

THE CANOE PROJECT

Toulouse, 02/09/2021

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INTRODUCTION

WHY DO YOU NEED CANOE ?

- *To create a great work tool for network communication-based products (CAN, LIN)*

WHO CAN USE IT ?

- *SE, Tester, EE*
- *People who don't know the product well but must use it*

AIM OF THE PRESENTATION :

- *To introduce an existing simulation*
- *To show that customization is possible*
- *To explain how to do it*

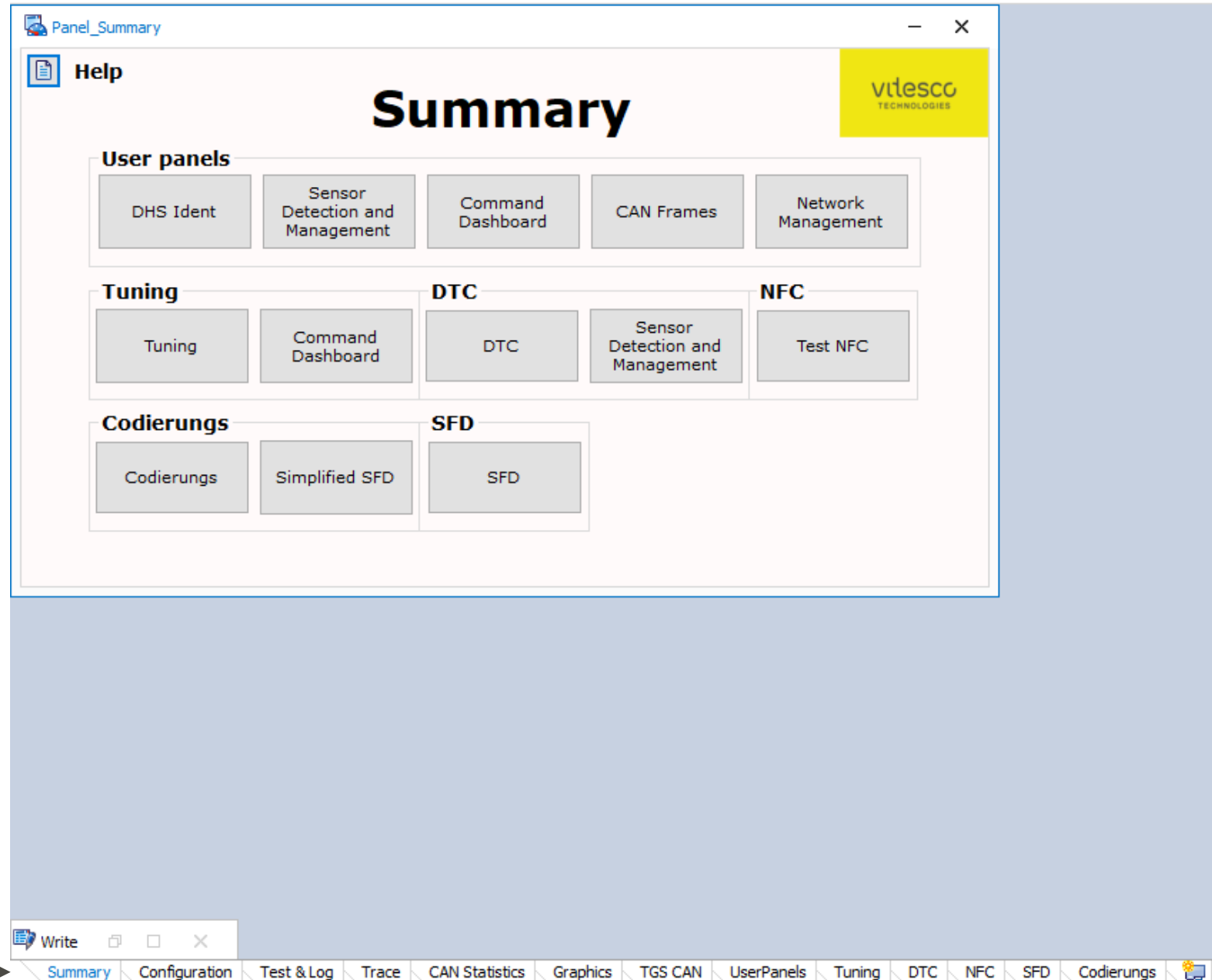
MAIN DESKTOP

PANEL SUMMARY

This panel can open all the other panels.

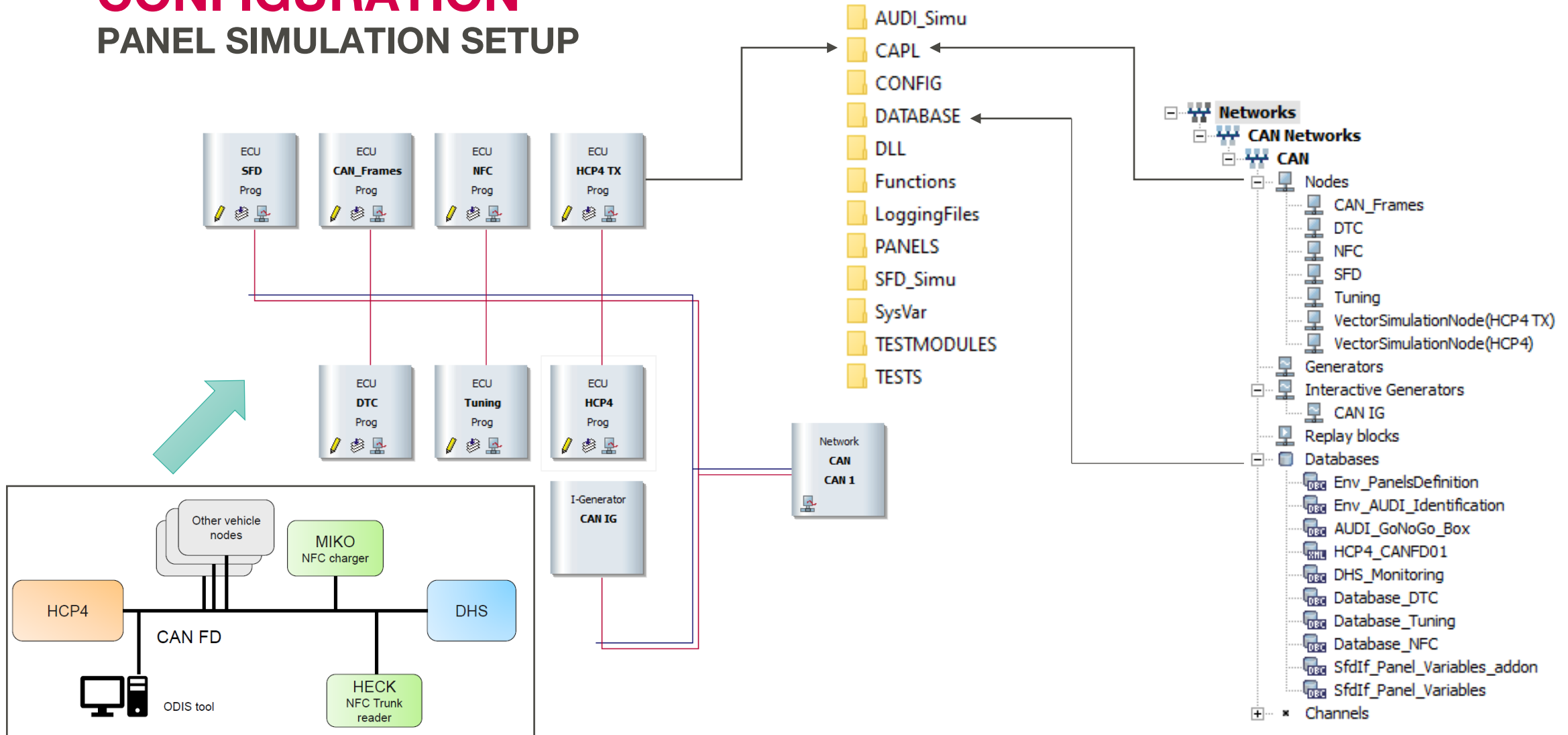
The 'Help' button opens a .txt file that you can complete on the go if you find things that can be useful for other people

The user can then personalize the desktops as he pleases.



CONFIGURATION

PANEL SIMULATION SETUP



Temporary Path : Y:\AD_Students\SE\Romain Choulot\CANoe_project\CANoe_project_2021

GENERALIZING

We tried generalizing the names of everything that we used to make it easier to search for information when needed.

Panel	Panel_name
Database	Database_name
Constant	c_VariableName
Local Variable	l_VariableName
Global Variable	g_VariableName
Env. Variable	Env_<PanelID/FunctionId><short_description>
Syst. Variable	SysV_<short_description>
NameSpace	SysSpace_<short_description>Variables
Timer	Timer_TimerName
Function	fun_FunctionName()


LOGGING FILES

PANEL MEASUREMENT SETUP

Logging allows you to record and play back tests with modifications.

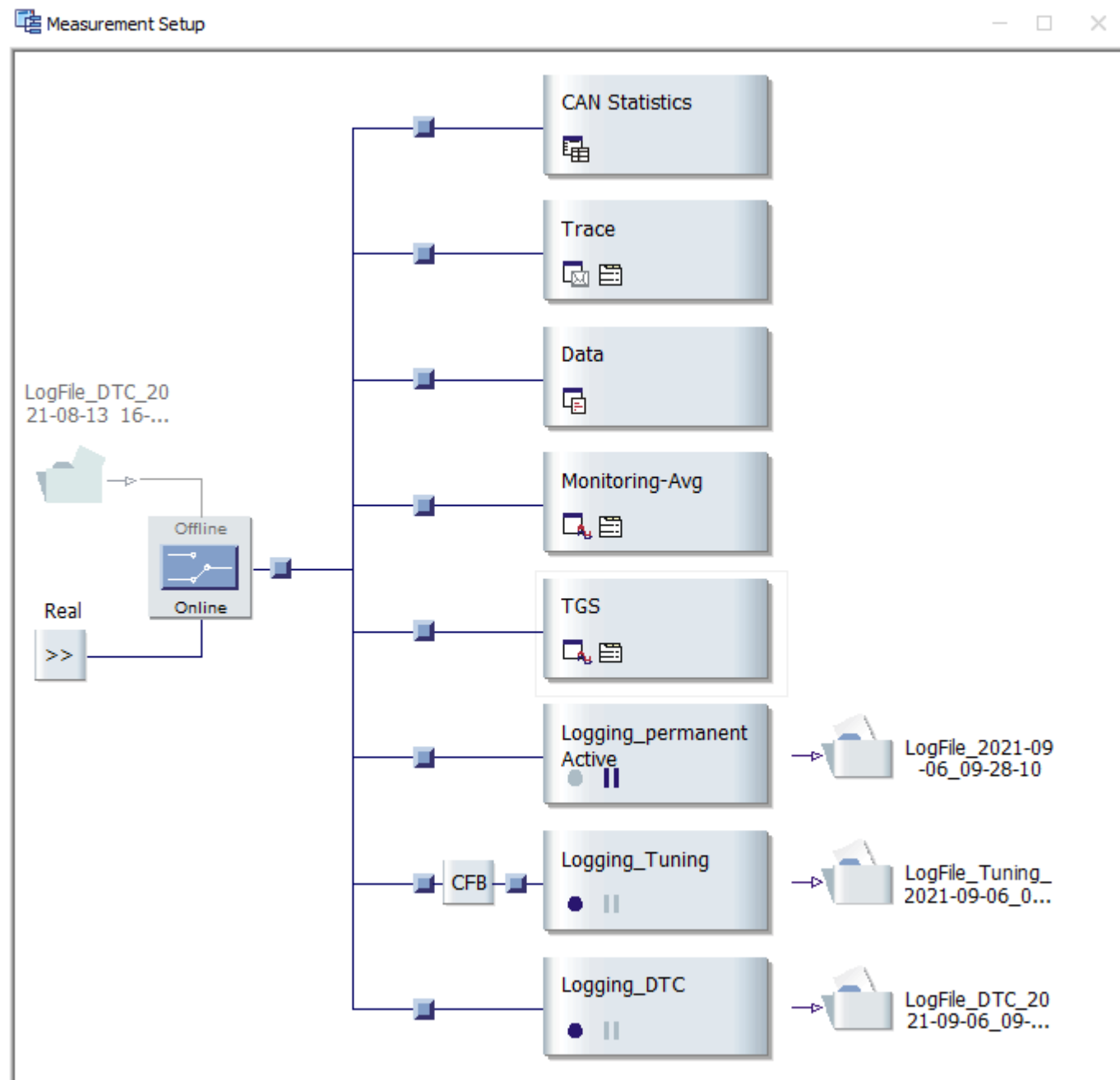
You can filter the frames you want to log with the 'CBF' Block, instructions are in the Help.

In the '*Test & Log*' Desktop, you can manage current Logging Blocks and add more.

Click on the  tab on the Summary for more information.



Help



USER PANELS

QUICK CHECKS, ACTIONS & TESTS

Panel_Sensor_Detection_and_Management

Sensor Detection

Lock: Touch, Proximity, PICC

Unlock: Touch, Proximity, PICC

Capa Deactivation: ☐ Sleep: ☐

Sensor Management

Device Status: Cx0_Init_nicht_erkannt

Polling mode: mode0

Function state: mode0

Auth Active: ☐ Active

Diag Active: ☐ Active

Tmin Active: ☐ Active

KL15 Active: ☐

Panel_CAN_Frame

CAN Frames

TX Msg:

- ☐ NFC_TGS_01
- ☐ KN_NFC_FS
- ☐ DEV_NFC_FS
- ☐ OBDc_NFC_FS
- ☐ NM_NFC_FS
- ☐ DS_NFC_FS
- ☐ ISO_NFC_FS

Sleep: ☐

HCP4

Start TX, Stop TX, TX Status

Clamp Control Set: ☐ Production: ☐ Transport: ☐

ESM: ☐ Driving Cycle: ☐

Prop. Sys. Active: ☐

KL15

Panel_Network_Management

Network Management

CAN FD01 nodes

- NM_BCM1_FCAB: Cx0_Init
- NM_BCM2_FCAB: Cx0_Init
- NM_AAG_FCAB: Cx0_Init
- NM_TSG_BT_FCAB: Cx0_Init
- NM_TSG_FT_FCAB: Cx0_Init
- NM_TSG_HBFS_FCAB: Cx0_Init
- NM_TSG_HFS_FCAB: Cx0_Init
- NM_VAS_L_FCAB: Cx0_Init
- NM_VAS_R_FCAB: Cx0_Init

NM Frame ID: No Wakeup

Cluster ID: NoWakeUp

NM Timer

TGS - EQ5 Vitesco

- ☐ NM_TGS_FS
- ☐ KN_TGS_FS
- NM_NFC_FS_FCAB: Cx0_Init
- NM_NFC_FS_CBV_AWB: Cx0_Passiver_WakeUp
- NM_NFC_FS_CBV_CRI: Cx1_NM_mit_Clusteranfon
- NM_NFC_FS_SNI_10: Cx117_NFC_FS_SNI
- NM_NFC_FS_NM_State: Cx0_Init
- NM_NFC_FS_UDS_CC: Cx0_Inaktiv
- NM_NFC_FS_Wakeup_V12:
- NM_NFC_FS_NM_aktiv_KL15: Cx0_Inaktiv
- NM_NFC_FS_NM_aktiv_Diag: Cx0_Inaktiv
- NM_NFC_FS_NM_aktiv_Tmin: Cx0_Inaktiv
- NM_aktiv_Authentifizierung: Cx0_Inaktiv
- NM_NFC_FS_FCIB: 0

Panel_DHS_identification

DHS identification

SW: Refresh

Internal SW: Clear

HW: Continuous ident: ☐

ECU HW:

Spare Part:

FAZI:

S/:

Vehicle Type: Unknown

Panel_Command_Dashboard

Command Dashboard

DHS identification

SW: Refresh

Internal SW: Clear

Sensors

NFC, TOUCH, PROXIMITY

HCP4

Start TX, Stop TX, TX Status

Sleep

Sleep count: 0 Sleep: ☐ Forced WakeUp: ☐

Error Management

Number of DTC: 0 Check

Tuning

12.0 V Monitoring

KL15

Write

Source: CAPL / .NET, CAPL / .NET, System

Message: zeitstempel: 1630502206000, timestamp array: 0 0 1 7B A1 81 3A 30, End of measurement 01:16:49.967 pm

TUNING & MONITORING

PANEL TUNING

This panel allows you to handle the generic monitoring frame and have a look at the main generic values monitored: N values, temperature, voltage, misuses...

You can also use the specific functions of the monitoring, such as:

- Update the tuning
- Force the NFC to IDLE mode
- Start the NFC field

Panel_Tuning_new

Tuning

Dashboard

Lock

Sensitivity 16

Count 16

DeltaN : 0

Unlock

Sensitivity 16

Count 16

DeltaN : 0

Read

Update

Reset

NFC

DeltaN : 0

012.0 V

000.0 °C

Threshold 0

Monitoring KL15

Monitoring

Capacitive

Misuse : 0

Timeout Counter : 0

Lock State : Idle

Unlock State : Idle

NFC

Misuse : 0

Timeout Counter : 0

State : Idle

Timeout Counter : 0

Reset DHS

Sleep

EOL Functions

Force IDLE

Start NFC field

Period (*100ms) 0

Logging

Counter 30

0

TESTING THE NFC PROTOCOL

NEW TEST NFC PANEL

The screenshot displays the 'Panel_Test_NFC' application window, which is organized into several functional panels:

- Sequence configuration:** Includes 'Frame Options' with dropdowns for 'Simulation' (Default) and 'FrameType' (APDUC), and input fields for 'Delay*' (50) and 'Timeout*' (3054). It also has checkboxes for 'Bad SID' and 'Bad PL', and buttons for 'Add', 'Clear', 'Load', and 'Default'. A 'Sequence' list box is present with 'Reset' and 'Load' buttons.
- Display:** Contains four sub-sections for protocol messages: 'Auth Request', 'APDU Command', 'APDU Response', and 'Auth Response'. Each has a table of fields (MsgType, Version, SessionID, AIDType, Result, SW) with input boxes and a 'SW' field with a spinner. Below these is a 'Counters' section with input fields for ARQST, APDUC, APDUR, and ARESP, and a 'Clear' button.
- Codierung:** Features an 'NFC' section with input fields for 'WaitingAPDUR*', 'WakeUpTimer*', 'WaitingComErr*', and 'RoutingTimer*', with a note '* in ms'. There is also an 'RConfig' section with a dropdown for 'EnableEcpLegacyFF' (Disable) and input fields for 'EcpTci2LowerNibble' and 'EcpTci3UpperNibble', along with 'Read', 'Update', 'Write', and 'Default' buttons.
- Reader Configuration:** Includes a hex display for data (41 42 43 44 45 46 47 4 ABCDEFG) and a 'ConfigType' dropdown (Write) with a 'Status' field (OK) and 'Send' and 'Clear' buttons.

What can it be used for?

- *Select a frame sequence to test the NFC protocol*
- *Display the last frames*
- *Change the Codierungs related to the NFC protocol*
- *Change and check the Reader configuration*

REPORTING ERRORS

PANEL DTC

DTC can be reported automatically, every 10s, and will wake up DHS if it's sleeping.

You can start logging by clicking on the button, and for 30s it will log everything you told it to log.



You can choose the DTC Status you want, and report by mask. Default status is 0xFF and all DTC are being reported.


Extended Data are bytes sent with the DTC to tell us when the error occurred.

You can manage the control of the car and check the CAN interface.

Panel_DTC

Error Management

Control
 KL15
Set Driving ☐ Set OBDx ☐ Set Warmup ☐
OCY Cnt 0 Delay 15 Start/Stop
Tuning
☒ NWDF
☒ NWDF_30
☒ NWDF_guelting
Sleep
Sleep count: 1
 Sleep
Logging
Counter 30
HCP4 TX
NFC Failure 0
KN Failure 1
Management
Number of DTC: 2 Check Reset DHS
New DTC: 0 Clear Data Clear DTC from DHS
Mask: 0xFF

Dashboard
Mileage
Start auto  KM
Date and time
Day Month Year
Start auto Hour(s) Minute(s) Seconds(s)

CAN Interface
DS_NFC_F ☐
DS_NFC_FS_ConfDTCChanged 0
DS_NFC_FS_DiagAdr 33078
DS_NFC_FS_IdentValid 1
DS_NFC_FS_MemSel10Changed 0
DS_NFC_FS_MemSelChanged 0
DS_NFC_FS_StMemChanged 0
DS_NFC_FS_TestFailedChanged 0
DS_NFC_FS_WIRChanged 0

DTC Read
Mask: 0xFF Report By Mask
DTC ID: Over Voltage Report

Status of DTC bits
Mask: 0xFF
Tick/Untick all
Bit pos.
0 ☒ TF
1 ☒ TF this OCY
2 ☒ PendingDTC
3 ☒ ConfirmedDTC
4 ☒ TNC Since Last Clear
5 ☒ TF Since Last Clear
6 ☒ Test Not Completed this OCY
7 ☒ Warning Indicator Requested

DTC 1
Name: MDK02 Monitoring
DTC Code: 10013
Diag Status: 2C
Extended Data
OCC Prio Date Time KM Aging
8 6 31/8/2021 14:31:2 12200 40
WIR TNC this OCY TFSLC TNCSLC CDTC PDTC TF this OCY TF

DTC 2
Name: NVEM12 Monitoring
DTC Code: 10014
Diag Status: 2F
Extended Data
OCC Prio Date Time KM Aging
15 6 31/8/2021 10:14:18 14800 40
WIR TNC this OCY TFSLC TNCSLC CDTC PDTC TF this OCY TF

DTC 3
Name: 0
DTC Code: 0
Diag Status: 0
Extended Data
OCC Prio Date Time KM Aging
0 0 1/1/2000 0:0:0 0 0
WIR TNC this OCY TFSLC TNCSLC CDTC PDTC TF this OCY TF

DTC 4
Name: 0
DTC Code: 0
Diag Status: 0
Extended Data
OCC Prio Date Time KM Aging
0 0 1/1/2000 0:0:0 0 0
WIR TNC this OCY TFSLC TNCSLC CDTC PDTC TF this OCY TF

SFD

NEW SFD PANEL

Panel_Test_SFD

SFD UDS Routines

☐ Use Gruppenmerkmal **Extended Session** ☐ DiagSession running

Unlock Protection : Role: 0 No unlock active ▾ Duration: 0 No unlock active ▾ Initial: No ▾ 0xC004 Status: *Invalid*

Lock Protection 0xC005 Status: *Invalid*

Reset Protection 0xC007 Status: *Invalid*

Request Token Invalid ▾ 0xC008

Request Logging Data 0 Log Entries 1 - 5 ▾ 0xC009 Log Entries: 0

Begin of Writing of Secured Data : Amount: 1 ▾ DID 1: 0x0600 ▾ DID 2: 0x0250 ▾ DID 3: 0x05F0 ▾ 0xC011 Status: *Invalid*

Write DID Configuration List : 1 ▾ 0x0600 ▾ 0x0250 ▾ 0x05F0 ▾ 0x0250 ☐ Use Padding

End of Writing of Secured Data 1 Finish writing of secured data ▾ 0xC012 Status: *Invalid*

Request Configuration : PVD Configuration Invalid ▾ 0x06A9 PVD Conf: 0 E2Esecured Amount: 0

Calculate Configuration State Fingerprint : 1 ▾ 0x0600 ▾ 0x0250 ▾ 0x05F0 ▾ 0x0F02 Status: *Invalid*

Type of Calculation: 1 DIDs in ControlOption ▾


SFD Status

Response Result: *Invalid* Status: *Invalid* Role: 0 None Status: 0 Group attribute set


Routine Info: Response Token: 0 Response Token Length: 0 Type: 0 None Duration: **SFD Status**

WriteCodierungs


Data to send to AUDI

Data imported from AUDI :  **Start**



Codierungs :

 **Read** **Send** **Finalize**

Log

nameFile.txt : 

State

 Final status : **<None>** 

What can it be used for?

- Do the SFD UDS routines
- Facilitate the writing of the Codierungs
- Log the results

WRITING CODIERUNGS

NEW SFD PANEL SIMPLIFIED

Panel_Test_SFD_Codierungs

Codierung

Display

Parameters

Carrier fields

Capa Misuse

NFC Misuse

Enable Wakeup

KL15 DisableNFC

KL15_DisableKessy

ESM Disable NFC

ESM Disable Kessy

Lighting

Chrome Cover

Carrier1

Carrier3

Vehicle

PollingDelay

RoutineTimer

ESM Config

Activate ESM

LpcdPulseESMInac

LpcdPulseESMAcive

Polling Esm Active

Polling Esm Not Active

NFC Config

UpperNibble

LowerNibble

Lpcd Sensitivity

LpcdPulseDuration

LpcdCalibration

ECP PollingCycles

RetryNFCDetection

WakeUpTimer

WaitComError

Wait APDU Resp

RetryAuthentRqst

nRetryAuthentRqst

Gaming Config

CMP_EnterTO

CMP_MaintainTO

CMP Retry

NMP_EnterTO

NMP_MaintainTO

NMP Retry

Panel_Test_SFD_Simplified

SFD UDS Routines

Log

nameFile.txt

SFD Status

Role: 0 None

Type: 0 None

Status: 0 Group attribute set

Duration:

State

Data to send to AUDI

Data imported from AUDI :

Codierungs :

Final status

<None>

What can it be used for?

- *Get the Codierungs from the first panel*
- *Write the Codierungs following the protocol using the AUDI public key*
- *Log the exchanges and the results*

QUESTIONS ?