Maximize the efficiency of in-vehicle testing and calibration for all types of powertrains!
New challenges
In-vehicle development

New technologies have to be connected with existing systems → conventional, hybridization, electrification

More and more vehicle variants have to be developed → Up to 1000 models per OEM

High amount of vehicle variants

New technologies have to be connected with existing systems

Testing kilometers

Complex interactions with e.g. ADAS and autonomous cars need more and more tests → 100 million testing kilometers and maneuvers

Tests under real conditions

More stringent legislations expecting more tests under real conditions → -7 ... +35°C, 0 ... 2400 meter

Public
New challenges
In-vehicle development

Frontloading

- Simulation
- Virtual Test Bed
- Component Test Bed
- Engine Test Bed
- Powertrain Test Bed
- Chassis Dyno
- Road Test

Cost

But what about the remaining tasks in the vehicle?
New challenges
In-vehicle development

Calibration activities in
the vehicle

- Conventional powertrain: 40%
- Electrified powertrain: 70%

100%
Example 1
This includes:

- Which items should be evaluated
- Which physical parameters should be taken
- How to evaluate the physical parameters
- How to drive a test vehicle
In-vehicle Calibration and validation

Electrified powertrain function development and calibration project:

During the project the function development evolves

For each loop the functions have to be calibrated and validated in the vehicle

example of an AVL project

- Testing in the vehicle
  - 15 groups of tests
  - 3 days
  - 2 drivers
  - > 500 maneuvers per loop
  - > 10 times validation

> 30/40

30/40
Smart Mobile Solutions Calibration package

- Easy setup of maneuver play list
- Audio-visual feedback
- Touch screen functionality
- Automatic evaluation and reporting
Crossing the finish line

preparation  execute  reporting

Select maneuvers out of a library

Automatic reporting
Example: NRMM monitoring and remote connection
Jennifer is a testing engineer at a European OEM for construction equipment. Her task is to measure perform the In-service-monitoring measurements for StageV. But to do this efficient and correct there are some challenges.
Machine work marking: how can I monitor if I collected enough events?

Minimum Test duration: how to monitor if the work is between 5-7 time NRTC work?

Am I within the ambient boundary conditions?

Many criteria to fulfill but how do I monitor all this real-time and remotely?
Current setup
Smart Mobile Solutions

IN THE OFFICE

Server Based Data Processing

PROVING GROUNDS

Measurement data [secured]

4G Router

WWW
This makes Jennifer happy!
No **additional** hardware needed: Utilizes existing vehicle infrastructure, connect **directly** to INCA, ATI, CANAPE

But also supports CAN, XCP & CCP to connect to every desired device

Touch screen **CONTROL** – Improved driver safety and usability
Smart Mobile Solutions Packages

Calibration package
for the calibration engineer
Assistance in maneuver driving and in-vehicle calibration

RDE vehicle package
Assistance in RDE route finding, online RDE testing and reproducing cycles

RDE simulation package
Supporting RDE simulation from office to lab
Smart Mobile Solutions Packages

Calibration package
for the calibration engineer
Assistance in maneuver driving and in-vehicle calibration

ISC package
Assistance in online PEMS testing for on- and off-road vehicle/machines
Contact us

Watch AVL Smart Mobile Solutions on youtube on the AVL List channel

Get more information or a free DEMO installation on: https://www.avl.com/web/guest/-/avl-smart-mobile-solutions
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