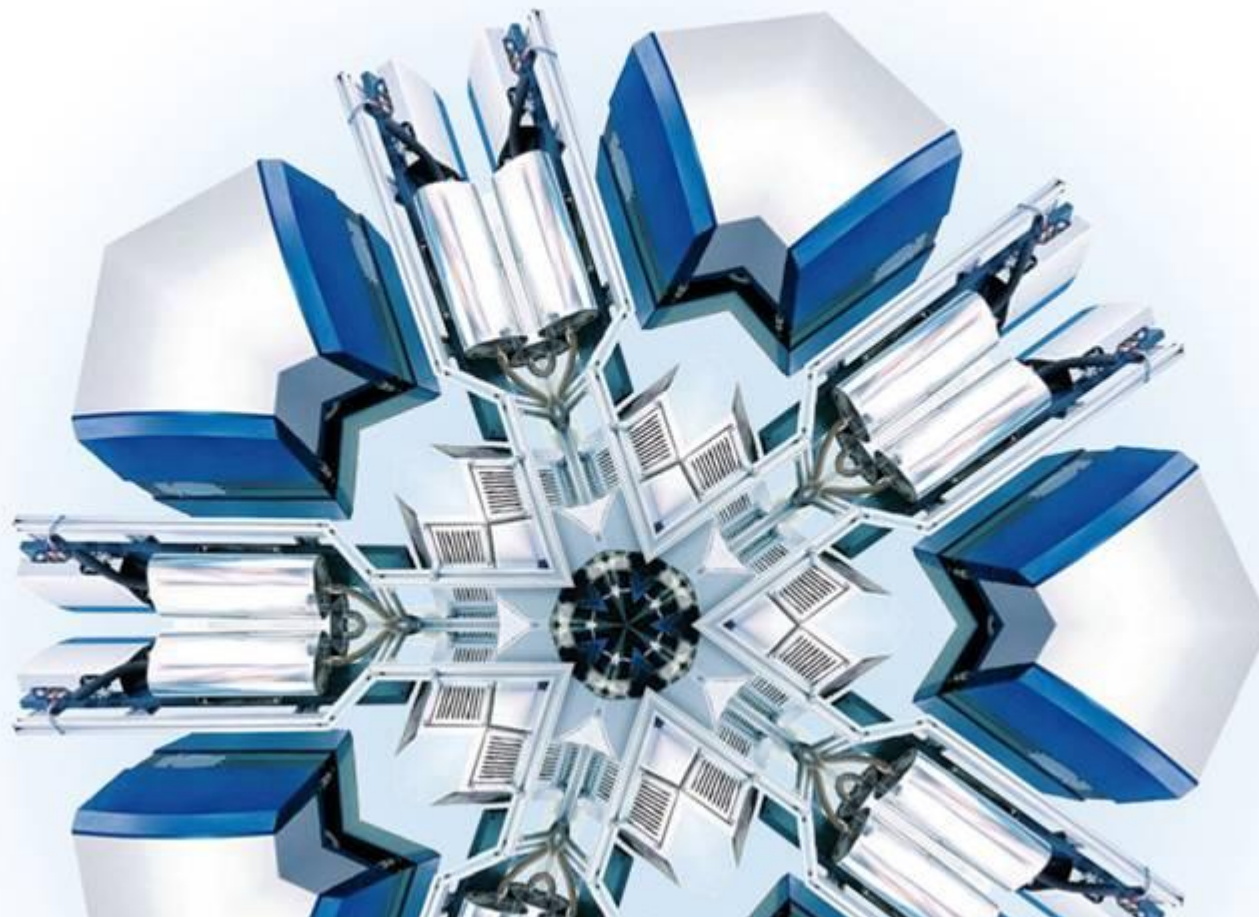


# AVL CRETA Calibration Data Manager

Thomas Guntschnig, Product Manager, AVL List GmbH



# Have you ever had this situation ?

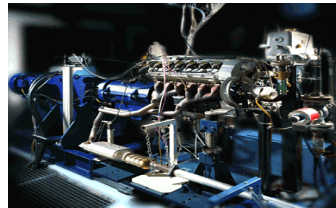


Kick-Off

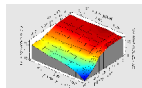
SOP – 2 months SOP



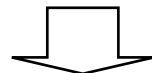
Test to find out !



Got it !

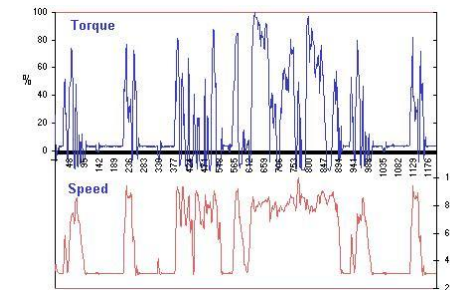


The map for injection timing is wrong!  
Why ? ... Nobody knows !



Where is the old data ?  
We cannot find it anymore !!!

Emissions test failed !



What's the reason

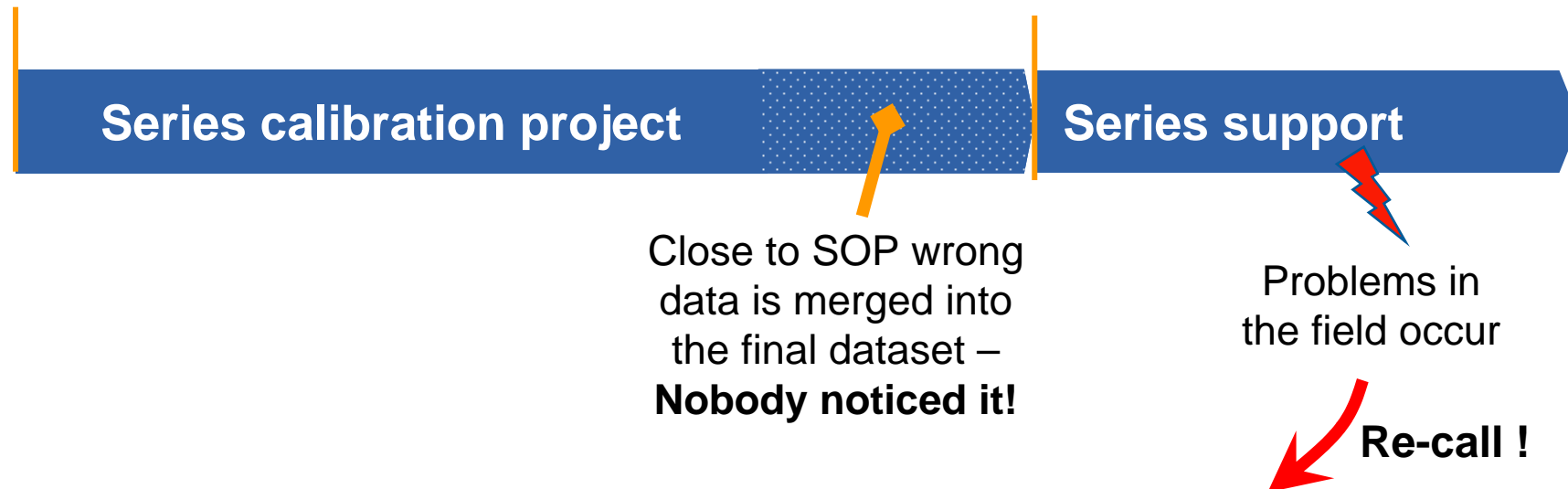


# Have you ever had this situation ?



Kick-Off

SOP



- September, 2007 – Chrysler recalls 370 000 vehicles (MY 06/07), to re-program a control unit. The recall addresses bad braking performance during uphill driving. Affected are about 157 000 Jeep Grand Cherokee and Commander.
- June, 2007 – Jaguar recalls 18 000 diesel vehicles (MY05 – 07) for re-programming of the engine control unit (ECU). This address issues with particle filter which can occur during constant low speed driving.
- November, 2006 – Volvo recalls 360 000 vehicles (MY 99 – 02) for re-programming of the ECU. The fix addresses issues with the electronic throttle body which could lead to an engine stall.

Have you ever had this situation ?



Kick-Off

SOP



**Using CRETA  
such scenarios  
can be avoided !**

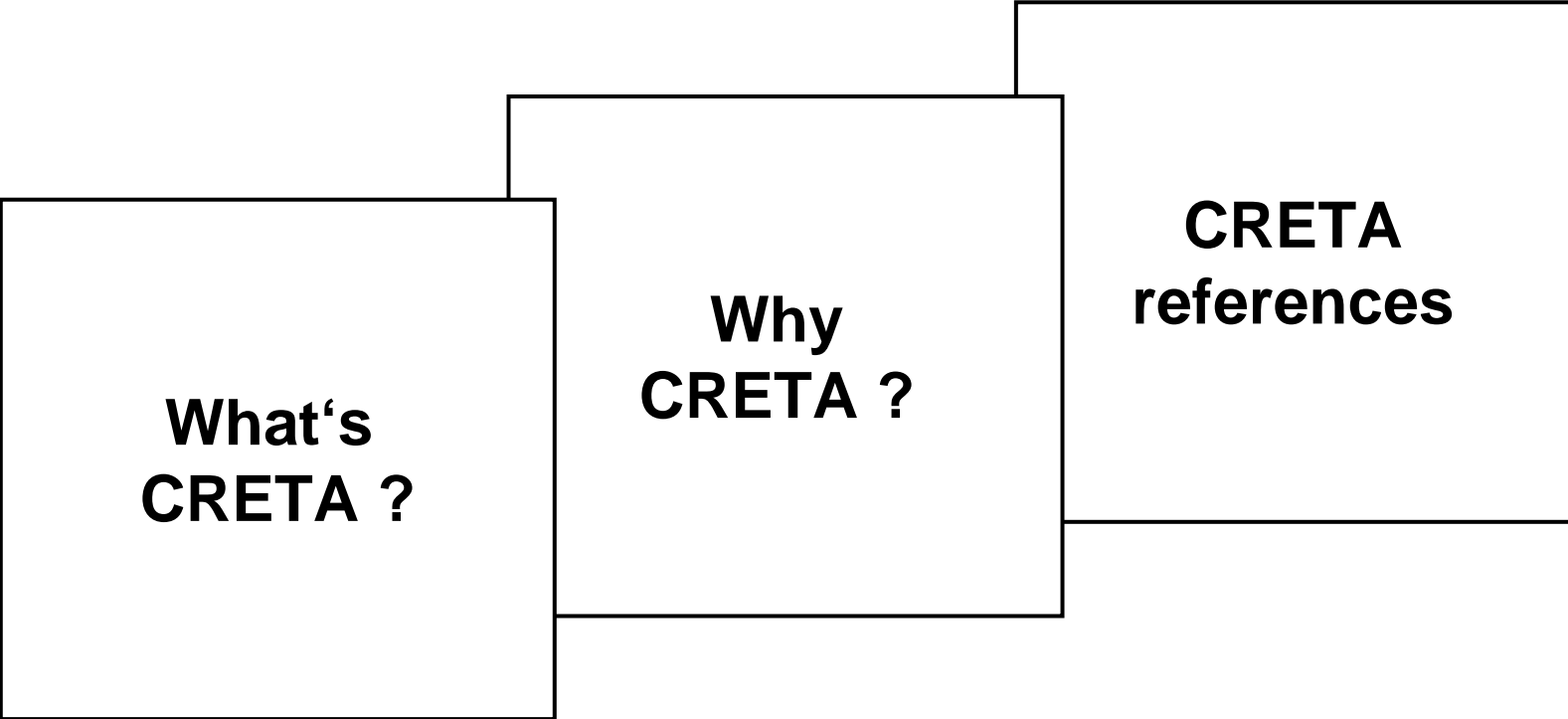
blems in  
eld occur

**Re-call !**

rogram a  
driving.

- September, 2006 – Jaguar recalls 100 000 diesel vehicles (MY 00 – 07) for re-programming of the engine control unit (ECU). The fix addresses issues with the electronic throttle body which could lead to an engine stall. Affected are all vehicles.
- June, 2007 – Jaguar recalls 10 000 diesel vehicles (MY 00 – 07) for re-programming of the engine control unit (ECU). This address issues with particle filter which can occur during constant low speed driving.
- November, 2006 – Volvo recalls 360 000 vehicles (MY 99 – 02) for re-programming of the ECU. The fix addresses issues with the electronic throttle body which could lead to an engine stall.

# Outline of the presentation



# What's CRETA ?



What's CRETA ?



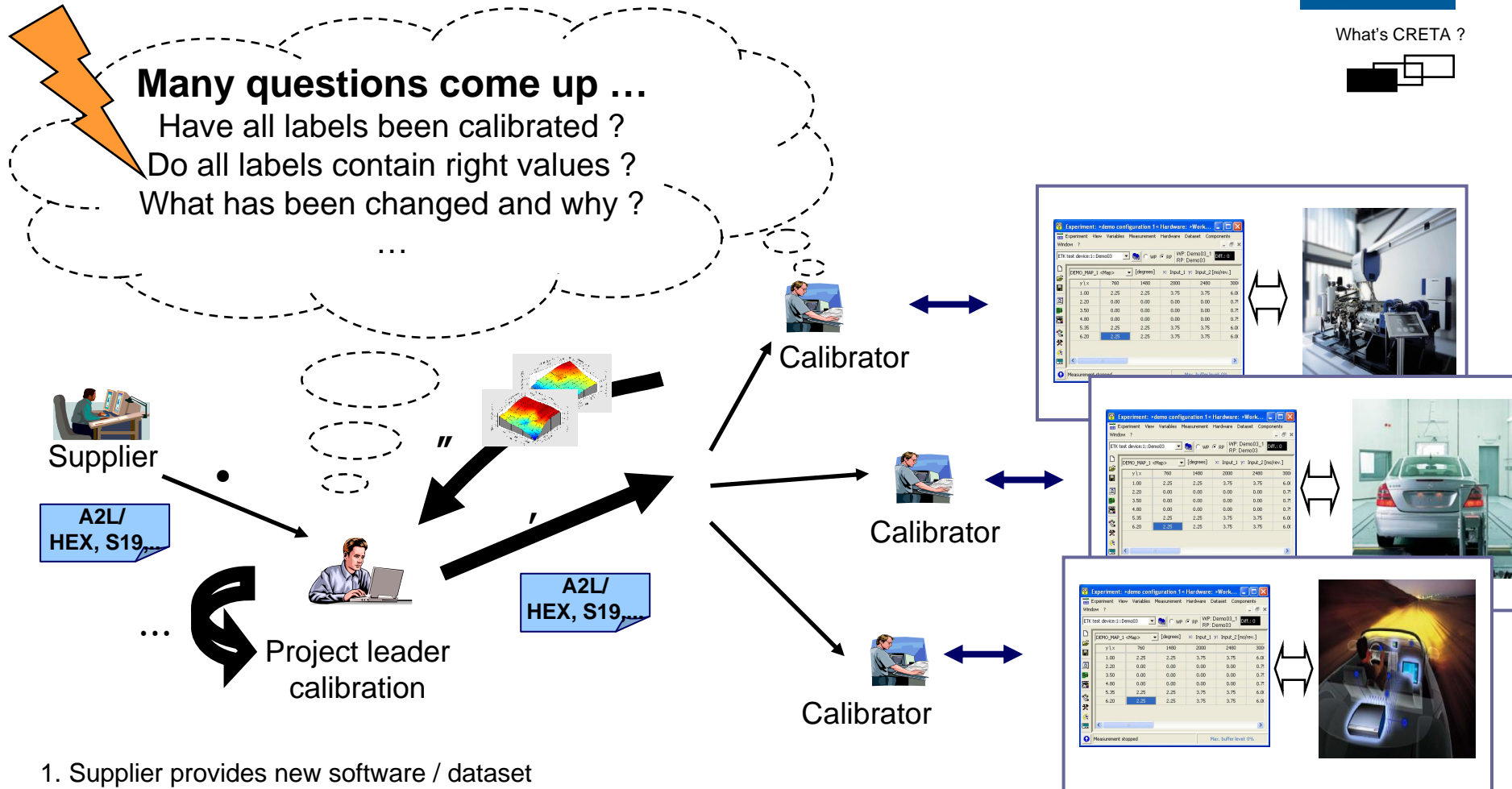
## **AVL CRETA™ Calibration data management system ...**

- ... is a secure and central repository for calibration data
- ... supports the traceable & conflict-free administration of calibration data
- ... keeps track on the status and quality of calibration work
- ... allows worldwide operation and automated data exchange with partners
- ... is easy and intuitive to use, roll-out and maintain

# A typical calibration process



What's CRETA ?



1. Supplier provides new software / dataset
2. Calibration pilot makes software/dataset available to engineers
3. Calibration engineers work on their calibration tasks
4. Calibration engineers send back their results to the calibration pilot
5. Calibration pilot merges the results to new data set release and distributes to calibration engineers

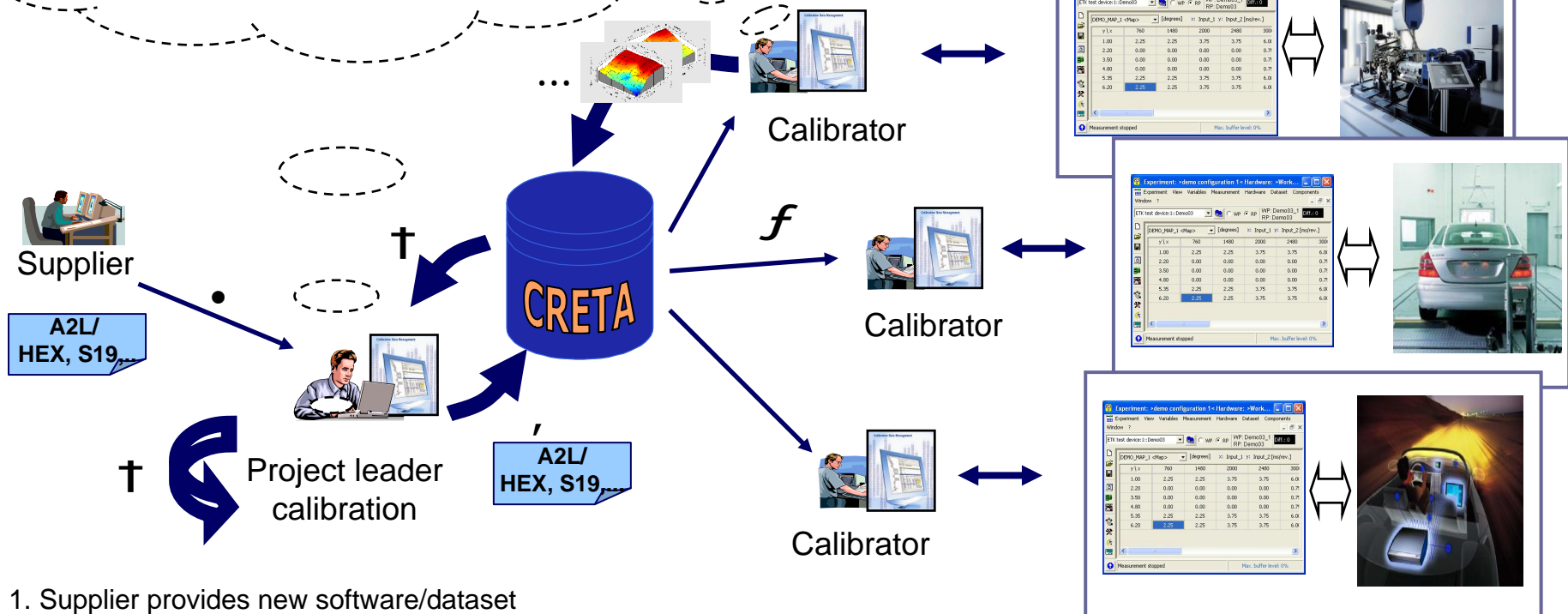
# How is CRETA used in a calibration process ?



What's CRETA ?



Why CRETA ?  
Has CRETA answers to all our questions ?



1. Supplier provides new software/dataset
2. Calibration pilot makes software/dataset available to engineers via CRETA
3. Calibration engineers download software using CRETA
4. Calibration engineers work on their calibration tasks
5. Calibration engineers send back their results to the calibration pilot
6. Calibration pilot merges the results to new release and distributes to calibration engineers

## Why CRETA ?



Why CRETA ?



AVL CRETA™ Calibration data management system helps power train developers to meet their **top priorities**:

- Better quality / robustness
- Improved collaboration
- Reduced time-to-market

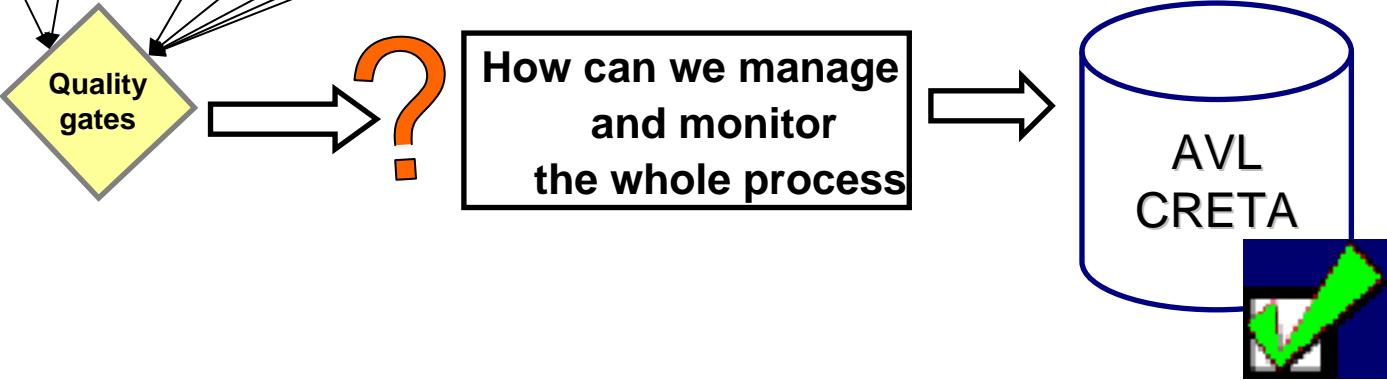
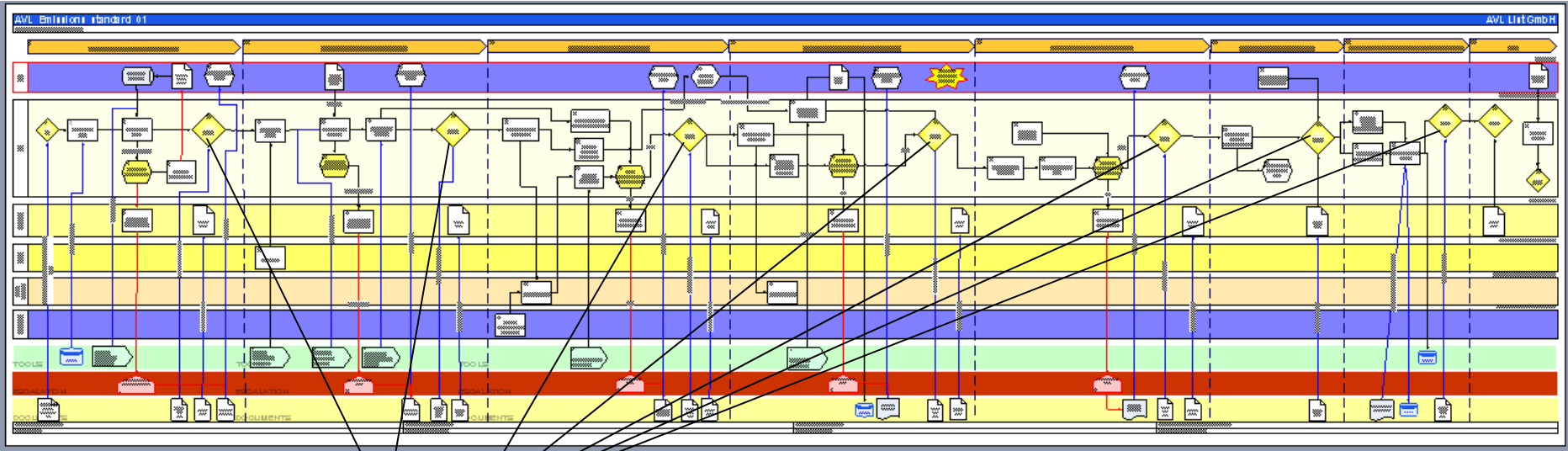
Would it be helpful if the robustness of products on the market could be improved ?



Why CRETA ?



**Calibration process:**



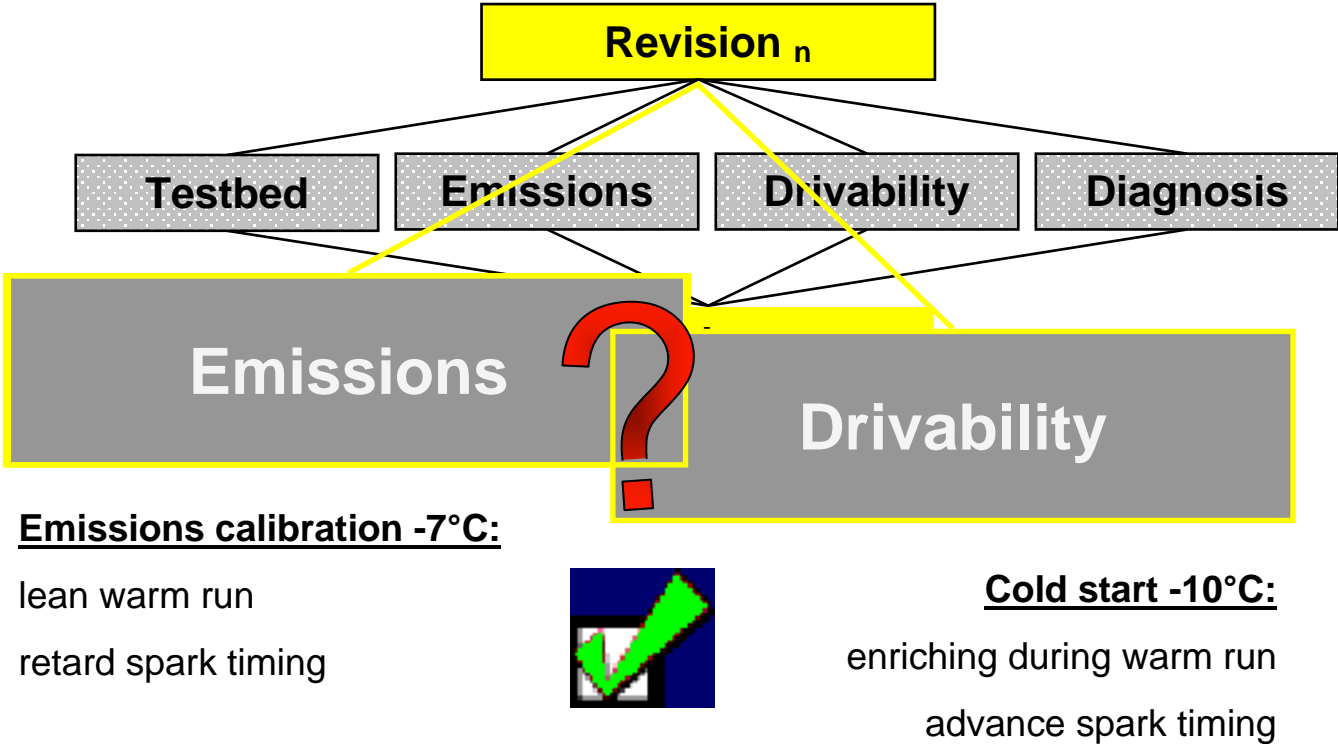
# Would it be helpful to prevent errors when merging calibration data?



Why CRETA ?



- Conflict-free generation of calibration data by clear assignments of responsibilities
- Automatic information in terms of conflicts or modifications of important parameters



## Why CRETA ?



Why CRETA ?



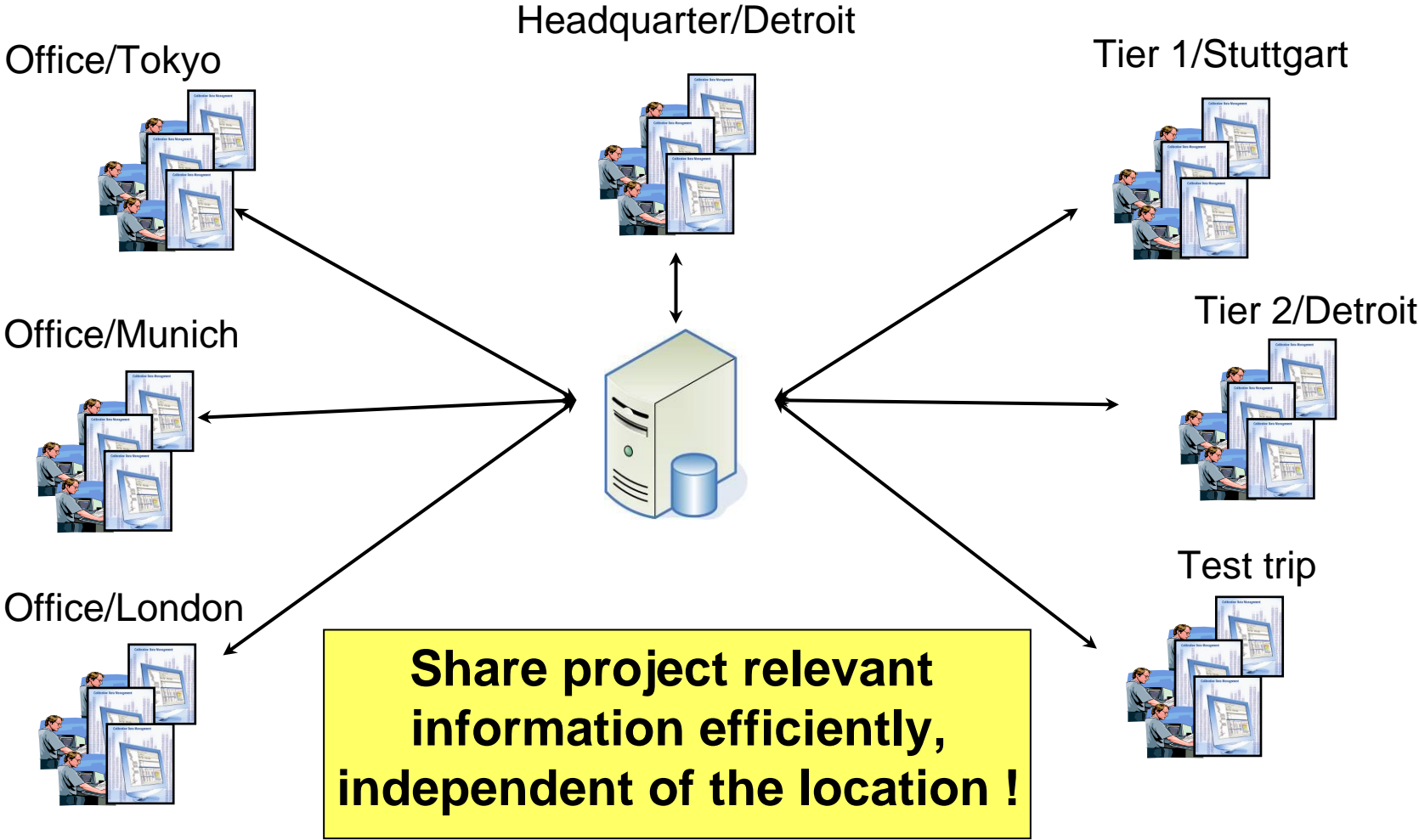
AVL CRETA™ Calibration data management system helps power train developers to meet their **top priorities**:

- Better quality / robustness
- Improved collaboration
- Reduced time-to-market

Would it be helpful if the collaboration of teams, suppliers and partners could be improved ?



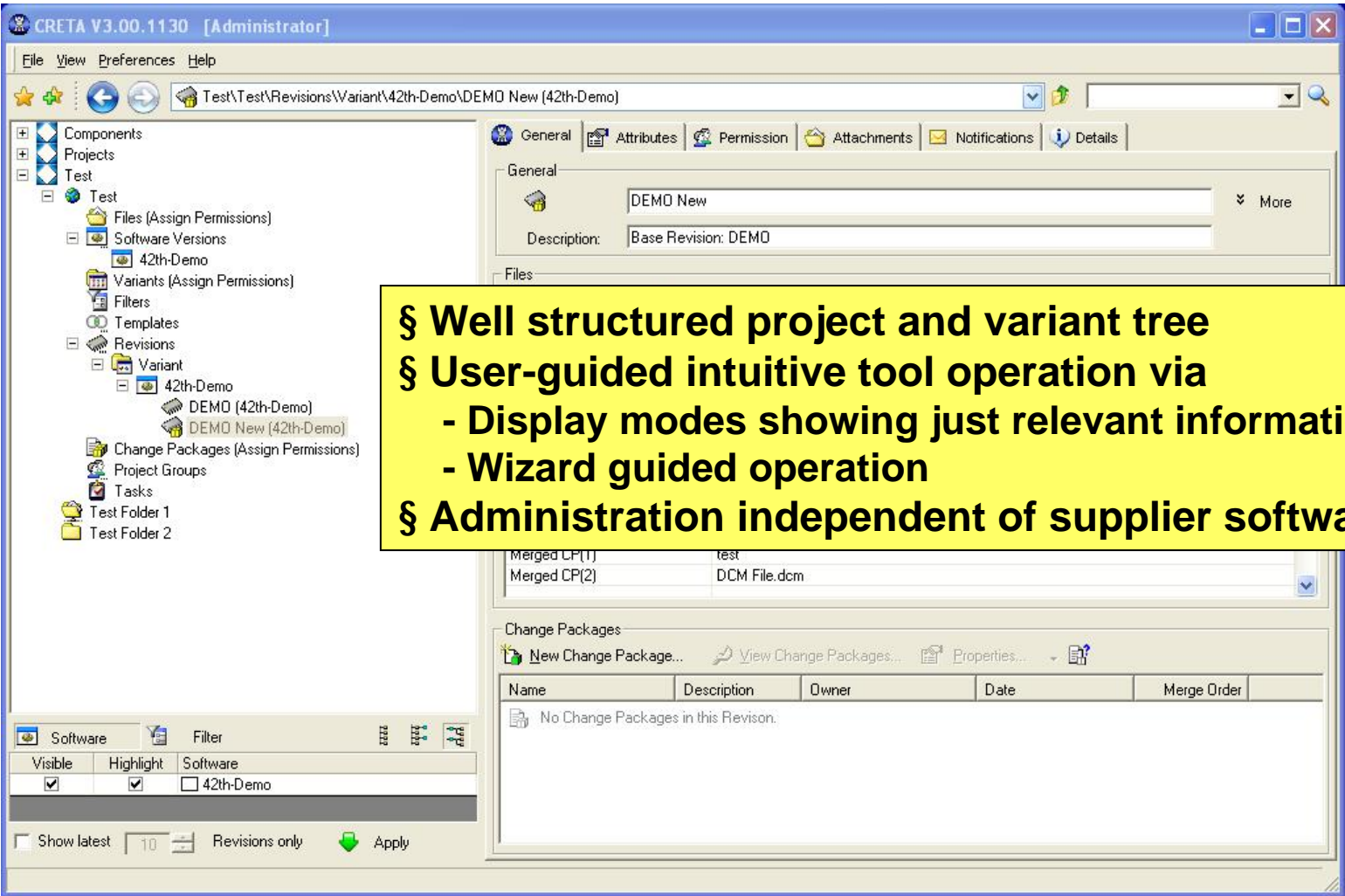
Why CRETA ?



Would it be helpful to have an easy to use tool for a better collaboration between project members ?



Why CRETA ?



## Why CRETA ?



Why CRETA ?



AVL CRETA™ Calibration data management system helps power train developers to meet their **top priorities**:

- Better quality / robustness
- Improved collaboration
- Reduced time-to-market

# Would it be helpful to pre-calibrate datasets ?

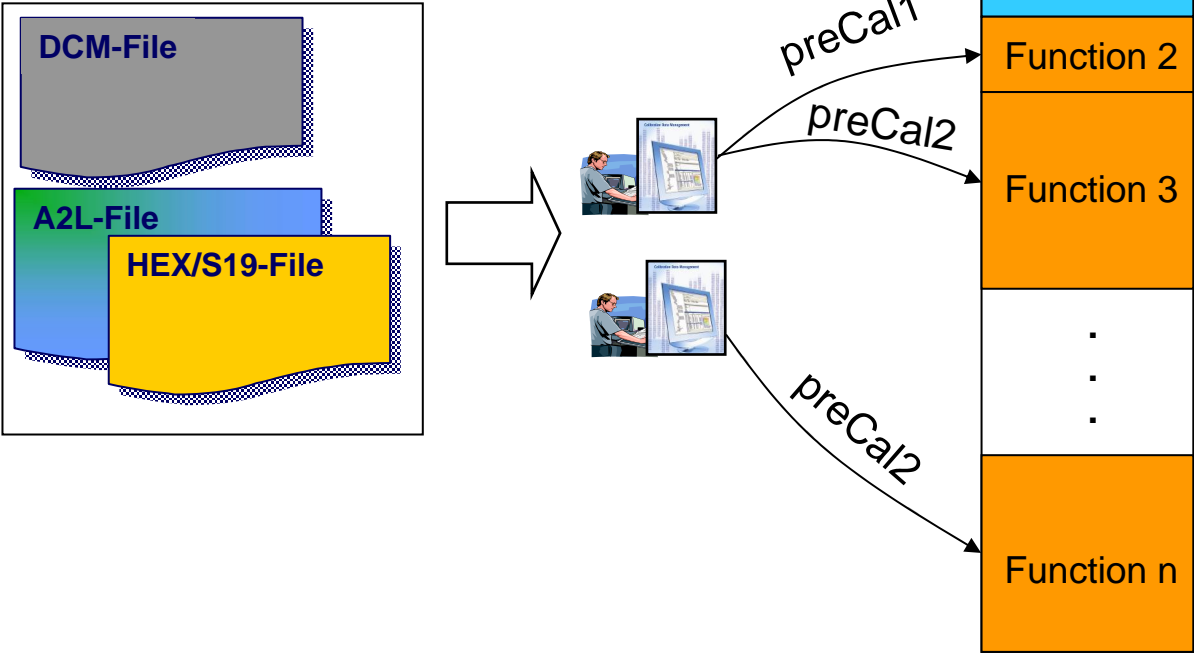


Why CRETA ?



Automated pre-calibration of initial software releases during startup

## Pre calibration toolbox



# Would it be helpful to feed data across projects efficiently?

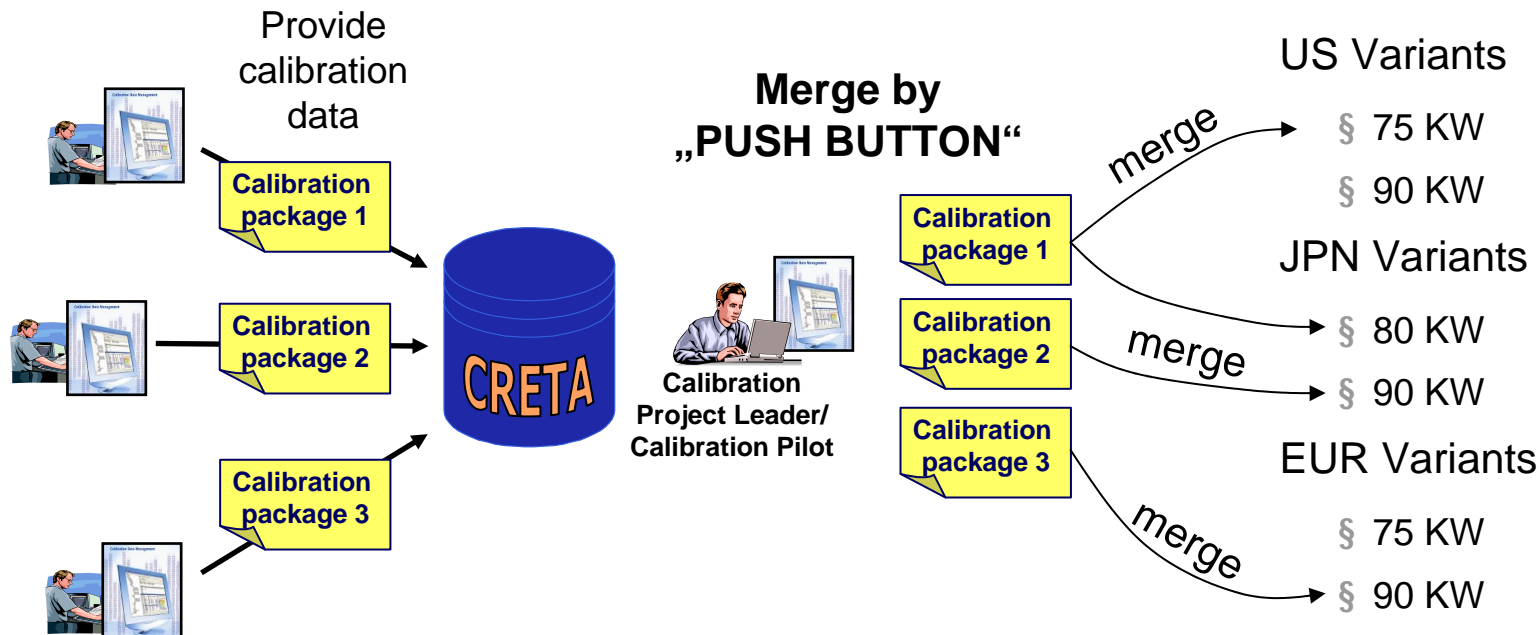


Why CRETA ?



Automated merging of data and documenting of results during projects

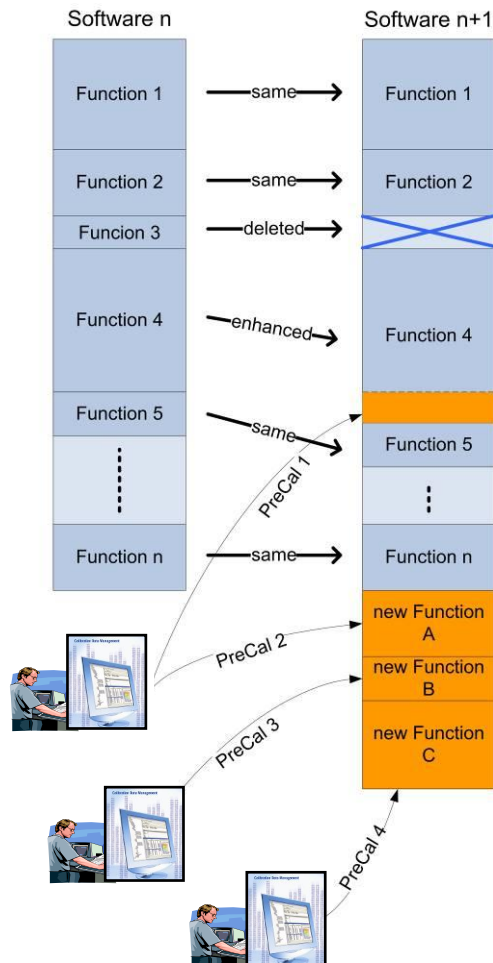
## Calibration projects:



# Would it be helpful to change software efficiently ?



Why CRETA ?



## Software Release Change

- Carry over calibration data from last valid release to the new software
- Pre calibration of new functions via pre calibration toolbox

# AVL's experience in using CRETA



Why CRETA ?



§ Typically effort for calibration data management within project:  
7-10% of application effort

§ Time reduction by introducing a calibration data management system, like CRETA:

		Project 1	Project 2	Project 3
Project duration		23 months	26 months	36 months
Number of variants		5	8	37
Number of labels		2000	5000	17000
Data Management with:	EXCEL	1900 hrs	2400 hrs	14400 hrs
	CRETA	1000 hrs	1200 hrs	6400 hrs
Time Savings		<b>900 hrs</b>	<b>1200 hrs</b>	<b>8000 hrs</b>
		<b>47%</b>	<b>50%</b>	<b>56%</b>

*Note: The data management includes data merging, software changes, documentation (label history, software history, variant comparisons, release documentation), project progress monitoring*

# Partial list of current CRETA customers



References



**Volkswagen**

**Audi**

**Continental**

**Navistar**

**Delphi**

**PSA**

**Vaelo**

**...**

# Customer's feedback



References



CRETA is successfully used at former Siemens VDO Automotive AG Powertrain at the following locations:

- § Regensburg (Germany)
- § Schwalbach (Germany)
- § Toulouse (France)
- § Auburn Hills (North America)
- § Newport News (North America)
- § Columbia (North America)
- § Ichon (South Korea)

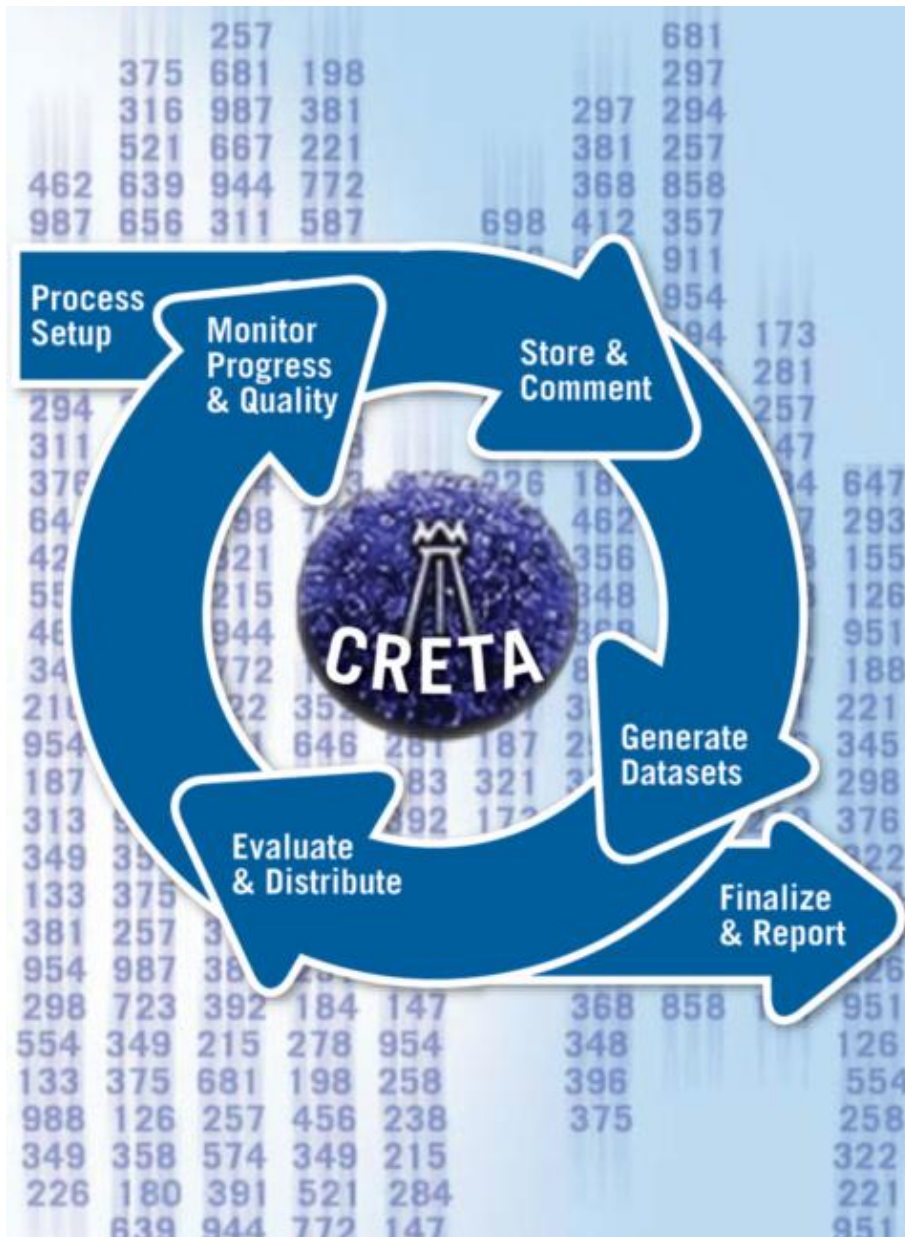
Customer's feedback (2006):

- § **Easy to use**
- § **Good stability**
- § **High performance**



## Why is CRETA useful ?

- Increase the quality of performed calibration → reduce risk of software re-calls after SOP
- Improve efficiency in data management → reduce costs to manage calibration data up to 50%
- Handle globally decentralized calibration projects easily → data exchange with partners & suppliers
- Easy tool operation and no need to change an existing calibration process → CRETA will support your process



Please visit our homepage ...

[www.avl.com/creta](http://www.avl.com/creta)

and booth.

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Product Manager,  
AVL List GmbH