Configure measurement chains quickly and reliably

CSM web seminars

CSM Xplained
measurement technology

Innovative Measurement and Data Technology

The Initial Situation

- The modules for the measurement chain were chosen
- The sensors have been selected

- **To Do:**
  - Define and enter channel names
  - Obtain scaling data for the sensors...
  - ... and enter
  - Try out the measurement setup
  - Document setup

Ambition

- Use correct parameters → Accuracy
- Spelling of channel names → For automatic evaluation, channel mix-up in case of errors
- Traceability → Comment
- Documentation → Record status of setup

...Rapid workflow

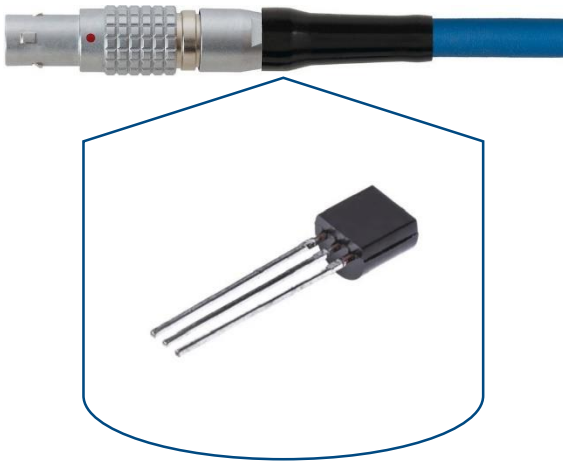
Approach

Method	Benefit
TEDS	Sensor properties in the plug
Signal database	Select channel names instead of typing Standards for automated evaluation
Sensor database	Select sensors instead of typing properties
Measurement schemes	Preparation of complete sets of signals

TEDS

TEDS = Transducer Electronic Data Sheet

- Parameters are "wired" to the sensor
- No mix-up of sensors and their data
- No longer misplacing of calibration certificates
- Read long channel lists in one go



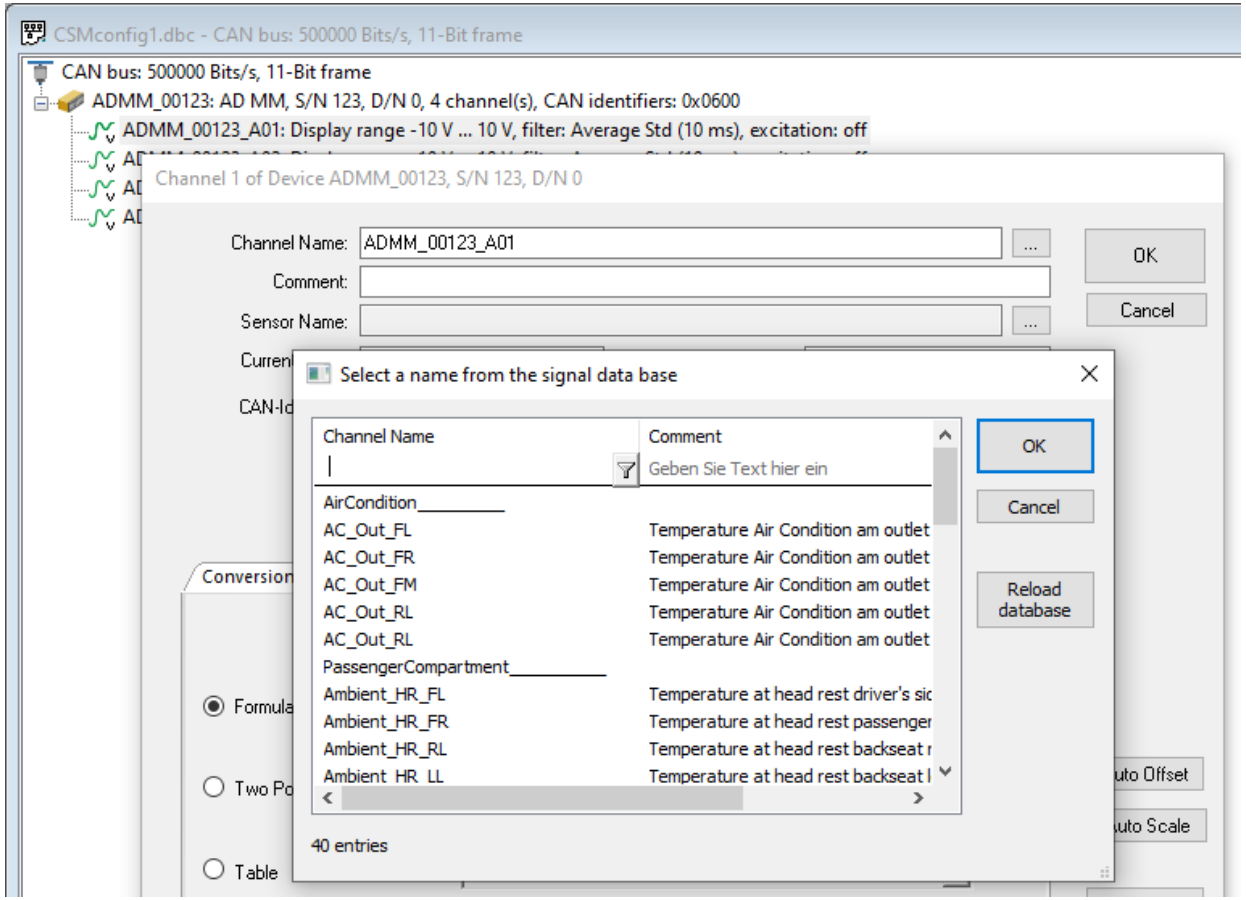
Applicable

- If the chain is ready to use (modules AND sensors)
- If it is possible to apply power to the chain of modules (HV setup)
- Channel names/comments are still maintained manually

Signal Database

Motivation

- Error prevention through prepared selection lists
- Bring comments/descriptions for signals with
- Standard-names for automation of the evaluation
- Company-wide standard name system
- Central management



Signal Database

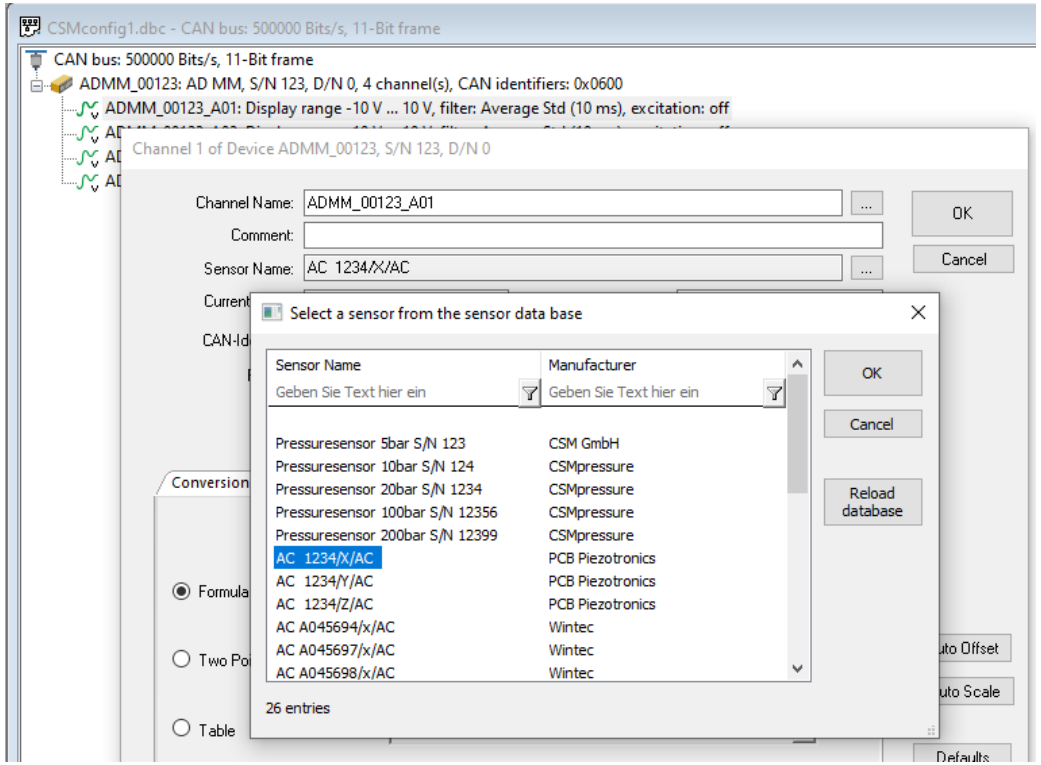
Application

- Completion of workflow with TEDS
- No corset but effective input assistance
- Applicable w/o TEDS and w/o “ready to use” module chain
- Scaling parameters not included
- Multilingual usage possible

Sensor Database

Motivation

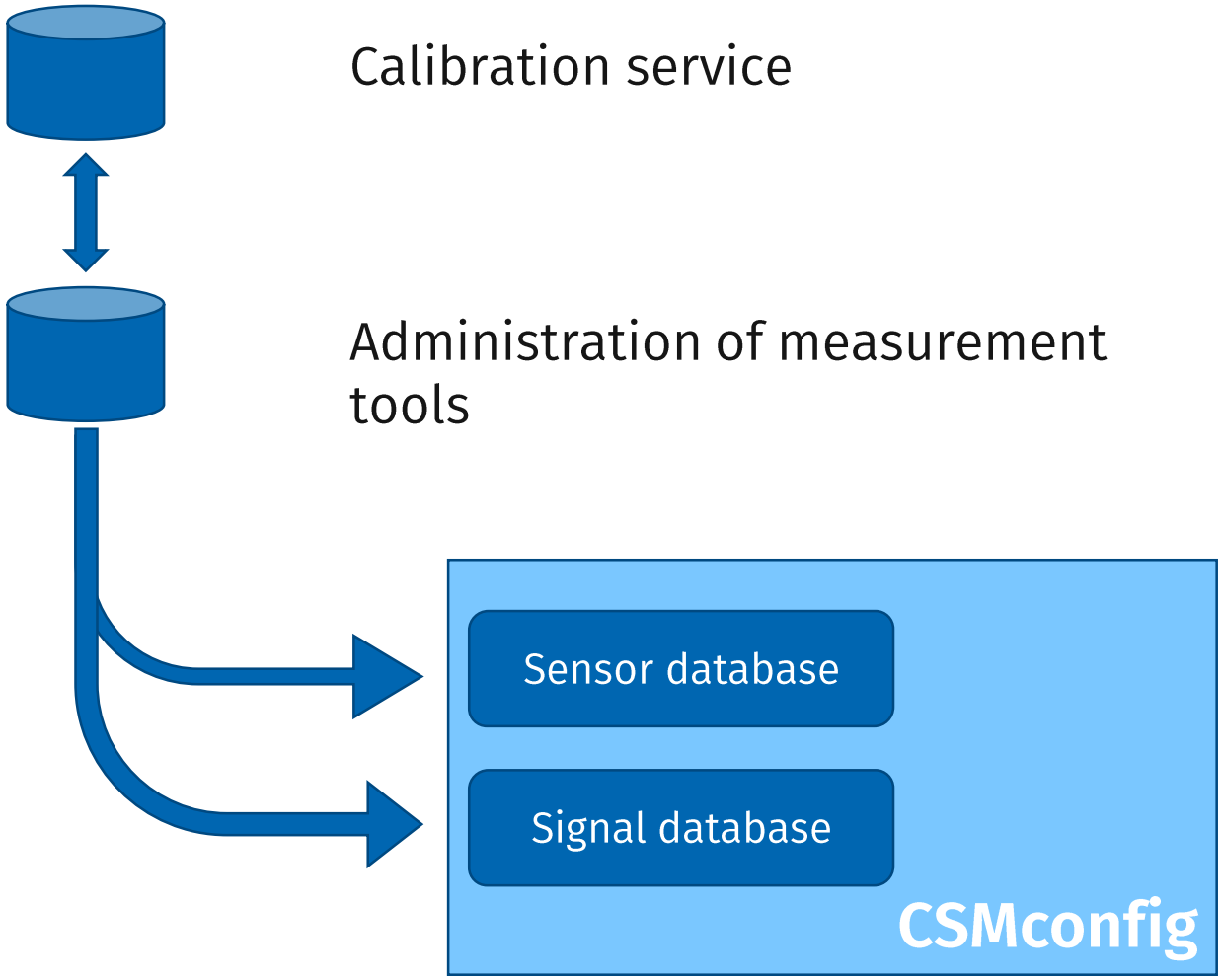
- Adopt all parameters of a particular sensor for a channel
- No more typos by selection but typing
- Central management



Sensor Database

Benefit by central management

- **Generate content automatically**
  - Calibration service
  - Administration of measurement tools
- **Central storage**
  - Data is up to date for all users
  - Calibration certificates will no longer be misplaced
  - Status of the data used is traceable
- **„Offline“ applicable**
  - Not necessary to a have a “ready to use” module chain
  - Configuration and mounting may happen at the same time
  - Parallel workflows speed up the entire process



Measurement Scheme

Motivation

- Configuration of an entire module chain instead of single channels/modules
- Set parameters beyond channel names and sensor scaling, e.g. filters and rates

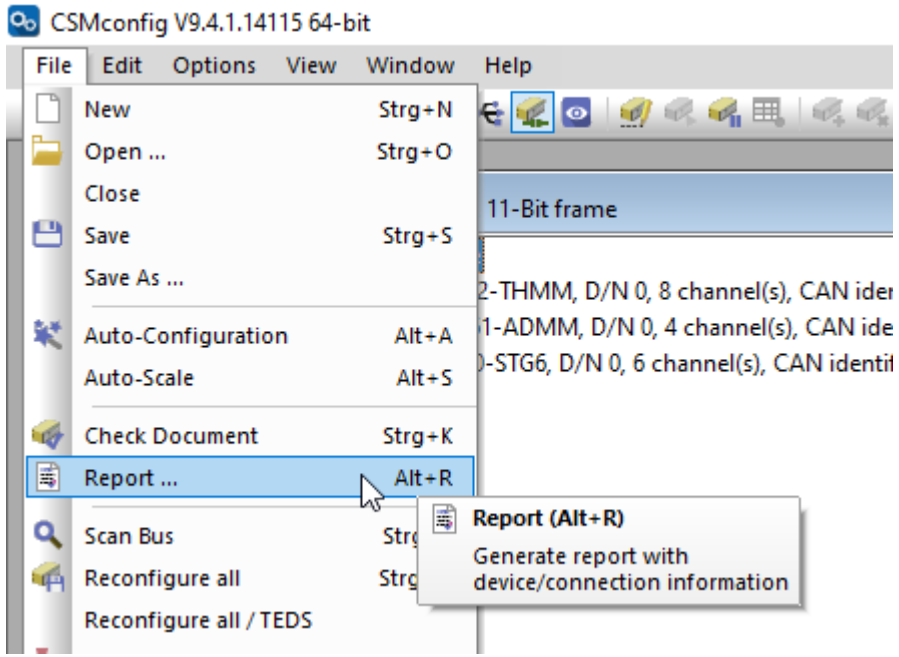
Implementation in CSMconfig

Opportunities

- Build configuration setups by automation via scripting
- Make use of import/export functions of external data sources
- **Tasks Distribution to teams**
  - Team “configuration” creates „offline“ the setup of a module chain
  - Team “installation” mounts the modules and just transfers the setup

Documentation of the Setup

- Create a report of the entire setup



CSMconfig Report

Summary

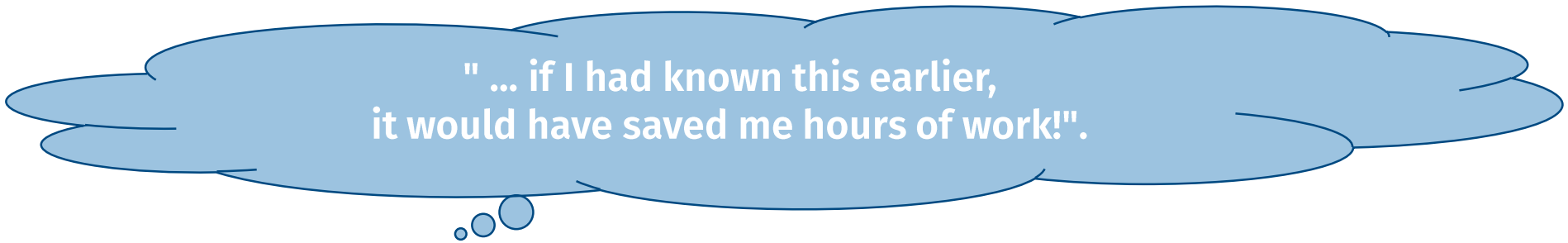
CAN bus
Interface: [Vector: VN1610 (Channel 0) S/N:5380
SDK: XL-Lib V20.30.14
11-Bit-Identifier (Standard-CAN), Bitrate 500000
3 device(s), bus load approx. 8 %

Device 1: *THMM_45742*
Device type: TH MM, 8 channel(s)
Calib. Date: 17.12.2021
CAN-Identifier 0x0601...0x0602

Device 2: *ADMM_32861*
Device type: AD MM, 4 channel(s)
Calib. Date: 12.10.2021
CAN-Identifier 0x0600

Comparison of Approaches

Method	Sensor Data	Signal Names	Application Online I Offline	Level of Automation
TEDS	In the plug	-	✓ I -	Read out by Module-Scan
Signal Database	-	Selection from lists	✓ I ✓	central maintenance manual selection
Sensor Database	Selection from lists	-	✓ I ✓	central maintenance manual selection
Measurement Scheme	Excel/ External Source	Excel/ External Source	✓ I ✓	Automation via (EXCEL)-Skripts



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CSM has been setting technological standards for decentralized measurement technology in vehicle development for over 35 years. Our CAN bus and EtherCAT® measurement devices support worldwide renowned vehicle manufacturers, suppliers and service providers in their developments.

Continuous innovation and long-term satisfied customers are our guarantee for success. Together with our partner Vector Informatik, we have developed an easily scalable and powerful E-Mobility Measurement System for hybrid and electric vehicles and are constantly expanding the areas of application. With our high-voltage safe measurement systems designed for fast and synchronous measurements and power analyses, we actively accompany the change to **E-Mobility.**

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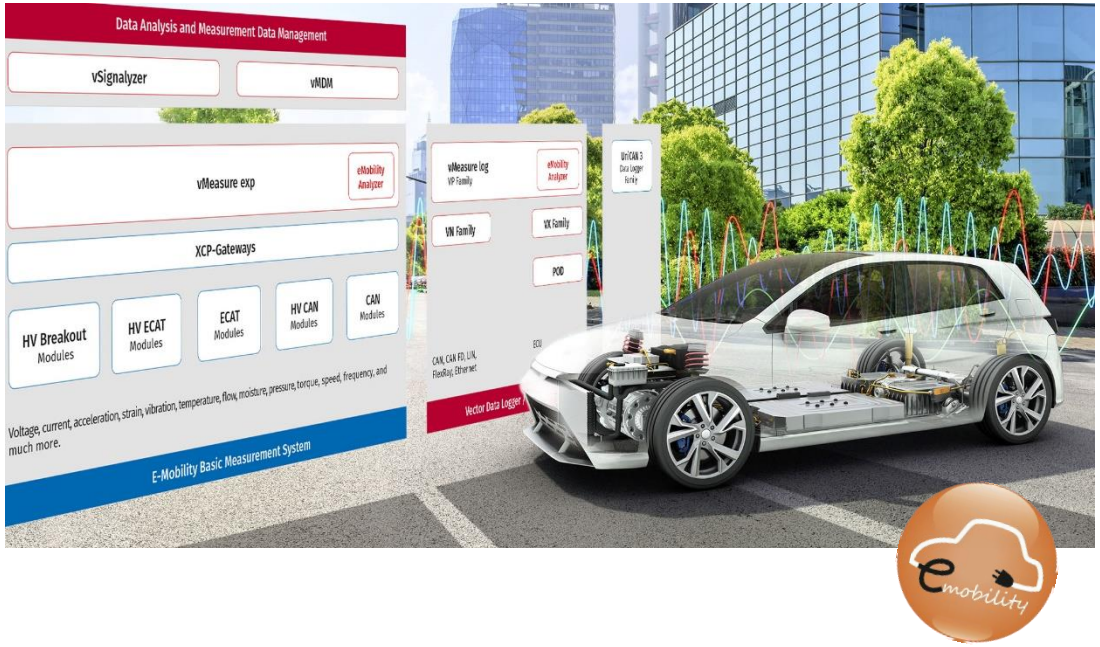

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