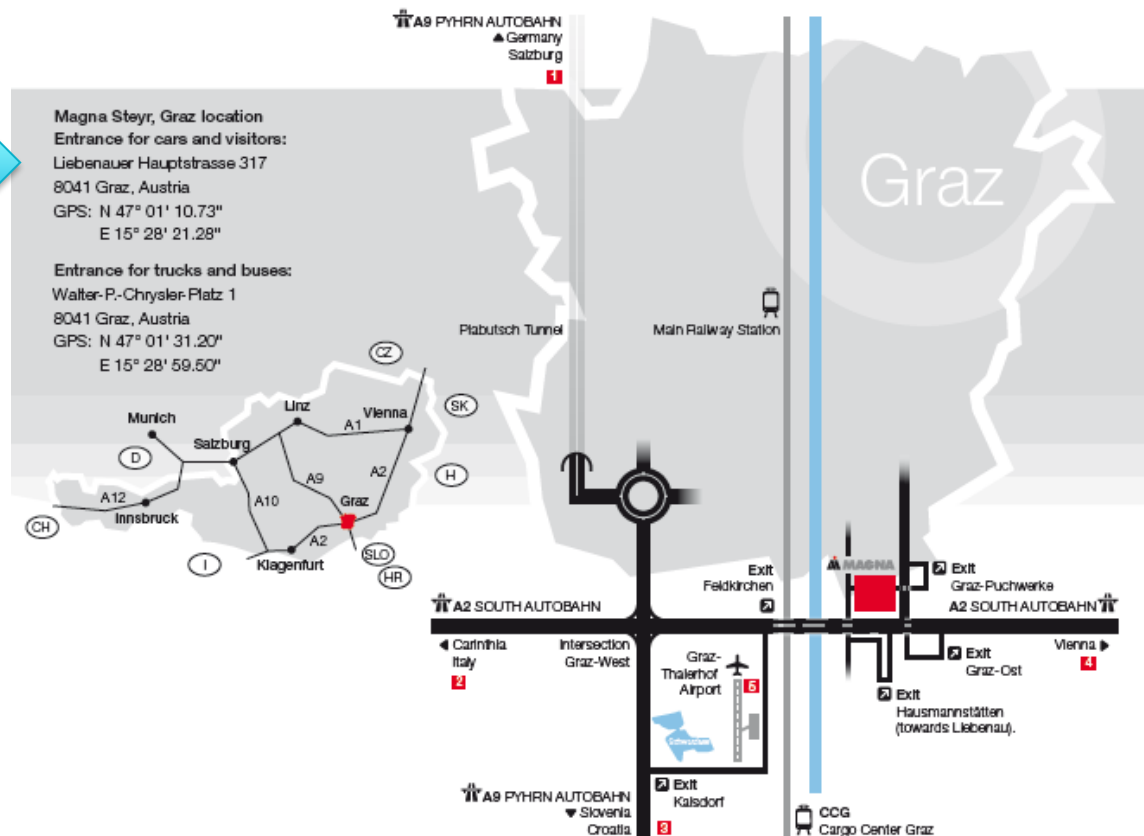
- Meet 24/11 at Magna Steyr Main Entry Liebenauer Hauptstr.317 at 09.30
 - Be on time, access takes a while!
- Lab time 10.00h-14.30h Tools used: CANoe, Measurement equipment (all onsite)
- Please bring your own laptop and USB stick for notes, save CAN-Traces etc.

The exercises must be documented in a test report
Due date test reports 01/12 (will be part of grading)

Template provided via moodle

MAGNA						Magna Steyr	
Confidential						Graz	
This form is assigned to AAE00038 „Vehicle In Engineering“.							
Test Report							
Project:	Report No.:	Serial No.:	Index Code:	Pages:	Date:	04/11/2011	
RAD Caplex	Order No.:	Test Object:	Report:	is complete			
Exclusion Unit: Please Choose						Test target accomplished: yes	
Special Subject: 0000-9999 Complete Vehicle						Comments:	
Reference:						(*): Relevant for strength <input type="checkbox"/> Relevant for Homologation <input type="checkbox"/>	
Chief Engineer:	Head of Department:	FTE resp. ITL:	C1				
Copy:							
Distribute 2 hardcopies to the EM office <input type="checkbox"/> for the customer <input type="checkbox"/>							
Task							
Summary, assessment							
Proposals, further procedures							

Directions



Groups 24/11/23

Group No.	Participants	Excercise 1 10-12h	Exercise 2 12.30-14.30h
1	Baumgartner, Bivolaku	Static Labcar	Automation
2	Das, Hu	Automation	Static Labcar
3	Kornberger, Kraker	EMC	Vehicle Intensive Test (VIT)
4	Maran Martins, Raza, Shah	Vehicle Intensive Test (VIT)	EMC

An abstract background image featuring a dark field with vibrant red and blue light trails. Overlaid on these are wireframe structures resembling architectural blueprints or molecular models. The red trails are more prominent in the center, while blue trails and wireframes are on the sides.

Static Labcar

FH Training 2023/24 – LabCar Overview & Tasks

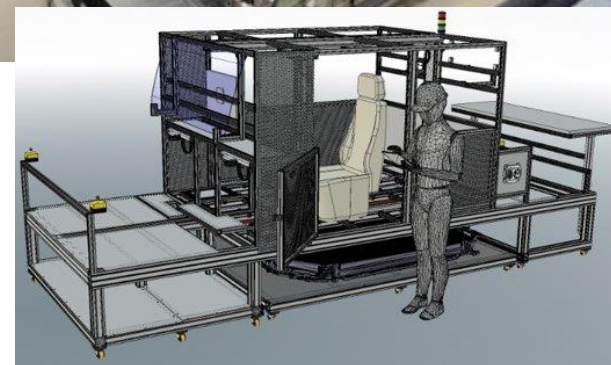
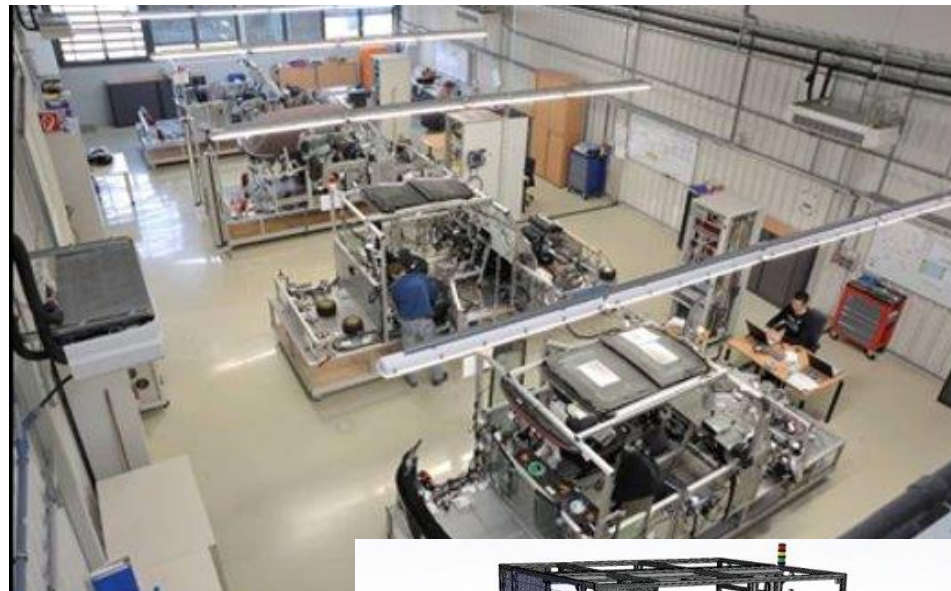
This test bench is ideal to perform E/E System tests with content of communication, network management and diagnostic.

Details

- Cable harness integration & validation
- System integration
- Bus-Physic (Error Frames, ramp up/down time, voltage level, load resistor, error simulation)
- Bus load (stress impact, power up/down, rest bus simulation stress load)
- Power Up/Down behavior
- Voltage Test
- Quiescent current
- Power management
- Diagnostic functions
- Commissioning prior to vehicle build
- Production Tester testing

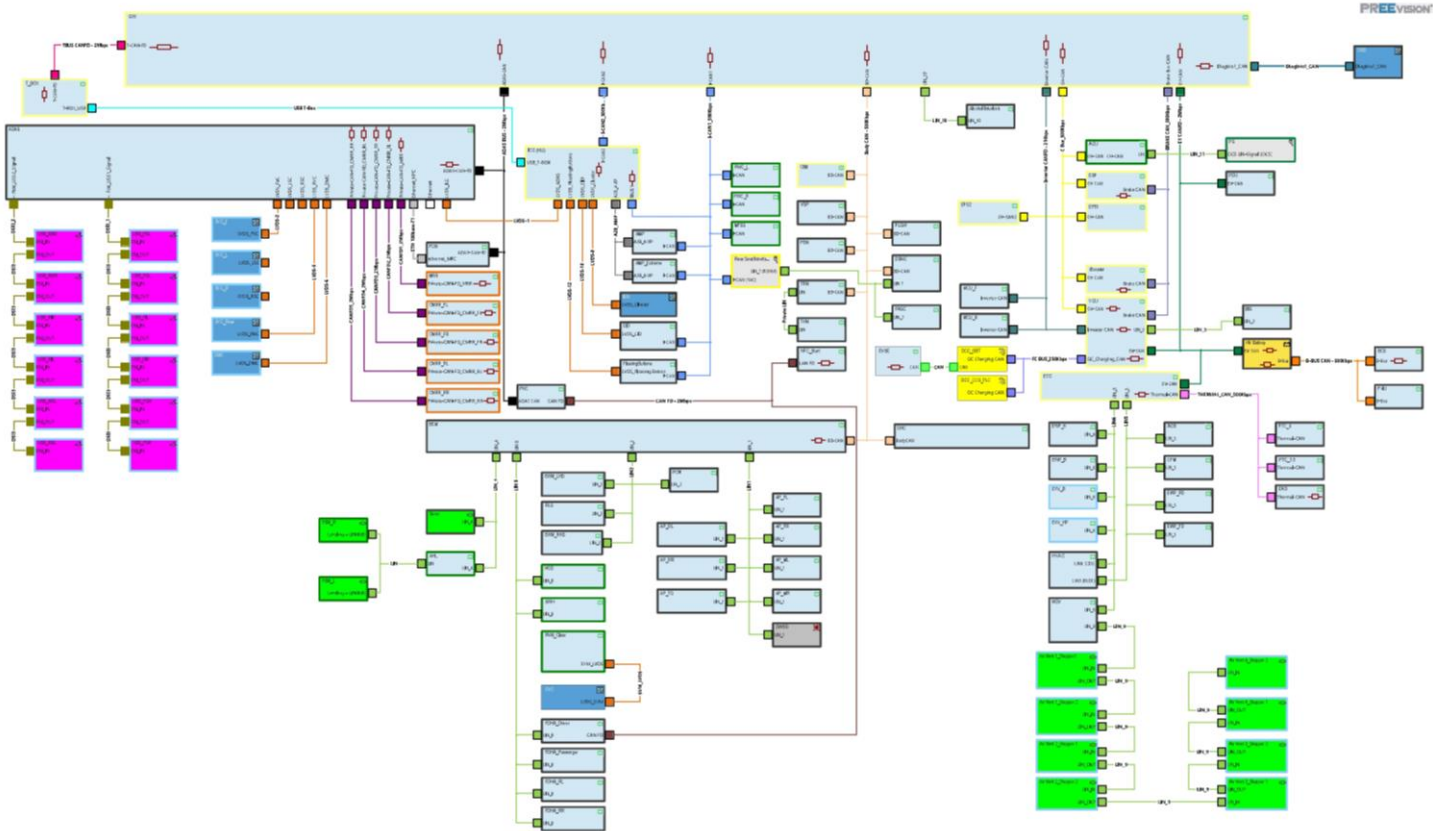
Benefit

- Harness problems can be found and fixed before vehicle building starts
- Commissioning can be done before vehicle building starts
- Hardware can be replaced very fast without disassembling the vehicle
- Useful platform for supplier tests

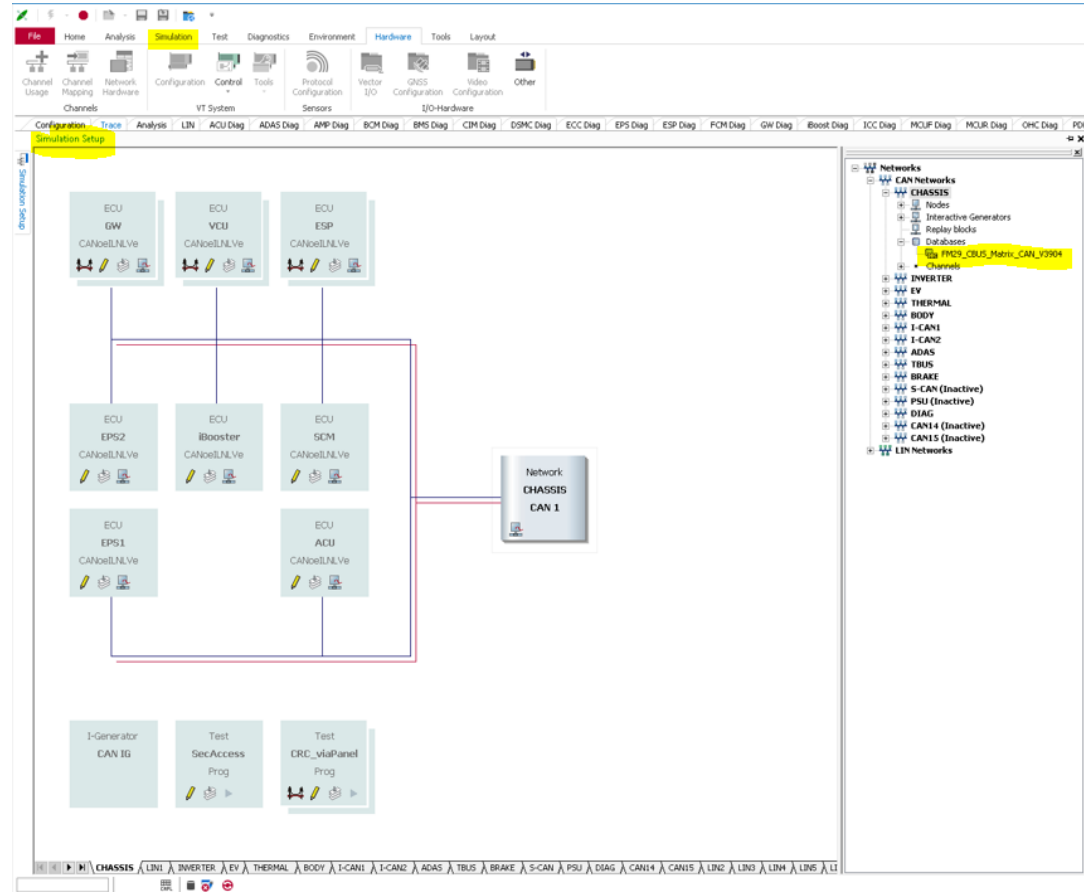


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Overview Complete Architecture



FH Training 2023/24 – LabCar CAN-Database/Matrix → .dbc



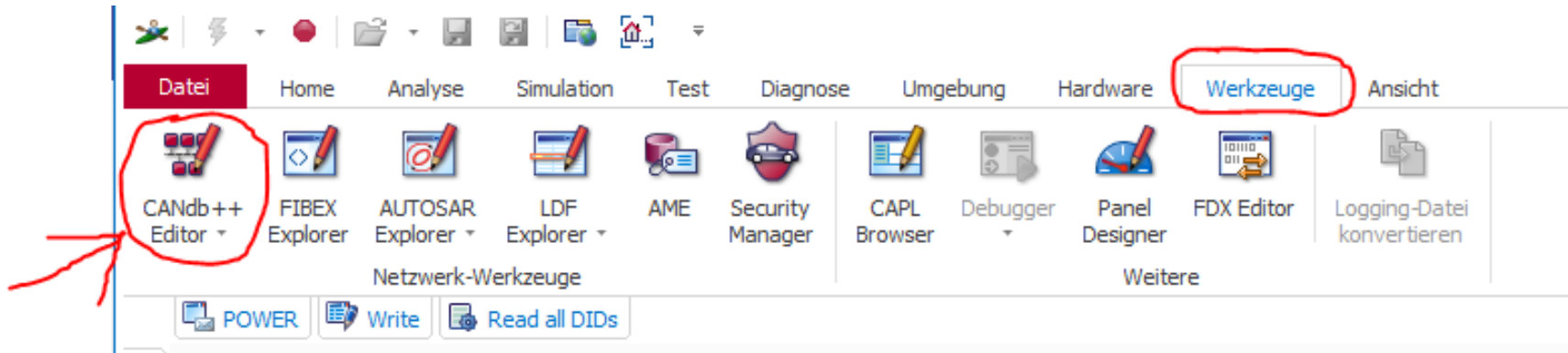
Include the .dbc file

.dbc file contains:

- 1) signal names
- 2) network nodes
- 3) signal IDs
- 4) cycle times
- 5) comments for information about the signals

■ ■ ■ ■ ■

How to find the CAN database in Vector CANoe:



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Exercise 1 – Check CAN communication



Check the CAN-communication according the .dbc file for the CHASSIS CAN network:

Chassis-CAN:

1. Check on the trace if all network nodes from the dbc file are sending.
2. If not, check the CAN-Statistics. Which possible causes are you able to think of?
3. Try to fix the issue
4. Present solution

Vector CANdb ++ Editor - D:\dbc_390\01_FM29_DBC_FRS390_Bugfix3_Release_V390.6\01_FM29_DBC_FRS390_Bugfix3_Release_V390.6\FM29_CBUS_Matrix_CAN_V390.4_2i

File Edit View Options Window Help

	Name	Message	Multiplexing/G...	Startbit	Leng...	Byte Order	Value Typ
Networks							
FM29_CBUS_Matrix_CAN_V3904							
ECUs							
Network nodes							
ACU	EPB_WarnMs...	ESP_0x268	-	23	1	Motorola	Unsigned
CBUS_Virtual_ECU	EPB_WarnMs...	ESP_0x268	-	24	1	Motorola	Unsigned
EPS1	EPB_WarnMs...	ESP_0x268	-	26	1	Motorola	Unsigned
EPS2	ESP_114_Alive...	ESP_0x114	-	8	4	Motorola	Unsigned
ESP	ESP_114_Che...	ESP_0x114	-	0	8	Motorola	Unsigned
GW	ESP_115_Alive...	ESP_0x115	-	8	4	Motorola	Unsigned
iBooster	ESP_115_Che...	ESP_0x115	-	0	8	Motorola	Unsigned
SCM	ESP_116_Alive...	ESP_0x116	-	8	4	Motorola	Unsigned
VCU	ESP_116_Che...	ESP_0x116	-	0	8	Motorola	Unsigned
Messages	ESP_120_Alive...	ESP_0x120	-	8	4	Motorola	Unsigned
Signals	ESP_120_Che...	ESP_0x120	-	0	8	Motorola	Unsigned
	ESP_268_Alive...	ESP_0x268	-	8	4	Motorola	Unsigned
	ESP_268_Che...	ESP_0x268	-	0	8	Motorola	Unsigned
	ESP_30A_Alive...	ESP_0x30A	-	8	4	Motorola	Unsigned
	ESP_30A_Che...	ESP_0x30A	-	0	8	Motorola	Unsigned
	ESP_318_Alive...	ESP_0x318	-	8	4	Motorola	Unsigned
	ESP_318_Che...	ESP_0x318	-	0	8	Motorola	Unsigned
	ESP_390_Alive...	ESP_0x390	-	8	4	Motorola	Unsigned
	ESP_390_Che...	ESP_0x390	-	0	8	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	26	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	28	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	30	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	32	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	42	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x114	-	24	1	Motorola	Unsigned
	ESP_ActvIndc...	ESP_0x268	-	21	2	Motorola	Unsigned
	ESP_ActvSig...	ESP_0x120	-	12	1	Motorola	Unsigned
	ESP_ActvSig...	ESP_0x114	-	20	1	Motorola	Unsigned

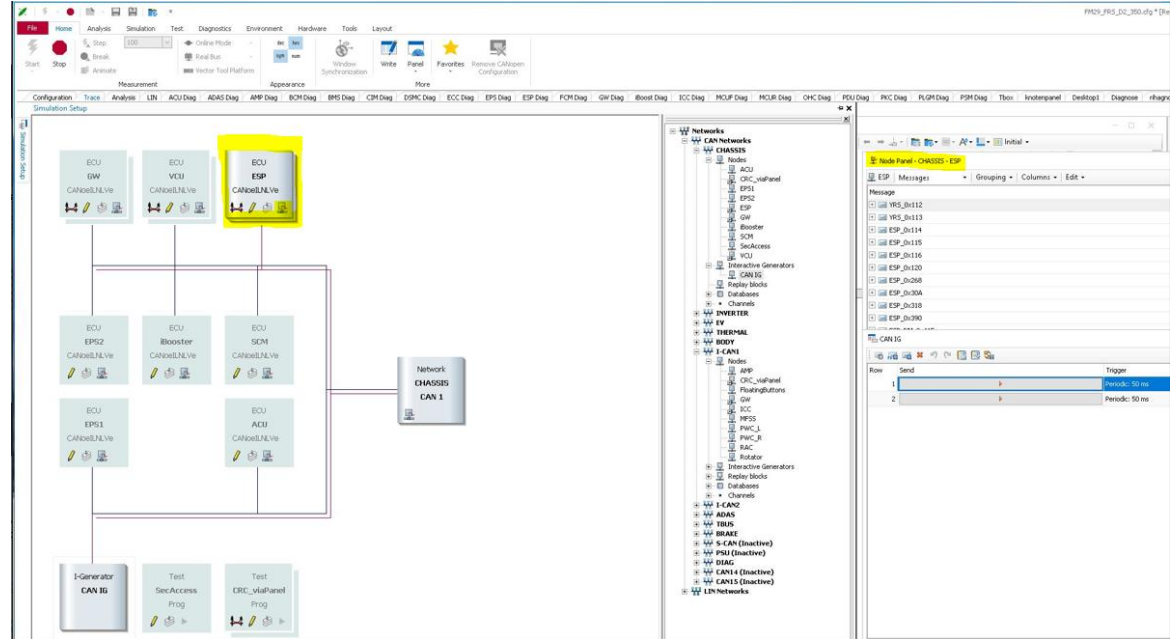
- [illegible]

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Exercise 2 – Simulation of a disconnected ECU



1. On the right in the Node Panel, you can alter the values of the signal and send it onto the bus.
2. For example
You can change the vehicle speed in the ESP_0x318



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Exercise 2 – Example of a simulated ECU

BODY-CAN

<Suche>

Initial

Time	ID	Sender ...	Name	Database	Chn	Dir	Data	DLC
0.099421	389	IPC	IC_PHOTOSENSOR	BodyCAN	CAN 2	Rx	00	1
0.099591	384	IPC	IPC_ST_POWER	BodyCAN	CAN 2	Rx	FF FF FF FF FF FF FF FF	8
0.200011	3EE	IPC	IC_RAW_TANK_DATA	BodyCAN	CAN 2	Rx	E2 03	2
0.640004	503	IPC	NM_IC	BodyCAN	CAN 2	Rx	03 00 FF 24 00 00 00 00	8
1.000905	2C9	IPC	IPC_TEMP_TRANSFER_CASE	BodyCAN	CAN 2	Rx	FF	1
0.999827	329	IPC	IC_ODO	BodyCAN	CAN 2	Rx	52 FC A6 11 F0	5
0.499541	3F3	IPC	IC_BORD_COMP_TRIP_A	BodyCAN	CAN 2	Rx	FF FF FF FF 00 00 FE	7
0.499533	3F4	IPC	IC_BORD_COMP_TRIP_B	BodyCAN	CAN 2	Rx	FF FF FF FF 00 00 FE	7
1.000001	411	IPC	IPC_DISP	BodyCAN	CAN 2	Rx	12 0E 04	3
1.000001	483	IPC	WarnMsg_IC	BodyCAN	CAN 2	Rx	FD 40 DC 02	4
0.999998	328	IPC	IC_RELATIVTIME	BodyCAN	CAN 2	Rx	76 07 8D 00 6A 00	7
5.001825	285	IPC	IC_UNIT	BodyCAN	CAN 2	Rx	01 00 80	3
5.000752	2F8	IPC	IC_UHRZEIT_DATUM	BodyCAN	CAN 2	Rx	09 17 23 05 17 E4 07 F0	8
5.000326	390	IPC	IC_DIMMING	BodyCAN	CAN 2	Rx	46 FF FF FF	4
5.000326	3EF	IPC	IC_SERVICE_INTERV	BodyCAN	CAN 2	Rx	7C 3A 40 00 00 00 FF	8
5.000326	450	IPC	IPC_AUX_TIMER_1_2	BodyCAN	CAN 2	Rx	EB 00 00 00 00 00	8
5.000318	451	IPC	IPC_AUX_TIMER_3_4	BodyCAN	CAN 2	Rx	00 00 00 00	8
10.002277	330	IPC	IC_MILEAGE	BodyCAN	CAN 2	Rx	00 00 02 00 00 FD FF	8
10.001006	5E0	IPC	IC_SVC_Kombi	BodyCAN	CAN 2	Rx	01 00 00 FF FF FF FF	8
0.049961	290	PDC	PDC_REAR	BodyCAN	CAN 2	Tx	02 00 00	3
0.049807	291	PDC	PDC_FRONT	BodyCAN	CAN 2	Tx	02 00 00	3
0.050113	293	PDC	PDC_CHIME_SETTING	BodyCAN	CAN 2	Tx	02 00 00	3
1.000261	486	PDC	WarnMsg_PDC	BodyCAN	CAN 2	Tx	8E 4D 00 00	4
1.000183	490	TTC	WarnMsg_TTC	BodyCAN	CAN 2	Rx	4F 05 FA 02	4
0.200233	3D4	TTC	TTC_STATUS_A_B	BodyCAN	CAN 2	Rx	93 43 84 00 7C 44 15 F0	8
0.200235	3D5	TTC	TTC_STATUS_C	BodyCAN	CAN 2	Rx	7F 03 85 01 FE	5
0.640018	510	TTC	NM_TTC	BodyCAN	CAN 2	Rx	10 40 FF 00 FF FF FF	8
0.500162	3D0	TTC	TTC_STAT_SOUND	BodyCAN	CAN 2	Rx	08 0A 00 00 FC	5
0.499980	2F1	TTC	TTC_STAT_ABAG	BodyCAN	CAN 2	Rx	A6 1A F8	3

Tx→ means that those messages are transmitted by our simulation

Exercise 3 – Check whether the simulations works correct

1. Check if there are ESP messages on the Trace.
2. Check if there are Error Frames in the CAN-Statistic. (picture below)
3. Check if the signal values on the trace are correct.
4. Do you need to add a terminal resistor? (look at the topology)

CAN-Statistic

CAN channel: CAN all

Statistic	CAN 1	CAN 2	CAN 3	CAN 4	CAN 5	CAN 6	CAN 7	CAN 8	CAN 9	CAN 10	CAN 11	CAN 12	CAN 13	CAN 14	CAN 15
Busload [%]	60.49	30.63	29.49	9.91	50.37	31.23	28.06	48.47	22.69	45.32	-	-	1.26	-	-
Unknown events	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	0.00	-	-
Chip State	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active
Transmit Error Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Receive Error Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Remote [total]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min. Send Dist. [ms]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	8.232	-	-
Transceiver Errors	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Frames per Burst	29	18	51	3	25	9	17	54	33	21	-	-	-	-	-
Errorframes [total]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Data [total]	37285	39530	37824	6105	30996	19127	16962	63292	29564	27959	0	0	743	0	0
Errorframes [fr/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ext. Data [fr/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bursts [total]	3305	3492	2887	894	4953	2797	2068	8839	2671	3574	-	-	-	-	-
Burst Time [ms]	6.923	2.008	5.845	0.726	5.955	2.157	4.134	6.026	3.844	5.014	-	-	-	-	-
Std. Remote [fr/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Data [fr/s]	2538	2686	2549	415	2109	1304	1153	4305	1987	1902	0	0	51	0	0
Ext. Remote [total]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ext. Data [total]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ext. Remote [fr/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transceiver Delay [ns]	0	150	150	0	0	0	0	0	0	0	-	-	0	-	-

Exercise 4 – Perform manual test of Anti theft system

5.3.2.8.4.2 Automatically activation of anti-theft system via remote locking request

Req ID	46488	Version number	46	Requirement Type	Component Function	ASIL	QM
--------	-------	----------------	----	------------------	--------------------	------	----

Precondition for automatically activation of Anti-theft system via remote request:

Vehicle Mode "PARK" or "CHARGING" Gear Shift "P" is active CAN:VCU_0x234::VCU_GearSig = 0x1

AND

Vehicle is unlocked

AND

All Doors closed

AND

Tailgate closed

AND

Transport Mode = deactivated

The BCM shall set Anti-theft system to "Anti-Theft system Set" and send related state on

CAN:BCM_0x343::BCM_AntitheftSts = 2 and send on LIN4:BCM_01::BBS_Arm_Disarm = 1 in case of:

Locking request via remote over CAN:TBOX_0x36::TBOX_RemCtrlLockCmd = 0x2 "Remote locking" PKC_0x4F0::PKC_RemLockCmd = 0x1 "Lock"

AND

LOCKING successfully performed

The BCM shall set Anti-theft system to "Anti-Theft system Unset" in case of:

LOCKING was not successful

OR

Transport Mode = activated

OR

Production Mode = activated

1. Make sure the preconditions are met
2. Lock the vehicle
3. Check the state of the signal on the trace

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Exercise 4 – Perform manual test of Anti theft system



1. Make sure the preconditions are met
2. Unlock the vehicle
3. Check the state of the signal on the trace

5.3.2.8.4.8 The system shall deactivate the Anti Theft System if vehicle was unlocked via Key Fob (Lock-or panic button)

Req ID	54623	Version number	42	Requirement Type	Component Function	ASIL	QM
--------	-------	----------------	----	------------------	--------------------	------	----

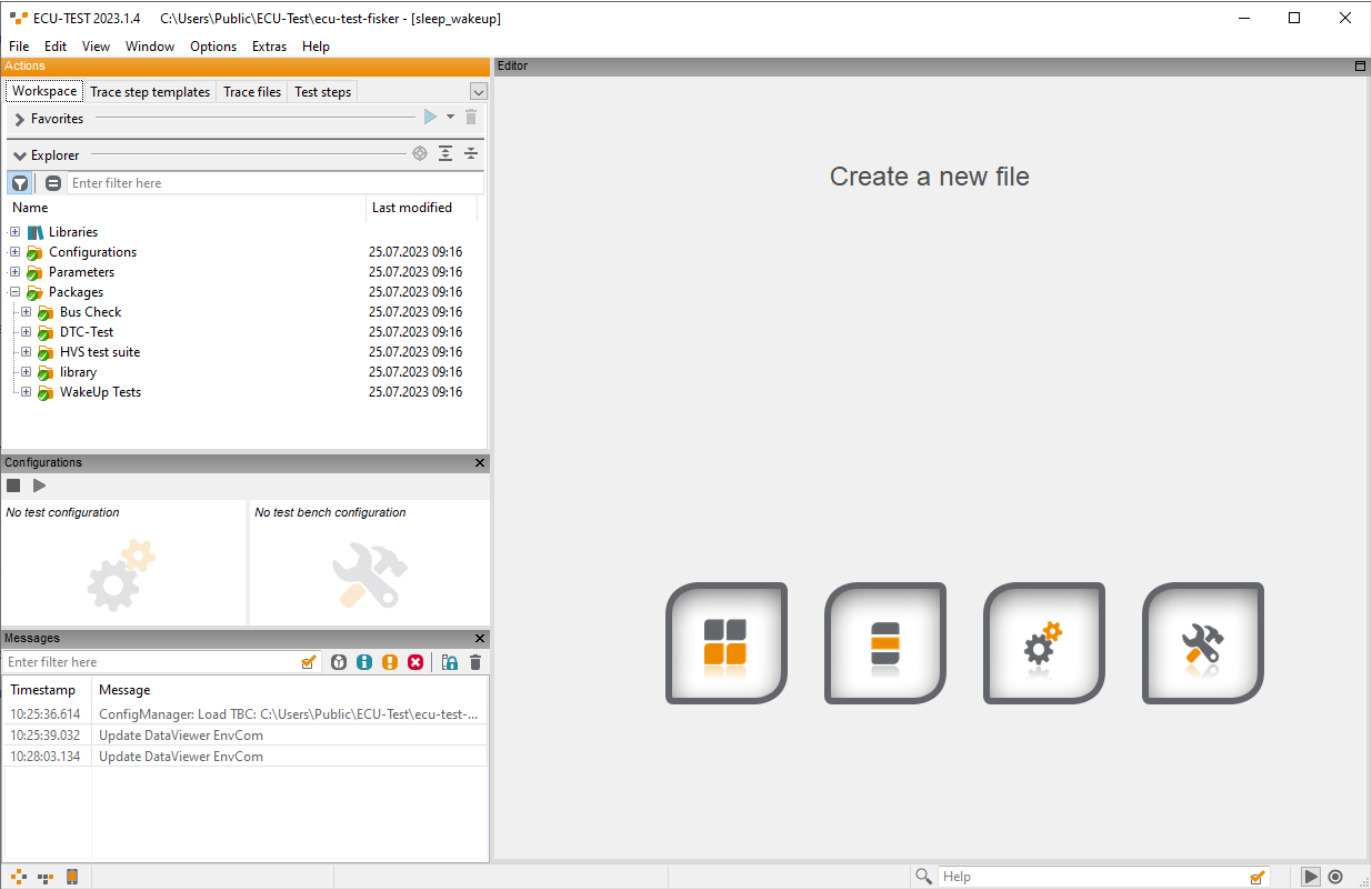
Precondition for automatic deactivation of Anti-theft system via Key Fob:
Vehicle is locked
AND
Anti-theft system is in "Anti-Theft system Set" state
The BCM shall set Anti-theft system to "Anti-Theft system Unset" and send related state on CAN:BCM_0x343::BCM_AntitheftSts = 0 and send on LIN4:BCM_01::BBS_Arm_Disarm = 0 in case of:
Unlocking request via mobile device over CAN:PKC_0x37B::PKC_RemLockCmd_Key = 0x3
"Unlock"
AND
UNLOCKING successfully performed
The BCM shall keep Anti-theft system to "Anti-Theft system Set" in case of:
UNLOCKING was not successful

A horizontal banner with a dark background. It features blue wireframe structures on the left and right, and a central area with vibrant red light streaks. The word 'Automation' is written in white, bold, sans-serif font across the center.

Automation

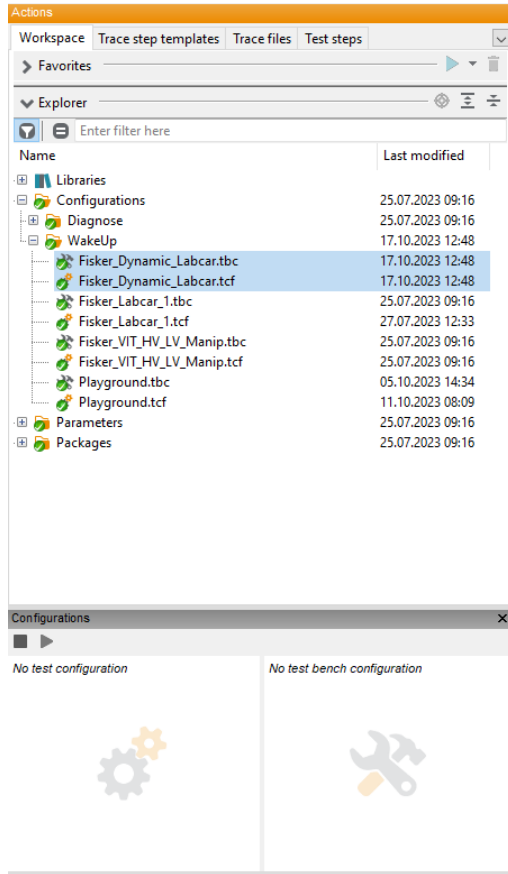
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ECU-Test - Overview



FH Training 2023/24 – Automation

ECU-Test - Starting the Configuration



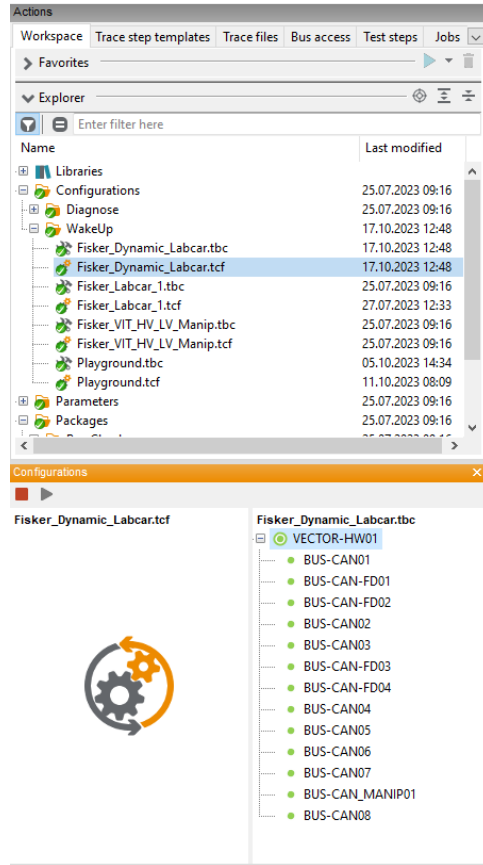
Load the fisker Labcar configuration.

Drag and Drop the config to the correct item

Hint: Look at the file extension

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ECU-Test - Start the config



Start the configuration by pressing the play button

Check if all CAN- buses are online

They should be marked in green.
If not, then look for the error

FH Training 2023/24 – Automation ECU-Test – Make an automation



ECU-TEST 2023.1.4 C:\Users\Public\ECU-Test\ecu-test-fisker - [sleep_wakeup]

File Edit View Window Options Extras Help

Workspace Trace step templates Trace files Test steps Jobs

Test case Properties Signal recordings Trace analysis Test report

Explorer

Name Last modified

- Libraries
- Configurations
- Parameters
- Packages
- Bus Check
- DTC-Test
- HVS test suite
- library
- WakeUp Tests
- Fisker_CAN_Checks
- Fisker_Dynamic_Labcar
- Functional_Packages
- coldstartOvernightRun.prj
- coldstartWithTimeVariationNoPrePost.pkg
- coldstartWrapper.pkg
- coldWarmstartOvernightRun.prj
- lvBattRecalibration.prj
- lvBattRecalibrationNoPrePost.pkg
- playgroundPackageWithPrePost.pkg
- presentationProject-StartMe.prj
- presentationScript.pkg
- sleepLoopTest.pkg
- tempPackage.pkg
- wakeupVialccTrigger.pkg
- wakeupVialccTrigger.prj
- warmstartOvernightRun.prj
- warmstartWithTimeVariationNoPrePost-Post...
- warmstartWithTimeVariationNoPrePost-Post...

Configuration

Fisker_Dynamic_Labcar.tcf Fisker_Dynamic_Labcar.tbc

Messages

Timestamp Message

- 14:09:02.691 ConfigManager: Stop TCF
- 14:09:02.703 Update DataViewer EnvCom
- 14:09:02.912 ConfigManager: Stop TBC

Comment for test step

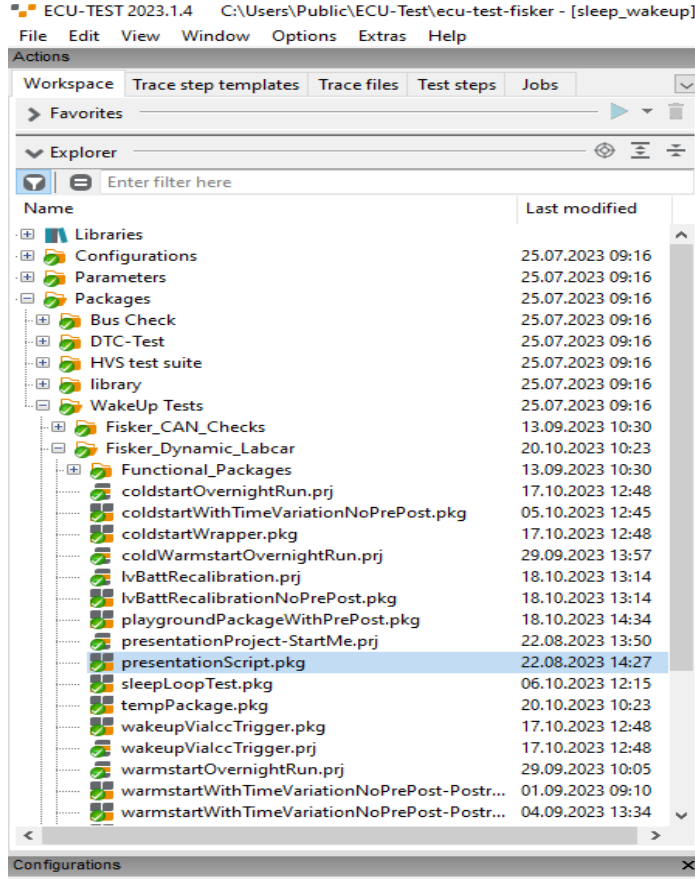
<Comment for test step>

Variables Mapping

	Name	Initial value	Current value	Description
0	BCM_BCM_0x343_B...	## Undefined ##		
1	all_ecus_awake_flag	False <Boolean>		Return value of labcarAwake
2	startup_to_sleep_de...	10 <Numeric>		delay time between startup to sleep sequence

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ECU-Test – Test packages



With the help of the packages, you can create your own automation.

Palcipate the required functions via Drag and Drop in the main window.



Your task, if you accept the order, is to start the vehicle with the help of ECU-Test.

Hint: think from the point of view of the car. What do you need to get started?

A wide banner image with a dark background. It features blue wireframe outlines of buildings on the left and right sides. In the center, there are bright red, glowing, curved lines that resemble light trails or energy flows. The letters 'EMC' are centered in a large, white, sans-serif font.

EMC

What will you do on the exercise

- Getting an introduction of Magna's EMC-Department (**E**lectromagnetic **C**ompatibility)



What will you do on the exercise

- Performing a measurement of **R**adiated **E**missions (RE)
 - Test setup: based on a specific standard, the test setup for performing the measurement must be arranged
 - Measurement: performing the measurement with special EMC equipment, finding failures in the test setup, analyzing the test results
 - Finding solutions for reducing exceedances (optional): which countermeasures are possible for optimizing radiated emission

The test will be done according to the military standard AECTP500. This standard was chosen, because it is available for free.

For this measurement different antennas are placed in various positions defined by the standard and the emissions caused by the DUT are measured using an EMI receiver (**E**lectro**M**agnetic Interference).

- Download the AECTP500 standard
- Find the required test within the standard
- Study it and answer the questions on the next slides

The AECTP500 standard must be downloaded from the link below, the name of the test which will be executed is NRE02.

[NSO NSDD \(nato.int\)](#)

- Please fill out the following questions before the exercise:
 - What is the frequency range in this measurement?

10 kHz to 18 GHz
 - Which antennas are needed for each frequency range?

10kHz to 30 MHz: 104 cm rod with impedance matching network.
30 MHz to 200 MHz, Biconical, 137 cm tip to tip.
200 MHz to 1 GHz, Double Ridge Horn, 69.0 by 94.5 cm
1 GHz to 18 GHz, Double Ridge Horn, 24,2 by 13,6 cm
 - What height should the table where the DUT is position on have?

80-90 cm.
 - In which height should the antennas be placed?

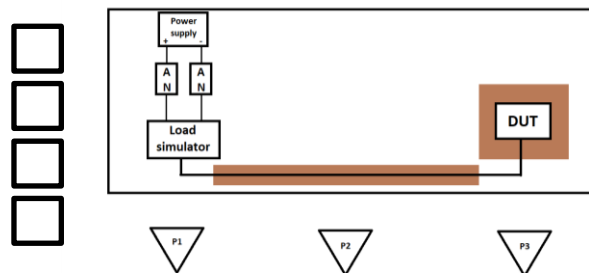
120 cm above the floor ground plane.

- How far away should the antenna be positioned from the DUT?

1 Meter from the front edge of the test set-up boundary.

- Which antenna should be placed where?

- Rod
- Biconical
- Double ridge horn
- Horn



Rod Antenna: The rod antenna should be centered with respect to the side edges of the boundary if the side edges are 3 m or less. If the side edges are greater than 3 m, multiple rod antennas may be required, positioned at intervals calculated by dividing the edge-to-edge boundary distance by 3 and rounding up.

Biconical Antenna: The biconical antenna should be placed in a sufficient number of positions such that the entire width of each EUT enclosure and the first 35 cm of cables and leads interfacing with the EUT enclosure are within the 3 dB beamwidth of the antenna.

Double Ridge Horn Antenna: The double ridge horn antenna should be placed in a sufficient number of positions such that the entire width of each EUT enclosure and the first 7 cm of cables and leads interfacing with the EUT enclosure are within the 3 dB beamwidth

VIT – Vehicle Intensive Test

E/E System Integration Vehicle Intensive Test (VIT)

This vehicles are ideal to perform E/E system and customer function tests with focus of end customer handling.

Details

- Guided testing of customer functions based on test cases
- Creative testing based on real customer behavior
- Creative testing with misuse handling
- System tests e.g., quiescent current, idle time, board net stability, diagnosis and coding
- Perform summer/winter or country testing
- Error analysis
- “Real world” testing

Benefit

- Test of latest HW/SW in real vehicle

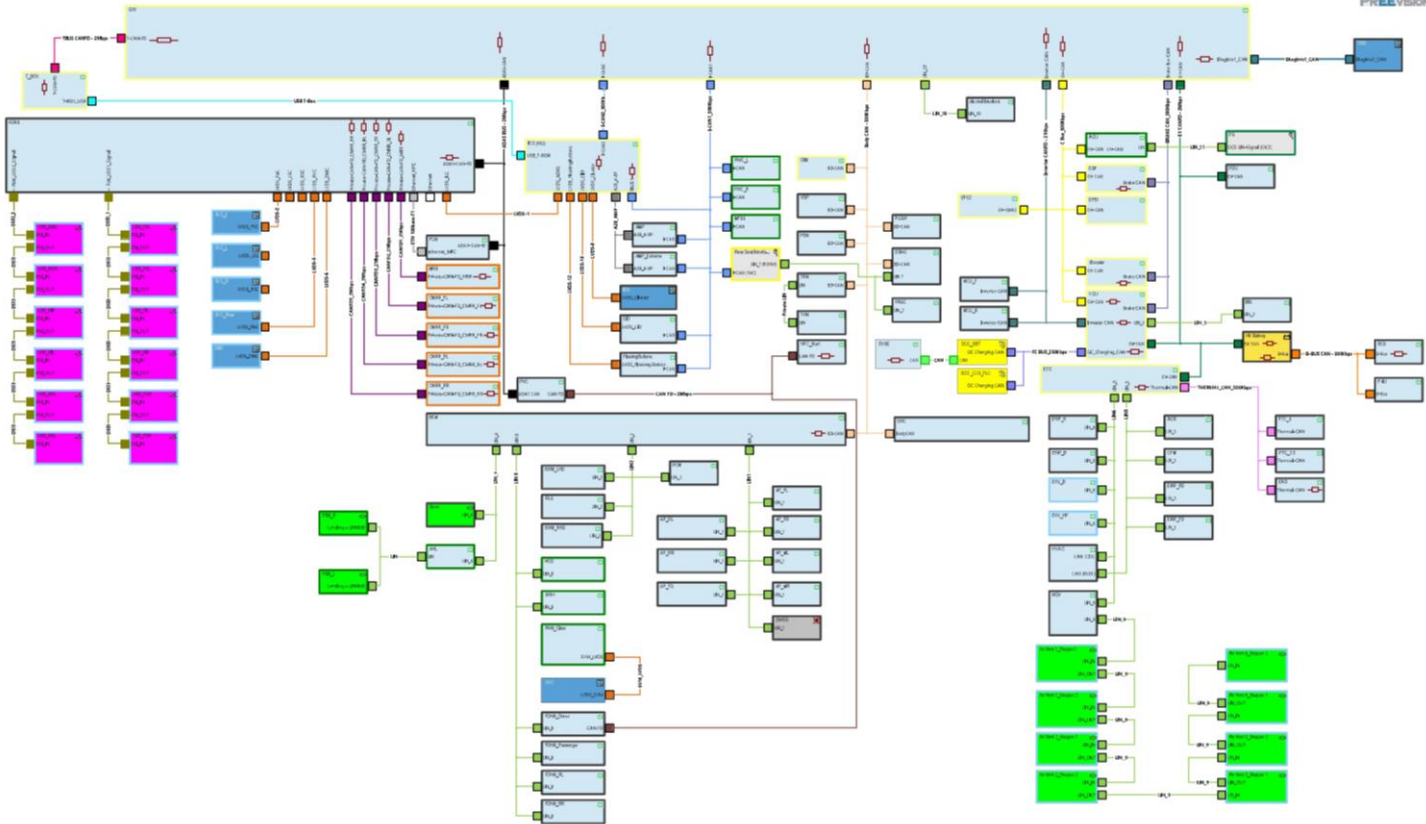


CAN-communication and recording

Overview CAN BUS architecture

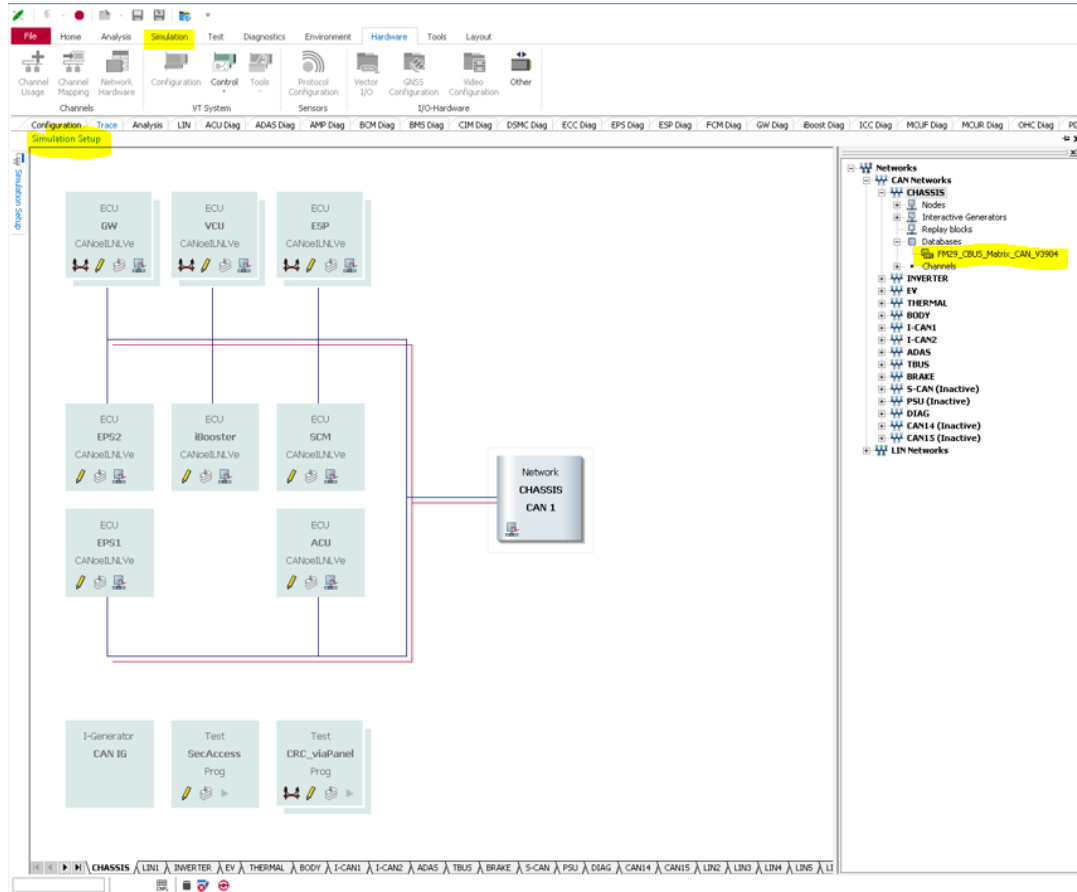


PREVIEW



CAN-communication and recording

CAN-Database/Matrix → .dbc



Including the
.dbc file

.dbc file contains:

- 1) signal names
- 2) network nodes
- 3) signal IDs
- 4) cycle times
- 5) comments for information about the signals

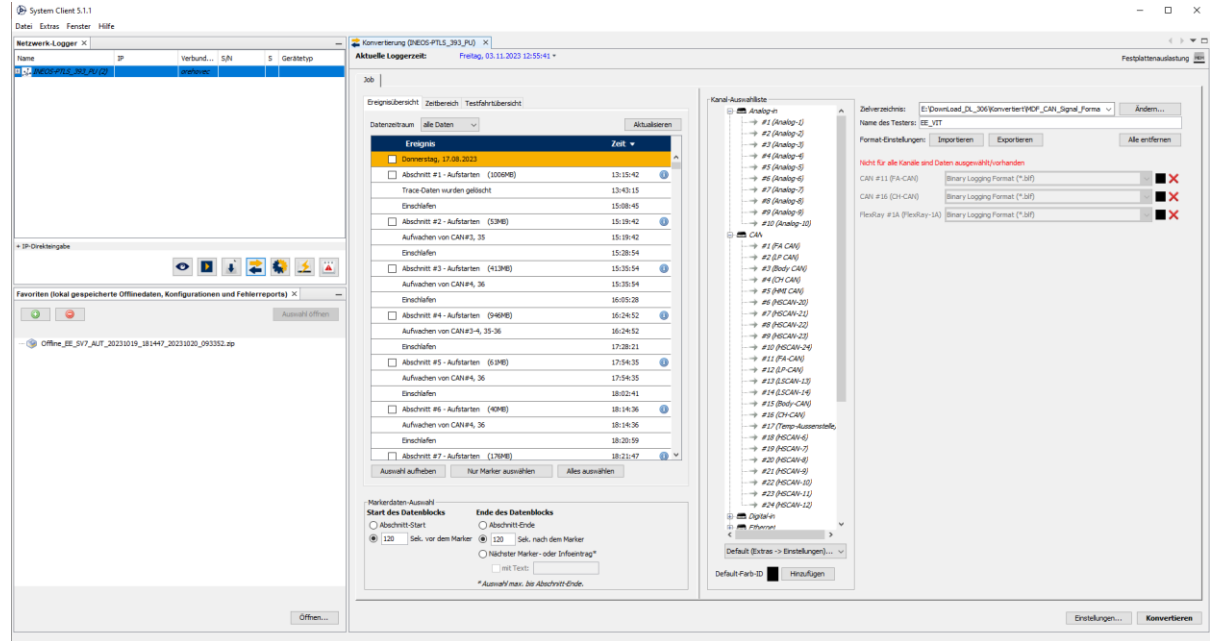
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CAN-communication and recording

CAN-Recording

CAN-Communication is recorded by a Logger (Blue Pirat)

To analyze the Traces from the logger you need the right converter program for BP it's called System Client 5.1.1





Error finding

Normal Customer Tests (driving)
Test Cases
Focus System Testing (Stress Test)
Endurance Testing



Error Analyse

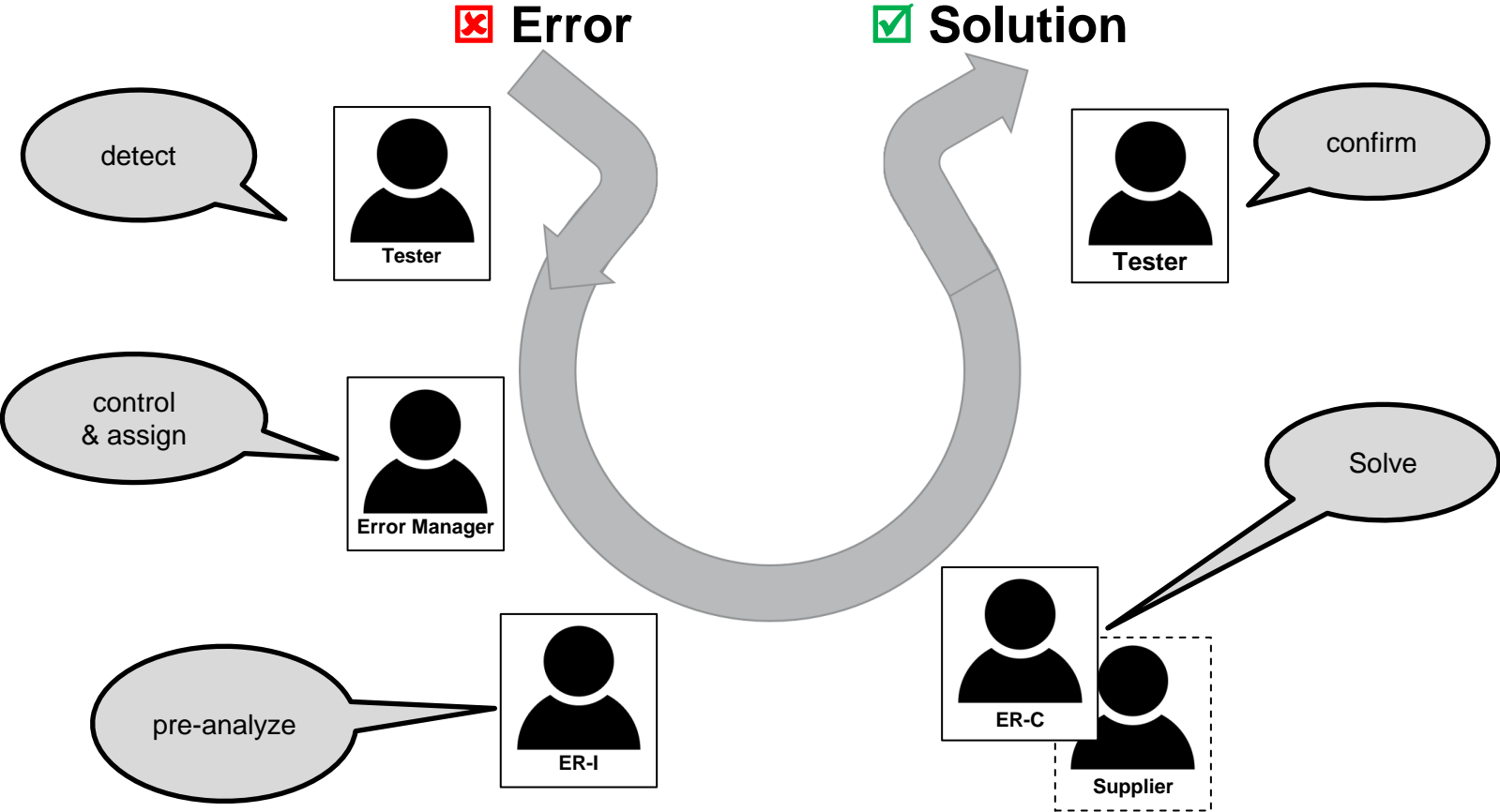
Identify error ECU
Why this component



Error Report

Which component
Real behavior vs expected behavior
How often (Sporadic, always, single event)
Vehicle Status (software, hardware)
Evidence (Video, Photo, Trace)

Defect Management Process Flow - Overview



Testing Overview

- Static Tests

- Door lock unlock
- Thermal comfort heating cooling
- Entertainment system
- Charging
- etc...

- Dynamic Tests

- Suspension
- Cruise Control
- ESP (Electronic Stability Program)
- ADAS (Advanced Driving Assistant System)
- ABS (Anti Blockier System)
- etc...



Testing ALM Test case "sunroof"- ID275155

Application Lifecycle Management

Domain: MS, Project: Fisker_FM29
User: denibaum

Test Sets
Edit
View
Tests
Favorites
Analysis

No Filter Defined

- 98_FRS_SORP_KiV_24.3
- 98_FRS_SORP_KiV_27.7
 - Dynamic Labcar
 - Labcar 1
 - Labcar 2
 - Labcar 3
 - NivTB
 - NivTB 2
 - SSTB ADAS/Chassis
 - SSTB Body
 - SSTB Infotainment
 - SSTB PwT
 - SSTB PwT 2
 - Supplier Test Sets
 - VIT
 - 1_557
 - 10_Seats (VIT)
 - 11_JCC Telltales (VIT)
 - 12_Tire Pressure Monitoring System
 - 13_Outter Mirror Electrical (VIT)
 - 14_Multimedia - Odometer Function
 - 15_Multimedia - Navigation
 - 18_External Acoustic Vehicle Alerting (VIT)
 - 19_Power Window (VIT)
 - 2_Vehicle Access Locking and Start Authoriza
 - 3_HV Activation Deactivation Sequence Tests
 - 4_Propulsion
 - 5_HV Charging
 - 6_Dynamic Control (VIT)
 - 7_Sun Roof (VIT)
 - 8_Power Doors & Closures (VIT)
 - 9_Interior Lighting
- 98_FRS_SORP_KiV_29.7
 - Labcar 1
 - Labcar 2

Select Tests
Run

Details
Execution Grid
Execution Flow
Attachments
Automation
Linked Defects
History

Sort By: Status[Ascending]

Test Instance ID	Name	Test: Test Name	Type	Status	
275156	[[[The sunroof shall open or close on (Self run mode) when the Mobile App requests	The sunroof s...	MANUAL	N/A	APP N/A
275161	[[[The sunroof shall open or close with selfrun when the (California Mode button) on the Mo	The sunroof s...	MANUAL	N/A	APP N/A
275162	[[[The sunroof shall open or close with selfrun when the (California Mode button) on the Mo	The sunroof s...	MANUAL	N/A	APP N/A
275153	[[[The motor of the sunroof will stop in the next closed position after activating the motor mor	The motor of L...	MANUAL	Not Completed	no VIT Test--> supplier TC
275154	[[[The sunroof shall close automatically in case of Thermal Propagation	The sunroof s...	MANUAL	Not Completed	no VIT Test--> BR&& (TC updated)
275149	[[[A manual learning process shall be triggered by pushing the moonroof button in closing dir	A manual lear...	MANUAL	Passed	
275150	[[[A manual learning process shall be triggered by pushing the moonroof button in closing dir	A manual lear...	MANUAL	Passed	
275151	[[[If anti-collision function not activated the sunroof shall move to the last stored position whe	If anti-collisio...	MANUAL	Passed	
275152	[[[If the sunroof is open further than position 5 and the opening signal of the tailgate is detect	If the sunroof...	MANUAL	Passed	
275155	[[[The sunroof shall open or close on (Self run mode) when the California Switch in OHC is p	The sunroof s...	MANUAL	Passed	
275157	[[[The sunroof shall open or close on (Self run mode) when the sunroof switch is pressed on	The sunroof s...	MANUAL	Passed	
275158	[[[The sunroof shall open or close while holding the Sunroof switch at Stage 1 & Stage 3	The sunroof s...	MANUAL	Passed	
275159	[[[The sunroof shall open or close with selfrun when the (California Mode button) on the FO	The sunroof s...	MANUAL	Passed	

Last Run Report

Step Name	Status	Exec Date	Exec Time	Comment...	Operating...
Step 1	Passed	18.07.2023	08:57:57		
Step 2	Passed	18.07.2023	08:58:30		


Step Details

Description:
Initial State:
Ignition ON
Sun Roof closed
Operating Element:
California mode switch at OHC
Operating:
Press California mode button to open the sunroof (stage 1)

Expected:
Sliding roof shall open with self run.

Actual:

Testing ALM Test case "Power Window"- ID275180

**Application Lifecycle Management**

Domain: MS, Project: Fisker_FM29 User: denibaum

Test Sets Edit View Tests Favorites Analysis

No Filter Defined

98_FRS_SORP_KW_24.3

98_FRS_SORP_KW_27.7

Dynamic Labcar

Labcar 1

Labcar 2

Labcar 3

NVITB

NVITB 2

SSTB ADASI/Chassis

SSTB Body

SSTB Infotainment

SSTB PWT

SSTB PWT 2

Supplier Test Sets

VIT

1_557

10_Seats (VIT)

11_JCC Telltales (VIT)

12_Tire Pressure Monitoring System

13_Outer Mirror Electrical (VIT)

14_Multimedia - Odometer Function

15_Multimedia - Navigation

18_External Acoustic Vehicle Alerting (VIT)

19_Power Window (VIT)

2_Vehicle Access Locking and Start Authoriza

3_HV Activation Deactivation Sequence Tests

4_Propulsion

5_HV Charging

6_Dynamic Control (VIT)

7_Sun Roof (VIT)

8_Power Doors & Closures (VIT)

9_Interior Lighting

98_FRS_SORP_KW_29.7

Labcar 1

Labcar 2

Labcar 3

Select Tests Run

Details Execution Grid Execution Flow Attachments Automation Linked Defects History

Sort By: Status[Ascending]

Test Instance ID	Name	Test: Test Name	Type	Status
275175	[1]Manual learning process - Passenger	manual learni...	MANUAL	Passed
275176	[1]Manual learning process - passenger side 2nd row	manual learni...	MANUAL	Passed
275177	[1]Manual learning process - Tailgate	manual learni...	MANUAL	Passed
275178	[1]Panic Mode - Driver Window after anti pinch situation after 5 sec.	Panic Mode - ..	MANUAL	Passed
275179	[1]Panic Mode - Driver Window after anti pinch situation within 5 sec.	Panic Mode - ..	MANUAL	Passed
275180	[1]Panic Mode - Driver Window after anti pinch release button	Panic Mode - ..	MANUAL	Passed
275181	[1]Panic Mode - Front Passenger Window after anti pinch situation after 5 sec.	Panic Mode - ..	MANUAL	Passed
275182	[1]Panic Mode - Front Passenger Window after anti pinch situation within 5 sec.	Panic Mode - ..	MANUAL	Passed
275183	[1]Panic Mode - Front Passenger Window after anti pinch release button	Panic Mode - ..	MANUAL	Passed
275184	[1]Panic Mode - Second Row Passenger Window after anti pinch situation after 5 sec.	Panic Mode - ..	MANUAL	Passed
275185	[1]Panic Mode - Second Row Passenger Window after anti pinch situation within 5 sec.	Panic Mode - ..	MANUAL	Passed
275186	[1]Panic Mode - Second Row Passenger Window after anti pinch release button	Panic Mode - ..	MANUAL	Passed
275187	[1]Panic Mode - Tailgate Window after anti pinch situation after 5 sec.	Panic Mode - ..	MANUAL	Passed
275188	[1]Panic Mode - Tailgate Window after anti pinch situation within 5 sec.	Panic Mode - ..	MANUAL	Passed
275189	[1]Panic Mode - Tailgate Window after anti pinch release button	Panic Mode - ..	MANUAL	Passed
275190	[1]Panic Mode - Third Row Passenger Window after anti pinch situation after 5 sec.	Panic Mode - ..	MANUAL	Passed

Last Run Report

Step Name	Status	Exec Date	Exec Time	Comment...	Operating...
Step 1	Passed	12.07.2023	11:00:39		

Step Details

Description:

Initial State:

Ignition On

Operating Element:

Window switch -Driver, test rod

Operating:

Force anti pinch and within 5 sec. pull the power window switch driver door in 2nd travel position (closing direction) and release it.

Expected:

Anti pinch function is activated.

Window opens the defined value.

Actual:

Test 27 of 29

Server Time: 03.11.2023 09:56

Testing Exercise 1

Perform functional tests on the vehicle for power windows and center lock buttons

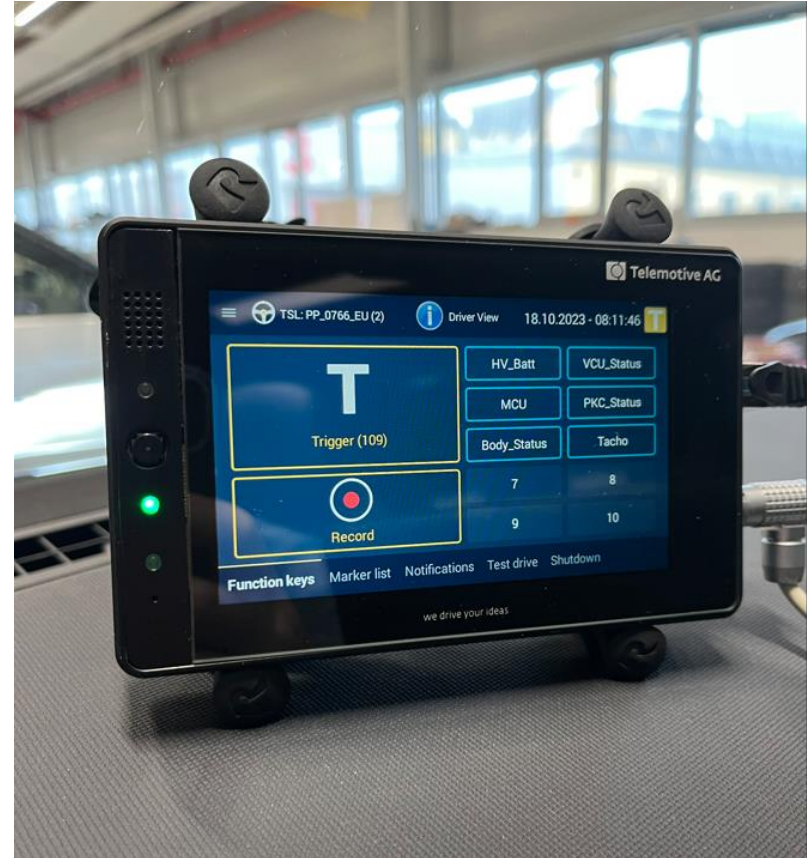
- Window down
- Window up
- Locking and unlocking
- Side mirror settings



Error Analyzing Exercise 2

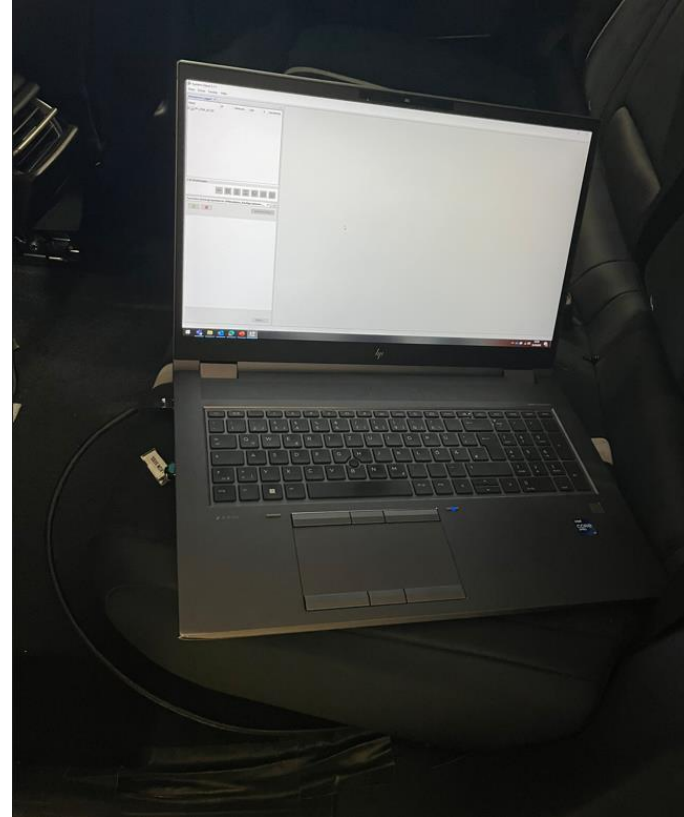
If the Function is not given or does not work as required -> Trigger via Logger the time stamp

- Push the touchscreen button “Trigger” or “Record” if you want to give audio information to the trigger



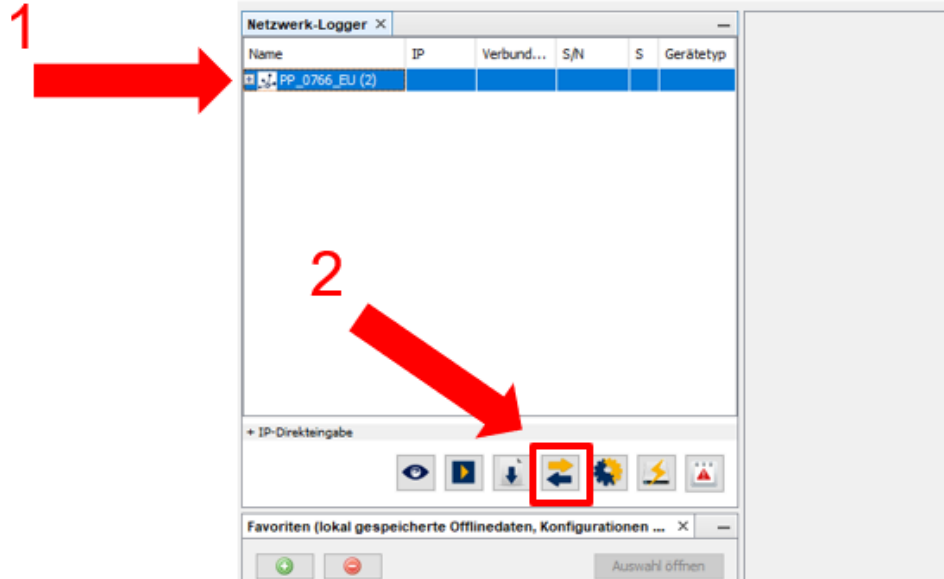
Error Analyzing Exercise 2

Connect your Laptop with the logger via ethernet and download the right trigger with the System Client 5.1.1



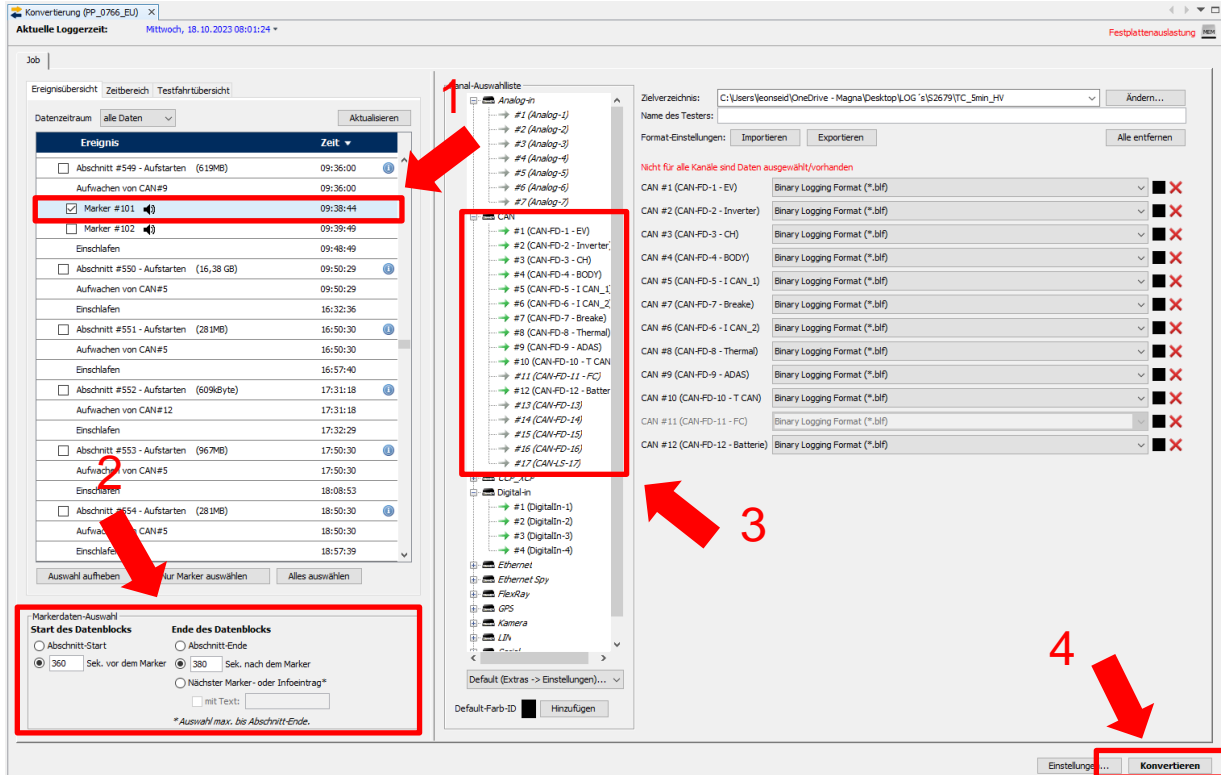
Error Analyzing

Exercise 2



1. Klick on the Name of the Logger
2. Select Data Convert and wait till the logger window opens

Error Analyzing Exercise 2



Konvertierung (PP_0766_EU) X

Aktuelle Loggerzeit: Mittwoch, 18.10.2023 08:01:24

Festplattenauslastung

Job

Ereignisübersicht Zeitbereich Testfahrtsübersicht

Datenzeitraum: alle Daten Aktualisieren

Ereignis	Zeit
<input type="checkbox"/> Abschnitt #549 - Aufstarten (51946)	09:36:00
<input type="checkbox"/> Aufwachen von CAN#9	09:36:00
<input checked="" type="checkbox"/> Marker #102	09:38:44
<input type="checkbox"/> Marker #102	09:39:49
<input type="checkbox"/> Einschlafen	09:48:49
<input type="checkbox"/> Abschnitt #550 - Aufstarten (16,38 GB)	09:50:29
<input type="checkbox"/> Aufwachen von CAN#5	09:50:29
<input type="checkbox"/> Einschlafen	16:32:36
<input type="checkbox"/> Abschnitt #551 - Aufstarten (28146)	16:50:30
<input type="checkbox"/> Aufwachen von CAN#5	16:50:30
<input type="checkbox"/> Einschlafen	16:57:40
<input type="checkbox"/> Abschnitt #552 - Aufstarten (509kByte)	17:31:18
<input type="checkbox"/> Aufwachen von CAN#12	17:31:18
<input type="checkbox"/> Einschlafen	17:32:29
<input type="checkbox"/> Abschnitt #553 - Aufstarten (96746)	17:50:30
<input type="checkbox"/> Aufwachen von CAN#5	17:50:30
<input type="checkbox"/> Einschlafen	18:08:53
<input type="checkbox"/> Abschnitt #554 - Aufstarten (28146)	18:50:30
<input type="checkbox"/> Aufwachen von CAN#5	18:50:30
<input type="checkbox"/> Einschlafen	18:57:39

Auswahl aufheben Nur Marker auswählen Alles auswählen

Markerdaten-Auswahl

Start des Datenblocks

☐ Abschnitt-Start

☒ 360 Sek. vor dem Marker

Ende des Datenblocks

☐ Abschnitt-Ende

☒ 380 Sek. nach dem Marker

Nächster Marker- oder Infoeintrag*

☐ mit Text:

* Auswahl max. bis Abschnitt-Ende.

Anal-Auswahl

Analogs

#1 (Analog-1)

#2 (Analog-2)

#3 (Analog-3)

#4 (Analog-4)

#5 (Analog-5)

#6 (Analog-6)

#7 (Analog-7)

CAN

#1 (CAN-FD-1 - EV)

#2 (CAN-FD-2 - Inverter)

#3 (CAN-FD-3 - Ch)

#4 (CAN-FD-4 - BODY)

#5 (CAN-FD-5 - 1 CAN_1)

#6 (CAN-FD-6 - 1 CAN_2)

#7 (CAN-FD-7 - Breake)

#8 (CAN-FD-8 - Thermal)

#9 (CAN-FD-9 - ADAS)

#10 (CAN-FD-10 - T CAN)

#11 (CAN-FD-11 - FC)

#12 (CAN-FD-12 - Batterie)

#13 (CAN-FD-13)

#14 (CAN-FD-14)

#15 (CAN-FD-15)

#16 (CAN-FD-16)

#17 (CAN-FD-17)

Digital

#1 (Digital-1)

#2 (Digital-2)

#3 (Digital-3)

#4 (Digital-4)

Ethernet

Ethernet Spy

FlexRay

GPS

Kamera

LiDAR

Default (Extras -> Einstellungen)...

Default-Farb-ID

Hinzufügen

Zielverzeichnis: C:\Users\jeonsei\OneDrive - Magna\Desktop\LOG's\5267\TC_Smin_HW

Name des Testers:

Format-Einstellungen: Importieren Exportieren

Alle entfernen

Nicht für alle Kanäle sind Daten ausgewählt/verhanden

Channel	Format	Selected
CAN #1 (CAN-FD-1 - EV)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #2 (CAN-FD-2 - Inverter)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #3 (CAN-FD-3 - Ch)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #4 (CAN-FD-4 - BODY)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #5 (CAN-FD-5 - 1 CAN_1)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #7 (CAN-FD-7 - Breake)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #6 (CAN-FD-6 - 1 CAN_2)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #8 (CAN-FD-8 - Thermal)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #9 (CAN-FD-9 - ADAS)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #10 (CAN-FD-10 - T CAN)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #11 (CAN-FD-11 - FC)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>
CAN #12 (CAN-FD-12 - Batterie)	Binary Logging Format (*.bif)	<input checked="" type="checkbox"/>

Einstellungen... Konvertieren

1. Select the trigger where the error happened
2. Select the time frame you want to analyze
3. Select the CAN-Bus where you think the error will show up and can be analyzed
4. Klick on "convert"

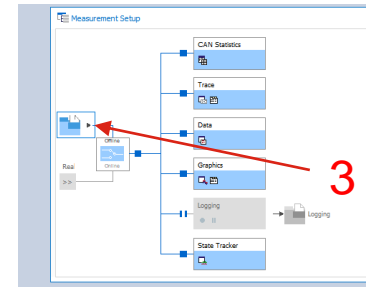
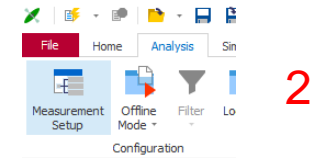
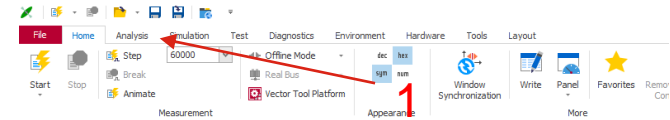
Error Analyzing

Exercise 2



- Task 4: Open Vector Canoe program on the laptop

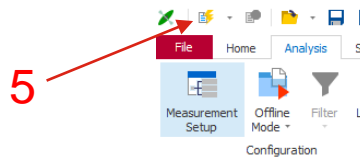
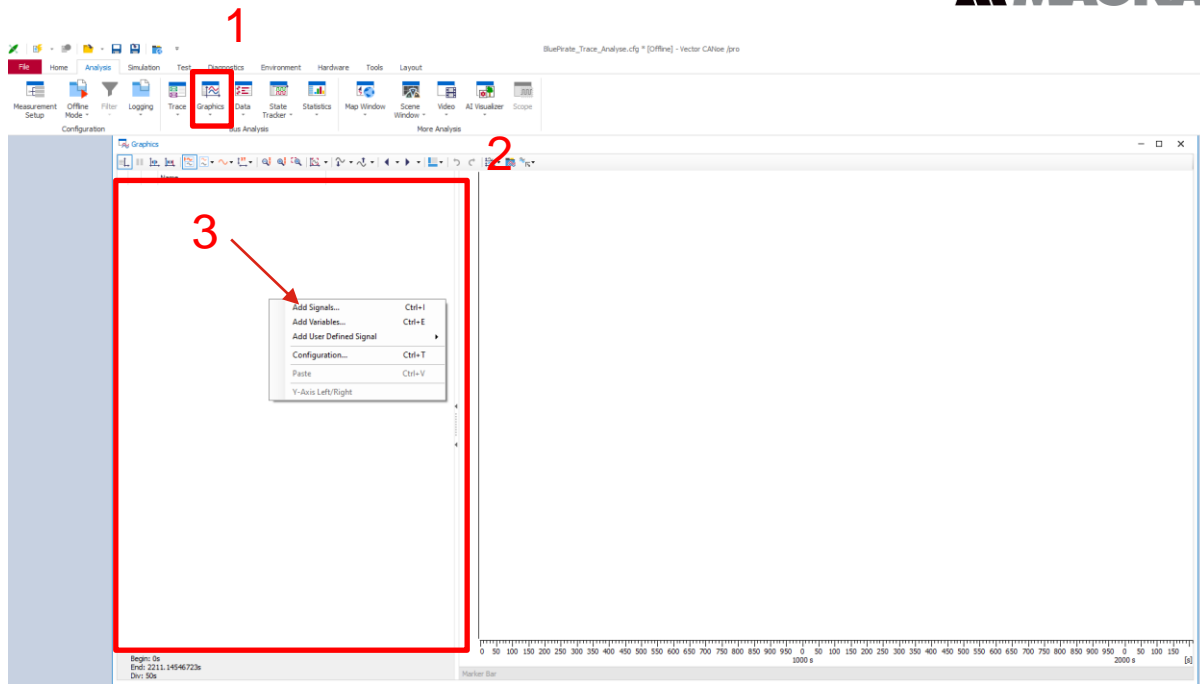
1. Klick on analyze
2. Select measurement setup
3. Klick on the folder and select your trace



Error Analyzing

Exercise 2

1. Select Graphics button and go to the „Graphics“ window
2. Right mouse click in left part of the window
3. Select “Add Signals...”
4. Now Search for the Signal you want to analyse
5. Start the measurement



- After finding and analysing the issue we must create a report
 - There your you have a special program for error handling (e.g. Jira or Octane)
- The report is for the specialist department to solve the issue
- The report need enough information for the department to understand the issue and prioritize the revision
 - which component (ECU) is responsible
 - what is the issue (what does not work)
 - how bad is the issue (evaluation)
 - In which status of the vehicle does it happen (driving, standing)
 - In which setting´s was the vehicle (climate, suspension, engine-mode)
 - In which frequency (always, sporadic, single event)
 - What hardware and software is in the vehicle
 - Is the issue reproducible
 - Evidence (videos, photos, traces) for the error report

Error Reporting

Exercise 3

Task :

- Open “Jira” with the Edge Browser
- Klick on „Erstellen“
- Now fill up the sheet

