



Driveline and Chassis Technology

# iDAS – Data Application and Documentation

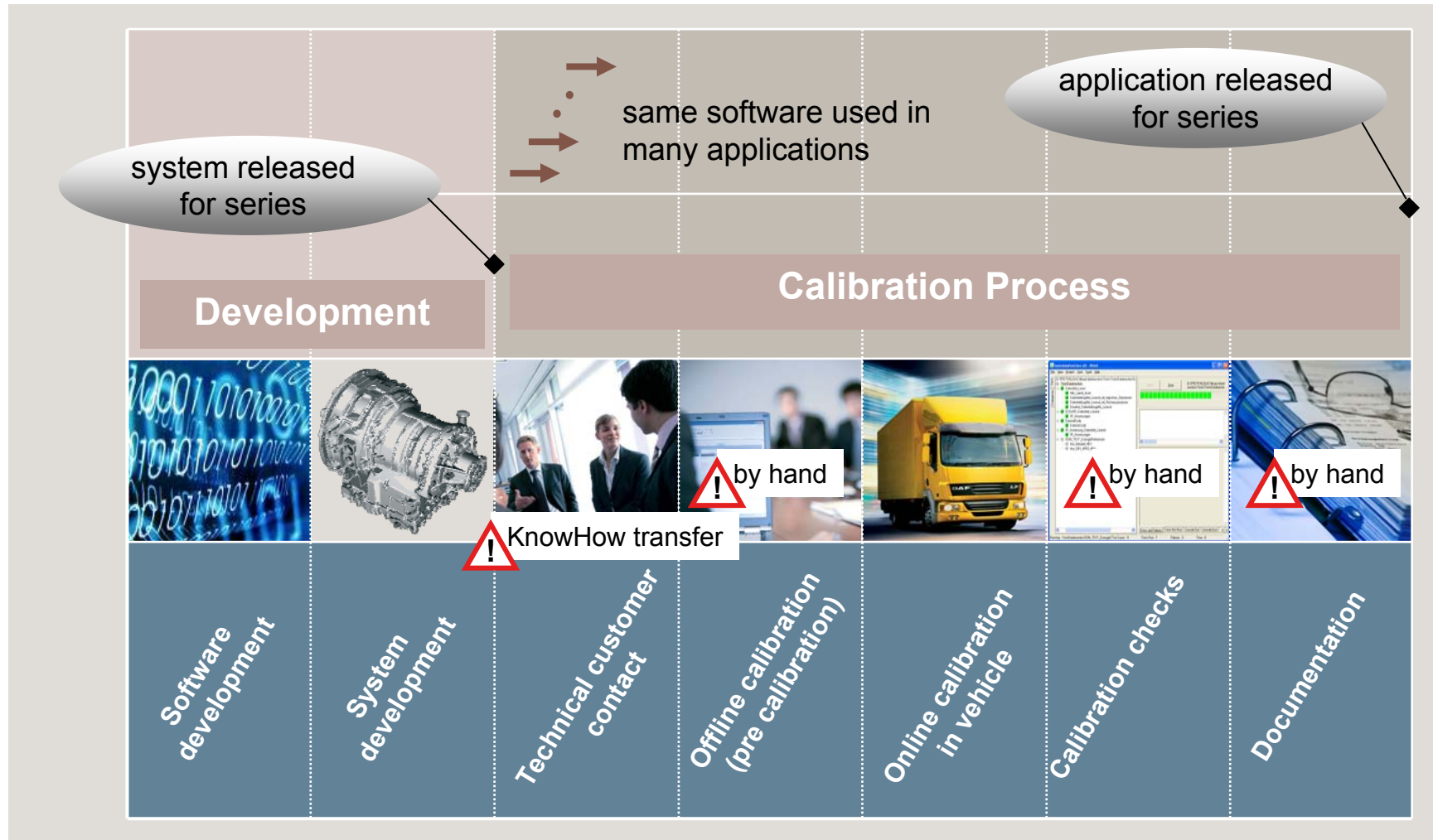
intelligent Data Application System

Rainer Röhrlé  
ZF Friedrichshafen AG





# Application Process (commercial vehicles)





# Change of Data Calibration

**Effort**  
**No. of parameters**

direct calibration within a HEX-file

calibration with description file

Parameter	Wert
Adjust_n_Ab_Geberrad	60 Zaehne
Adjust_n_Mot_Geberrad	60 Zaehne
Adjust_n_Tu_Geberrad	72 Zaehne
AnfKo_BREMS_D.LEW_Mot_Ret_a...	3.53 %
AnfKo_BREMS_D.LHyneq_Mot_Re...	-1.18 %
AnfKo_BREMS_D.MEW_Mot_Ret_...	50 Nm
AnfKo_BREMS_D.MHyneq_Mot_R...	-10 Nm
AnfKo_BREMS_D.Sw_Ret_Anf_Da...	1 -
AnfKo_BREMS_D.t_Ret_Aus_Anf_...	1 s
AnfKo_Gg_D.Gg_GgEin_EFP_default	V5
AnfKo_Gg_D.kPrEW_BeBr_N_Gg_...	30 %
AnfKo_Gg_D.kPrEW_BeBr_NE	20 %
AnfKo_Gg_D.kPrHyneq_BeBr_GgF...	-1 %

11753 Objekt(e) in Filter 'Alle'



# Change of Data Calibration

**Effort**  
**No. of parameters**

direct calibration within a HEX-file      calibration with description file      ReUse of calibration components

**All objects**

Object	Class
APRJ : BMW_8HP7090_K / -; : 0	Application Project
K110.C	Dataset
DST : BMW_8HP7090_K / VF.K110.C; 1	Dataset
A2L : K110.C / -; : 0	ASAP2 File
HEX : K110.C / VF.K110.C; 1	Hex File
ZFPAR : ALS_Serie_8HP70 / J160_D; 0	Additional Parameter
ZFPAR : ATSYS-GETR_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : ATSYS-MOT-WD_N63B44 / J160_F; 1	Additional Parameter
ZFPAR : ATSYS-SPEZ_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : ATSYS_Allg_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : BMW_OVF / K110_A; 0	Additional Parameter
ZFPAR : BOSCH_Allg / K110_D; 0	Additional Parameter
ZFPAR : DIAG_8HP7090-Otto-BN2000-noMSA-Lear...	Additional Parameter
ZFPAR : HK-WD_Nw250_N63B44 / J160_F; 0	Additional Parameter
ZFPAR : LCC-MOT-WD_N63B44 / J160_F; 0	Additional Parameter
ZFPAR : LCC_Allg_8HP70 / J200_B; 6	Additional Parameter
ZFPAR : NOKLA_OVF / K110_A; 1	Additional Parameter
DST : BMW_8HP7090_K / XD.K110.C; 1	Dataset
A2L : K110.C / -; : 0	ASAP2 File
HEX : K110.C / XD.K110.C; 1	Hex File
ZFPAR : ALS_Serie_8HP70 / J160_D; 0	Additional Parameter
ZFPAR : ATSYS-GETR_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : ATSYS-MOT-WD_N63B44 / J160_F; 1	Additional Parameter
ZFPAR : ATSYS-SPEZ_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : ATSYS_Allg_8HP70 / J160_F; 8	Additional Parameter
ZFPAR : BMW_OXD / K110_A; 1	Additional Parameter
ZFPAR : BOSCH_Allg / K110_D; 0	Additional Parameter
ZFPAR : DIAG_8HP7090-Otto-BN2000-noMSA-Lear...	Additional Parameter
ZFPAR : HK-WD_Nw250_N63B44 / J160_F; 0	Additional Parameter
ZFPAR : LCC-MOT-WD_N63B44 / J160_F; 0	Additional Parameter
ZFPAR : LCC_Allg_8HP70 / J200_B; 6	Additional Parameter
ZFPAR : NOKLA_OXD / K110_A; 1	Additional Parameter



# Change of Data Calibration

**Effort**  
**No. of parameters**

direct calibration within a HEX-file      calibration with description file      ReUse of calibration components      calibration by use of rules

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# Change of Data Calibration

**Effort**  
**No. of parameters**

3 BD AA 33 38 FE 00 00 93				
0 00 01 2C 38 BE 00 00 83				
0 82 00 4C 3C 80 00 04 38				
5 1F 20 40 41 82 FF F0 3B				
5 8C 02 4E 91 9E C2 80 3B				
1 65 C2 84 38 FE 00 00 93				
1 60 D1 0A 90 1E C0 2 93				
1 8 E 00 00 38 BE 00 00 93				
1 6B 00 30 91 E C1 04 3D				
1 29 00 70 91 3E C1 0C 03				
9 80 00 01 01 05 02 00 70				
0 00 C0 C6 90 1E 7F 80 7C				

direct calibration within a HEX-file      calibration with description file      reuse of calibration components      calibration by use of rules

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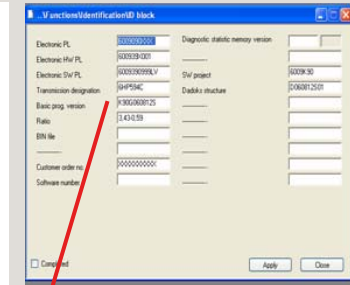


# What is iDAS



## Calibration with iDAS

User is guided through the forms - the parameters are not visible. Expert knowledge is in an easy to create iDAS configuration.



## Calibration with Description File (A2L)

Names and influence of the parameters must be known. Partly expert knowledge is in description file (A2L-file).

AnfKo_Gg_D.TEW_Sumpf...	-10 °C
AnfKo_Gg_D.TEW_Sumpf...	-10 °C
AnfKo_Gg_D.THWneg_Su...	-2 °C
AnfKo_Gg_D.THWneg_Su...	-2 °C
AnfKo_Gg_E.kPrEW_BeBr...	22 %
AnfKo_Gg_E.kPrEW_BeBr...	22 %
AnfKo_Gg_E.kPrEW_BeBr...	18 %
AnfKo_Gg_E.kPrEW_BeBr...	18 %
AnfKo_Gg_E.kPrEW_BeBr...	18 %
AnfKo_Gg_E1.sw_zweite...	PegelGetrigg



## Calibration directly in Hex-Code

Address, data typ, conversion and influence of the parameters must be known. Highest expert knowledge is necessary.

3	0D	0A	33	3B	FE	00	00	93
C	00	01	2C	38	BE	00	00	83
0	82	00	4C	3C	80	00	00	48
C	1F	20	40	41	82	FF	F0	3B
5	80	02	4E	91	9E	C2	80	3B
1	65	C2	84	3B	FE	00	00	3D
1	60	D1	0A	90	1E	C0	38	93
B	E0	00	00	38	BE	00	00	93
1	6B	00	30	91	7E	C1	04	3D
1	29	00	10	91	3E	C1	0C	93
9	80	00	01	B1	9E	C2	00	70
3	E0	E0	C6	90	1E	7F	80	7C



**ZF iDAS ASLITE Kunde\_2.IDH**

Datei Extras Ansicht Fenster

Kunde\_2.IDH

- Kunde\_2.IDH
  - Allgemein
  - Hardware
    - ZF Stücklistennummern
    - Mitgeltende Dokumente
    - Fahrzeug(e)
    - Motor(en)
    - Getriebe
  - Zusatzaggregate
    - Pto+NLP
    - Intarder
    - Zusatzkühlung
  - Mech. Schnittstellen
  - Pneu. Schnittstellen
  - System
  - Einbau/Sonstiges
  - weitere Anlagen
- Checklisten

iD

..Functions\Deceleration\Motorbremse var\_selekt: df1

Exist engine brake

Via digital input ED-Port

ERC1\_FROM\_ENGRET.EngRet\_TrqMode ID (Hex)

Torque hysteresis value to the transition engine brake OFF->ON  Nm

Torque to the detection of engine brake enabled  Nm

Torque hysteresis value to the transition engine brake ON->OFF  Nm

Comments

Erledigt

DM1\_Transmission.Active Diagno ID (Hex)

DM1\_Retarder.Active Diagnostic T ID (Hex)

DM1\_Wandler.Active Diagnostic T ID (Hex)

DM4.Freeze Frame Parameters ID (Hex)

**Getriebe-Einbauneigung**

Einbauneigung längs:  \*  % Einbauneigung quer:   %

Wertebereich 0..5°

Comments

Erledigt

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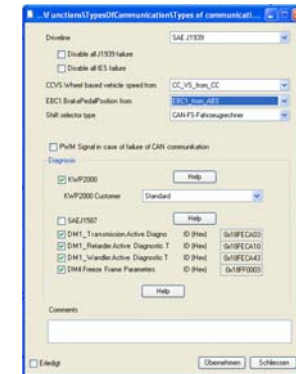
# iDAS - Calibration

## Functional Application

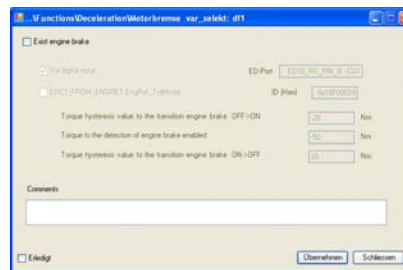
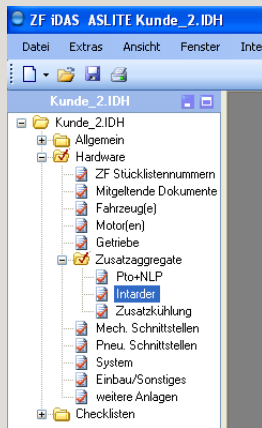
- Application of functions instead of individual parameters

### Example „*Type of Communication*“

The most important switches of communication functions are placed in one form. If a file (e.g. \*.hex) is opened in iDAS, it will show the functional settings when open the form. If the user changes a setting, iDAS will set the necessary parameters in the file.



## Guided Application



- Completed topics are marked
- Settings of disabled functions are faded out to focus on necessary items
- Errors are displayed immediately

**Getriebe-Einbauneigung**

Einbauneigung längs:  \*  % Einbauneigung quer:   %

Wertebereich 0..5°



**Moduleditor**

Datei Ansicht Bearbeiten Code Hilfe

Assembly: Y:\FRDTENLIDAS\projekte\PKW\_Pruefungen\tests.ipk Modul:

---

**Edit Labelcheck**

File

- Prüfkonfigurationen
  - tests.ipk
    - All Checks
      - MSA
      - AxleLearning**
      - SA2TBVARIANT
      - TEST\_ALWAYS\_ID\_Bloc
    - All References
    - External Code
    - This

Name:  Nr. (not used yet):

Condition:  
`Datenfeld(SWL_IG_HA_Learn) = EXTERNAL(This.GetFuncValue(AxleLearning)) AND EXTERNAL(This.Pruefe_D_IG_HA_Default( ))`

Failure Message:  
`Funktion AxleLearning nicht richtig appliziert!`

Correction:



# iDAS - Checks

## External Code

- iDAS is able to read and interpret C# or VB.Net source code to realize complex logic.
- Within that source code the user is able to use all the possibilities of .Net programming (e.g. access to other files, message boxes, ...)
- An integrated modul editor is available to create, modify and test the code.

```
Public Shared Function Public_D_IG_HA_Default(ByVal input As String) As Integer
    Dim SWL_IG_HA_Learn As Integer
    SWL_IG_HA_Learn = CInt(Access.Database("D_IG_HA_Default"))

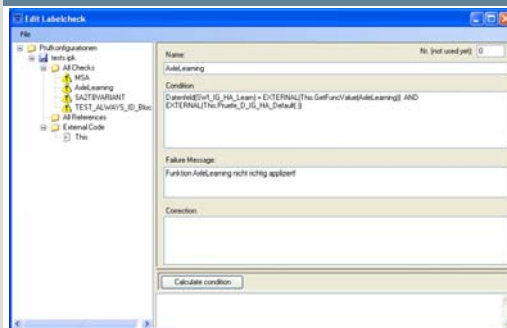
    Dim D_IG_HA_Default As Decimal
    D_IG_HA_Default = CDec(Access.Database("D_IG_HA_Default"))

    Dim laenge As Integer
    laenge = CInt(Access.Length("D_IG_HA_Tab"))

    If SWL_IG_HA_Learn = 0 Then
        If D_IG_HA_Default = 2 And Also D_IG_HA_Default = 4.5 Then
            Return "True"
        End If
    Else
        Return "False"
    End If

    For i As Integer = 0 To laenge - 1
        If CDec(Access.Database("D_IG_HA_Tab", i.ToString)) = D_IG_HA_Default Then
            Return "True"
        End If
    Next
    Return "False"
End Function
```

## Application Checks



- Simple checks can be easily configured within iDAS
- Complex checks use external code
- Correction proposals can be given
- Checks can be started in batch mode



# iDAS - Documentation

The screenshot shows the ZF iDAS software interface. The main window is titled "ZF iDAS ECOLIFE\_V6.0\_CC EB1\_gepached 2.hex \*". The menu bar includes "Datei", "Extras", "Ansicht", "Tools", "Fenster", "Projekt", and "Hilfe". The left sidebar shows a project tree with folders for "General", "Hardware", "Vehicle1", "Vehicle2", "Vehicle3", "Transmission", "Engine1", "Engine2", "VehicleEngineAlloca", "CoolingSystem", and "Peripherals". Below the tree, a smaller tree shows "EB1\_gepached 2.hex" with sub-items "var\_selekt", "df1", "df2", and "df8".

The main area displays a dialog box titled "..GeneralProject var\_selekt: df1". The dialog contains the following fields:

- name of project: Testproject from Customer 1
- date: 2010-12-01
- vehicle manufacturer: Customer 1
- phone: 012345/789
- OEM contact person: Max Musterman
- fax: (empty)
- e-mail: max.musterman@musterfirma.de
- D-U-N-S number: (empty)
- ZF contact person: Rainer Röhrle
- phone: 07541/777622
- e-mail: rainer.roehrle@zf.com
- fax: (empty)
- ZF parts list no.: (empty)
- customer order number: (empty)
- number of vehicles in iDAS: 1
- number of engines in iDAS: 1

At the bottom of the dialog, there is a checkbox labeled "Erledigt" and two buttons: "Übernehmen" and "Schliessen".

Below the dialog, a status bar shows "Bereit". At the bottom of the main window, there is a table with the following data:

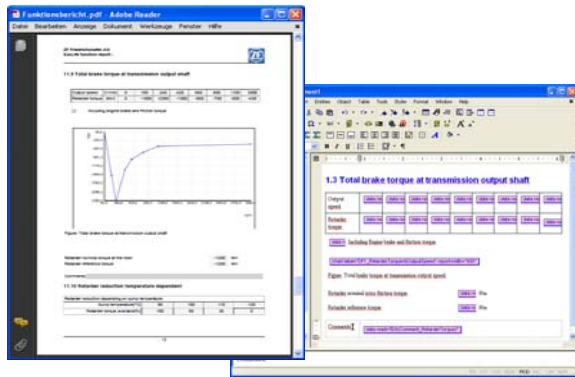
Sump temperature[°C]	90
Retarder torque available[%]	100

Below the table, there is a "Command:" field and a status bar with the text "TRK | EXT | OVR | READ | MOD | INC | CAP | NUM".



# iDAS - Documentation

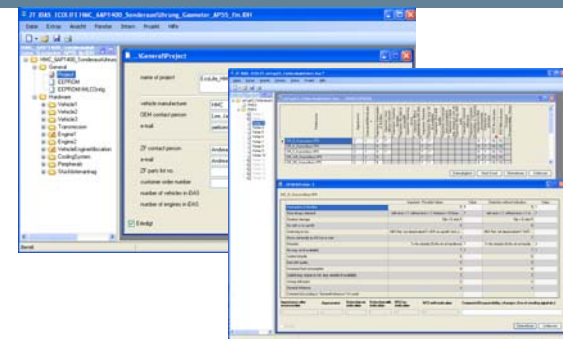
## Report Generator



- Application specific reports (e.g. Fault specification, Functional report, ...)
- The reports are configured in an WYSIWYG-XML-editor
- The reports can also be configured and printed specific to target groups (customer report, internal report, ...)

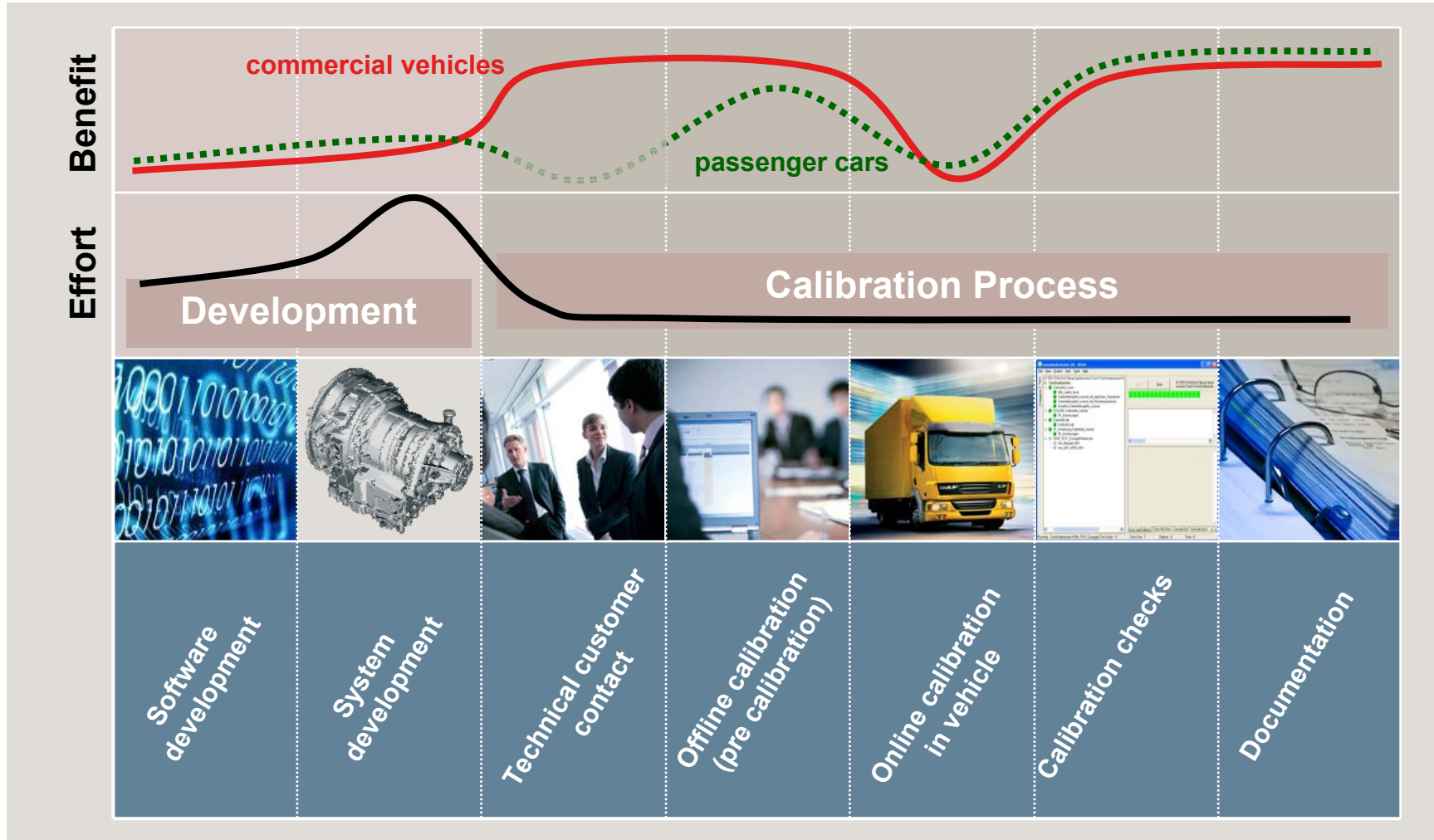
## Additional Data

- Additional data in iDAS extends the functionality to non parametric informations.
- Therefore iDAS is able, to support the application process from the first technical customer contact to final documentation.
- So iDAS is used today also to define manual transmission applications (without an ECU).





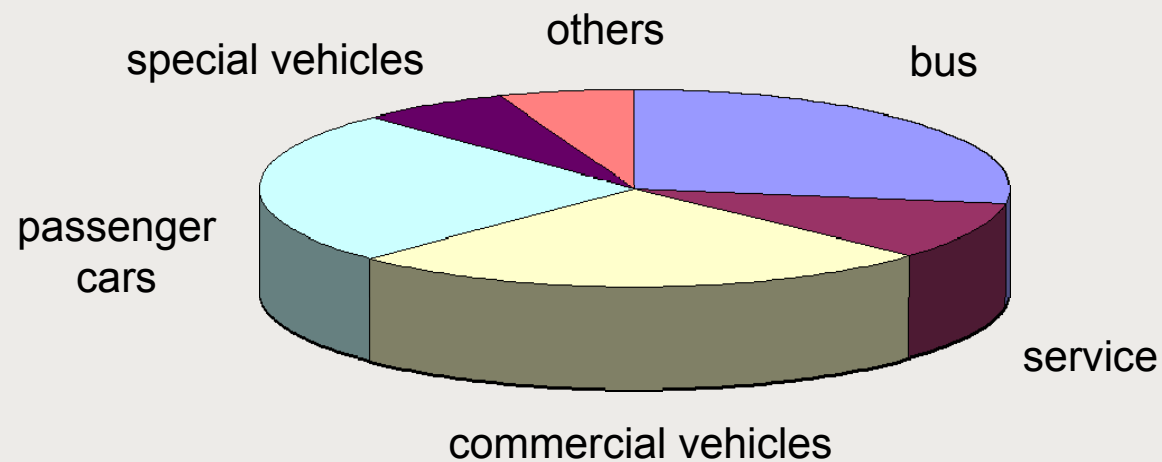
# iDAS - Effort and Benefit in Process





# Usage of iDAS

- About 300 iDAS-User
- iDAS in almost all transmission projects in various range in use
- Also projects without an electronic unit use iDAS to specify their applications





# Experience



**For several years in operation**



**Improved quality**

- Standardized applications independent from application engineer
- Automated check of application data



**Reduced costs**

- Less calibration loops during application



**Positive customer feedback**

- Positive feedback from internal user as also from customer



# Forecast / Appeal

## Forecast



- Interface to the calibration tools (CDM-Studio, CANape and eASEE.CDM) to make it available in all process steps without reloading file.

## Appeal



- To reduce costs and ensure quality there is a need to have the **iDAS** functionality. Vector Informatik GmbH should provide a functionality like **iDAS** within the calibration tools and forces it's further development.



Driveline and Chassis Technology

# Thank you very much for your attention!

Rainer Röhrlé  
ZF Friedrichshafen AG

