From 2006 onwards: a PSA experience for the development and exchange of AUTOSAR applications

9th AUTOSAR Open Conference
Executive Summary

1. Introduction

2. Process

3. Evolution

4. Future for AUTOSAR in PSA Powertrain
Introduction

PSA became AUTOSAR core partner

First approach: powertrain & body demonstrators with new business model

Beginning of powertrain development in AR 2.0

Start Of Production of the First powertrain in AR 2.0

Powertrain Migration from AR 2.0 to AR 3.1

Start Of Production of the First powertrain in AR 3.1

Powertrain Migration from AR 3.1 to AR 4.2
Powertrain Process

Macro-Module (MM)

Function 1

Function 2

Function 3

AR Composition
Includes the entire PSA application requirements of command control laws

Supplier X Integration

MM
Powertrain Process

- New business model:
  - AUTOSAR modular approach (A-SW-C)
  - Plug & Play Modules/Functions
- Generic Modules
  - Diesel, Gasoline, Hybrid, other ECU
- Confidential Aspect for exchanges
  - Possibility to have many application suppliers and integrators
- PSA applicative becomes a black box for Tier 1

Needs for the development cycle:
- Describe interfaces between A-SWC Vs BSW
- Describe system dynamic parts
More than 80% for powertrain applicative software for next generation

Applicative module size increase every year

Modularity eases the introduction of new functions
Powertrain Process

2006
- Manual

2016
- Model Based Design and automated

Project needs
- + Agility
- + Quality
- + Cost reduction

Integration phases

Validated

Module
- Functional needs
- Validated
- Coding phases

Macro-Module
- Ready to deliver

In house tools

AR
- Module
- Macro-

Version migration of powertrain Macro-Module made twice
Integration of Macro-Module onto platform:
- With different AR version (Possibility to mix AR versions under certain conditions)
- Without AR
Easy to integrate and migrate it
Only Applicative part
Automatically Conversion possible
Few Client-Server interfaces
No functional code modification
No full functional validation required
Future for AUTOSAR in PSA Powertrain

Enlarge our Macro-Module Size
  Modules number, functional perimeter, applicative software part
Benefit from AR for messaging exchanges
Improve our modelization to be closer to AR.
  Model Based Design ready for complete automatic code
  AR needs to be taken into account as soon as possible in our V Cycle
Best DCM exchanges approach
  Try to eradicate all non AR design
MM fully designed for AR multicore
Conclusion

Since more than 10 years:

More & more AUTOSAR in PSA applicative powertrain ECU
Size and number of modules on the shelf increase ✅
Reactivity & Agility ✅
Time to market ✅
Applicative Price ✅

Migration for applicative: It’s not complicated