



## Configuration management in AUTOSAR

The need for efficient process tools for Automotive System Engineering

- ❑ AUTOSAR will influence the ECU SW Architecture ...
- ❑ ... and also the way ECU SW is developed!
- ❑ Current Questions:
  - ❑ Will business models between OEMS and suppliers change?
  - ❑ What development process areas will be influenced or changed?
  - ❑ How can a migration concept towards AUTOSAR look?
  - ❑ How can a distributed development process be supported?
    - ❑ Personally distributed
    - ❑ Company wise distributed
    - ❑ Globally distributed
- ❑ Our Contribution:
  - ❑ eASEE as an Engineering Data Backbone for Configuration Management of your AUTOSAR artifacts!

Introduction

## > **Automotive System Engineering Challenge**

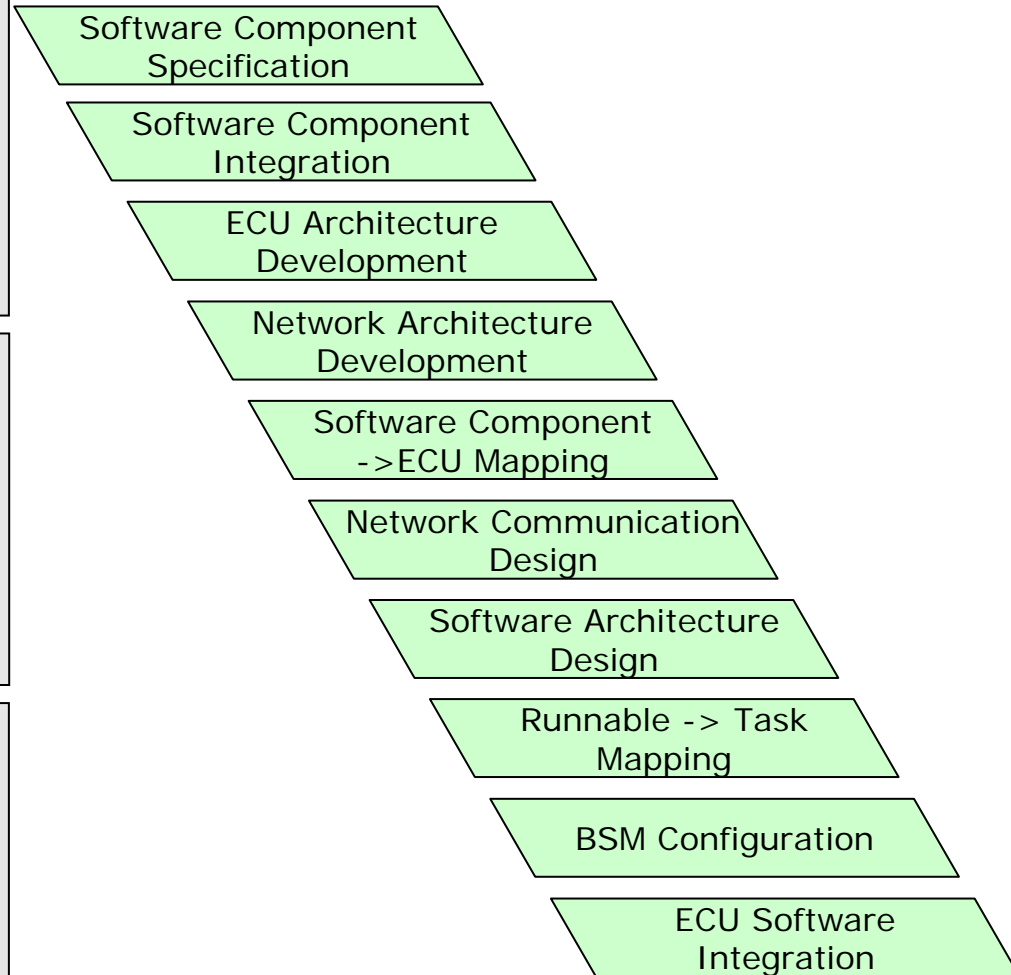
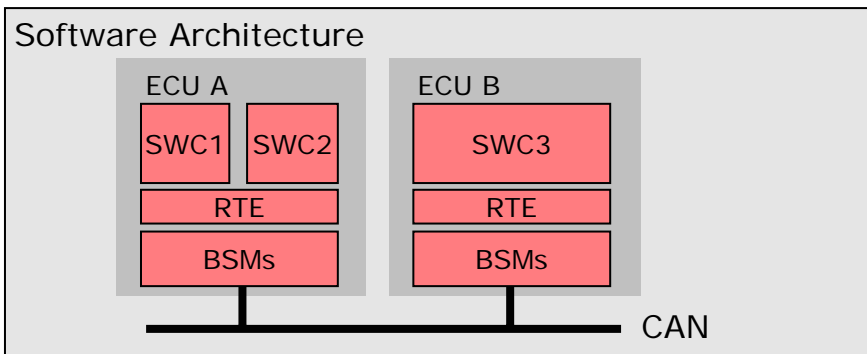
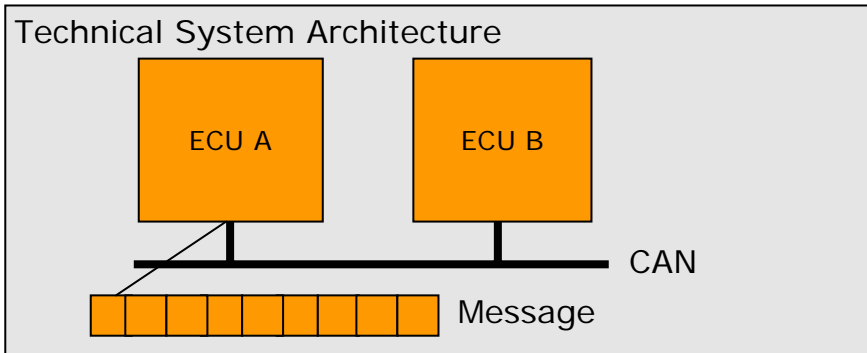
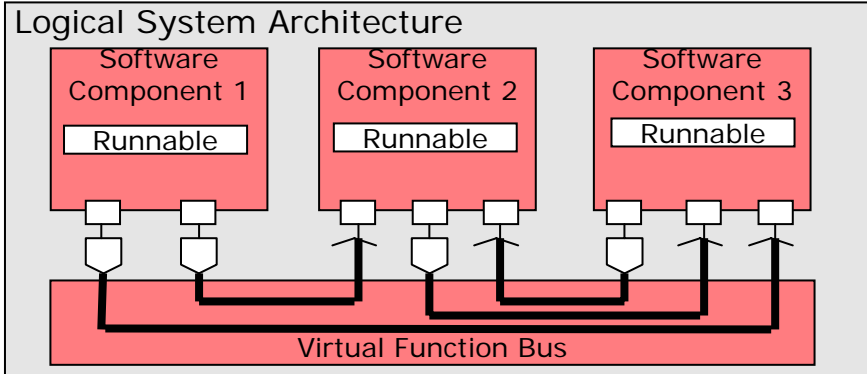
The eASEE Tool Suite

eASEE.sdm : System Data Management Module

Conclusion

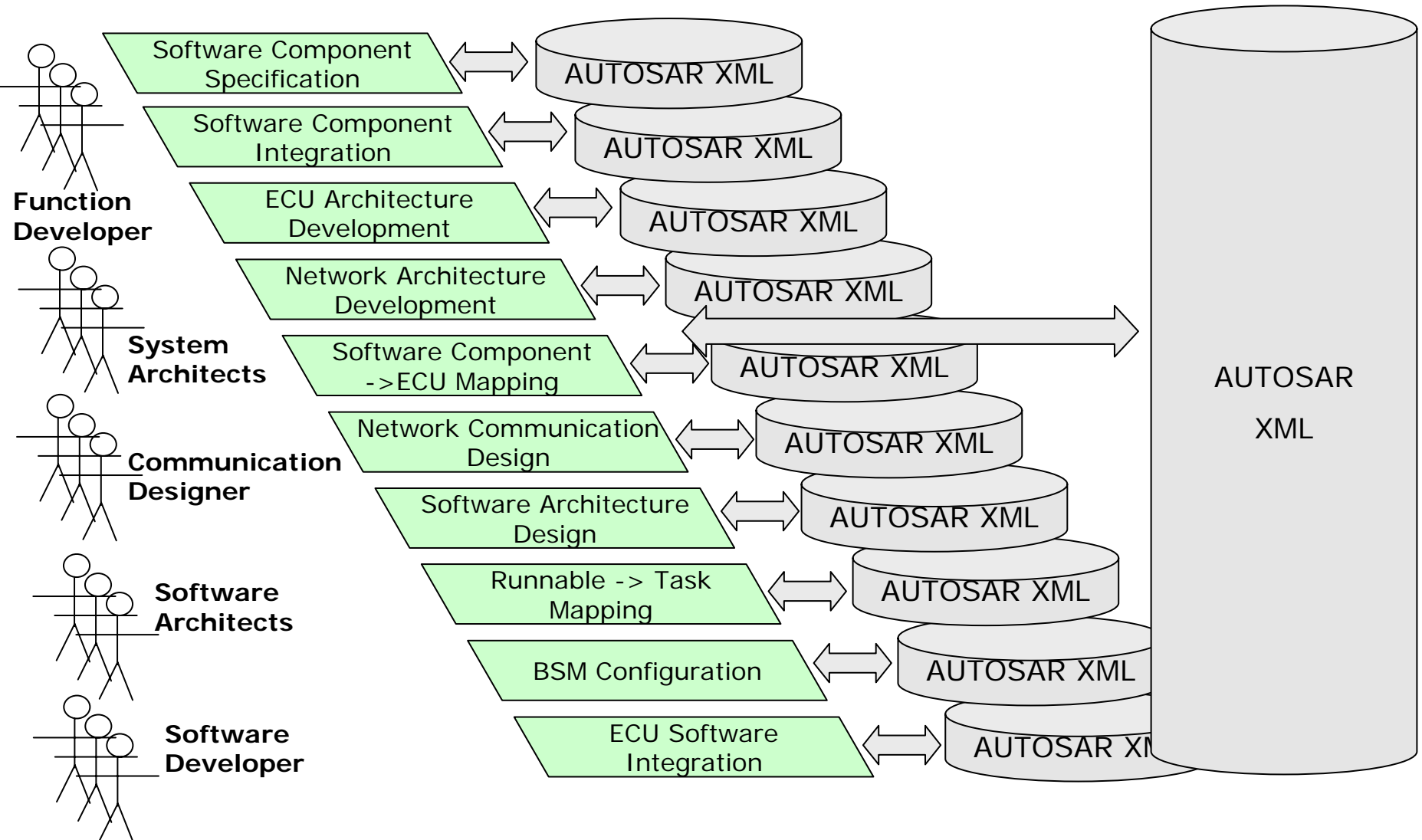
# Automotive System Engineering Challenge

## AUTOSAR Development Process and Development Steps



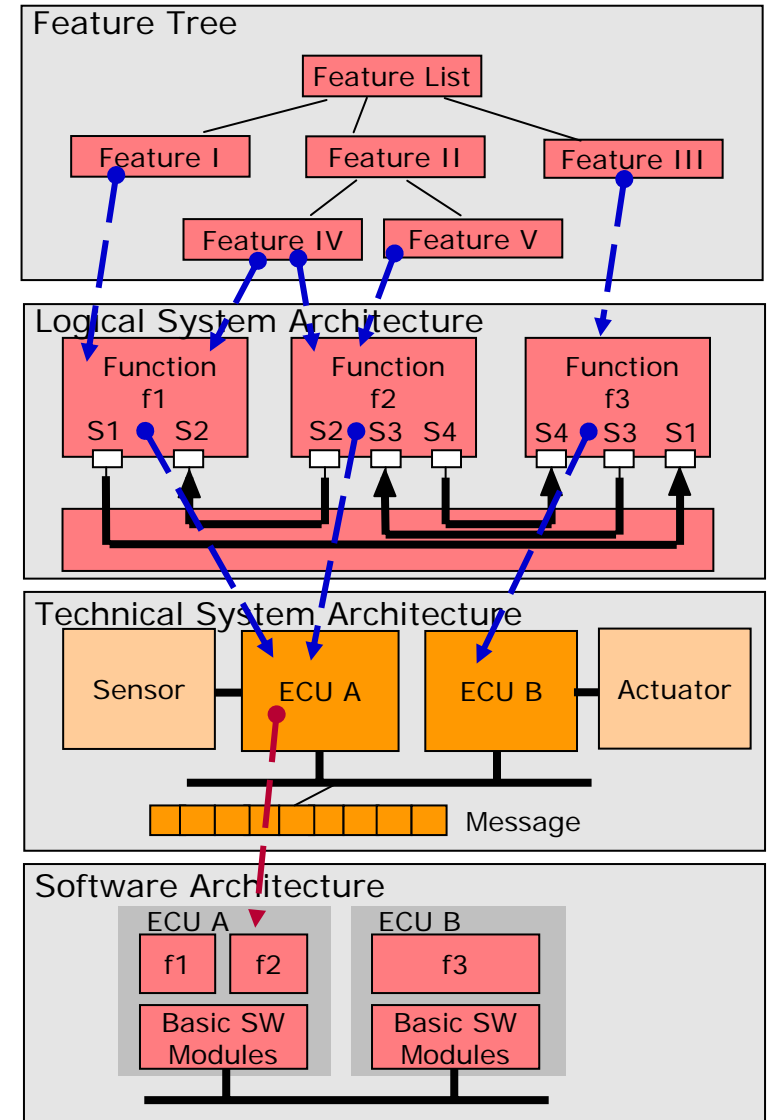
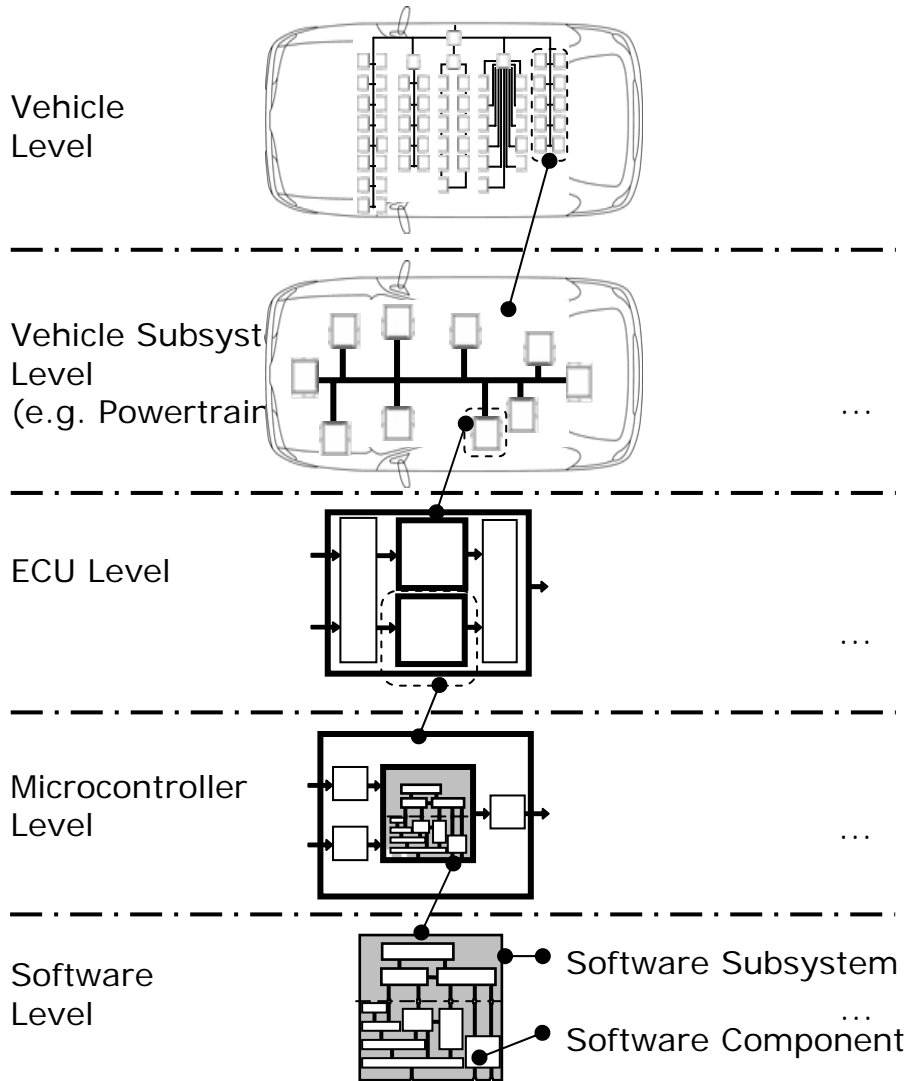
# Automotive System Engineering Challenge

## Roles and Artifacts



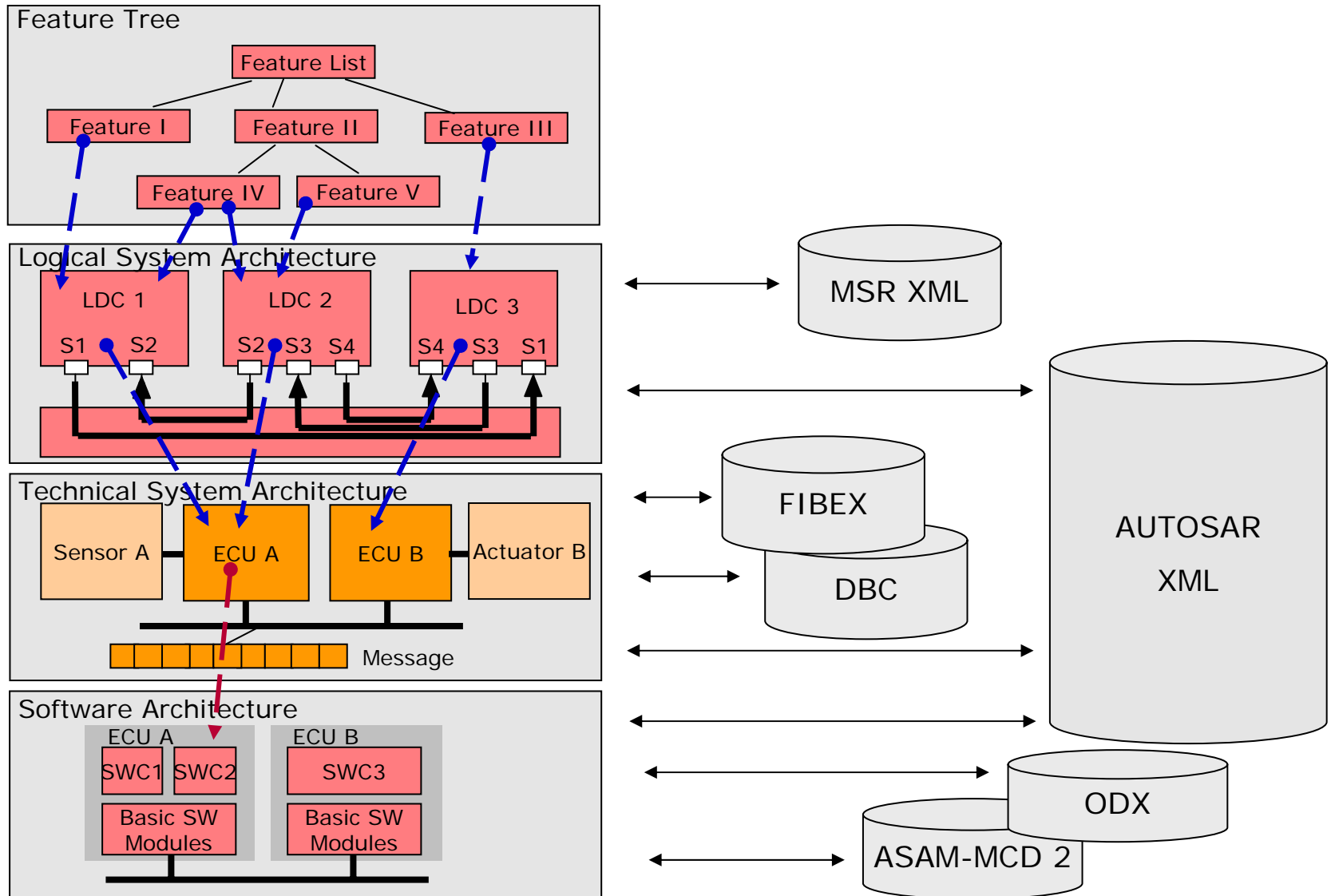
# Automotive System Engineering Challenge

## AUTOSAR as part of a global Process



# Automotive System Engineering Challenge

## Migration to AUTOSAR



Introduction

Automotive System Engineering Challenge

> **The eASEE Tool Suite**

eASEE.sdm : System Data Management Module

Conclusion

## What is eASEE?

### **electronic Automotive Systems Engineering Environment**

- ❑ Pronounced “EASY”
- ❑ Product Lifecycle Management (PLM) for automotive E/E and Powertrain development

### **What eASEE is ...**

- ❑ a scalable, modular, client/server system to:
  - ❑ Manage engineering data on the file level and on the data object level
  - ❑ Automate and deploy development process workflows
  - ❑ Integrate different development tools
  - ❑ Coordinate teams of developers across multiple global locations
- ❑ a complement to established enterprise-wide PLM systems e.g. for released data
- ❑ a flexible, configurable platform with smart application modules

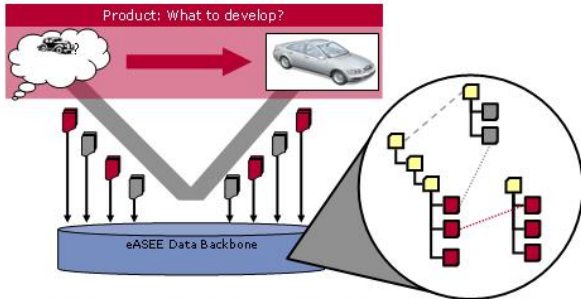
### **What eASEE is NOT ...**

- ❑ a replacement for existing development tools like:
  - ❑ Matlab/Simulink, CANoe, compilers, debuggers, INCA, data loggers, etc.
  - ❑ Vector embedded software, AUTOSAR, code generators, etc.
- ❑ a replacement of established enterprise-wide PLM systems
- ❑ a fixed or closed system that everybody sees the same way

# The eASEE Tool Suite

## eASEE Base System

### eASEE Engineering Data Management



- Management of all artifacts (documents, engineering data) of the entire development process
- Version, Variants and Relations between artifacts

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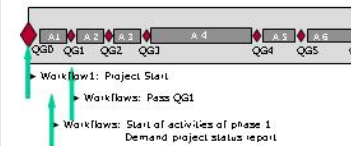
Slide 1



### eASEE Workflows and Processes



- Workflows
  - Based on roles
  - Used for release of documents, calibration data



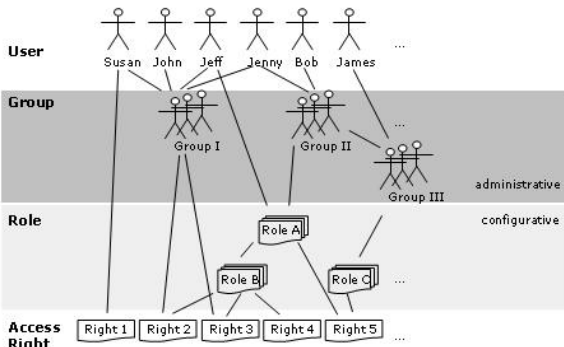
- Processes
  - Modeling of development processes e.g. Test Processes, Function Development Process
  - Based on Gates and Activities

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Slide 3



### Users, Groups, Roles and Permission Concept in eASEE

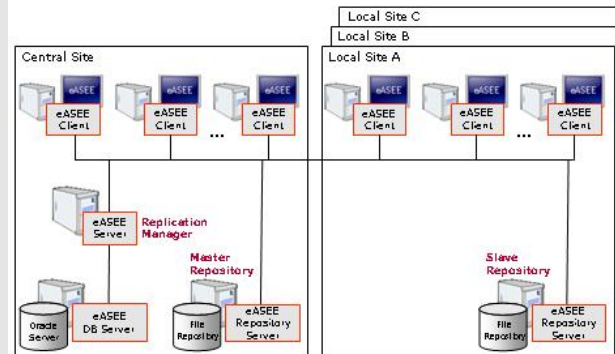


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### eASEE Global Team Support



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**eASEE Base System: Data Backbone, Workflows, Reports, Traceability, Multi Site, Roles & Rights, Messaging Service, Import/Export, APIs ...)**

# The eASEE Tool Suite

## eASEE Modules

Analysis

Design

Implement-  
ation

Verification

Integration

System Test

Product Management and Release Planning (eASEE.prm)

Project Planning and Project Steering (eASEE.pm)

Change Management (eASEE.chm)

Requirements  
Management

(eASEE.rqm)

System Data  
Management

(eASEE.sdm)

Hierarchical  
SW Config.  
Management

(eASEE.hscm)

Test Data  
Management

(eASEE.tdm)

Calibration  
Data  
Management

(eASEE.cdm)

**eASEE Base System:** Data Backbone, Workflows, Reports, Traceability, Multi Site, Roles & Rights, Messaging Service, Import/Export, APIs ...)

Customizing

Configuration Environment

APIs

# The eASee Tool Suite

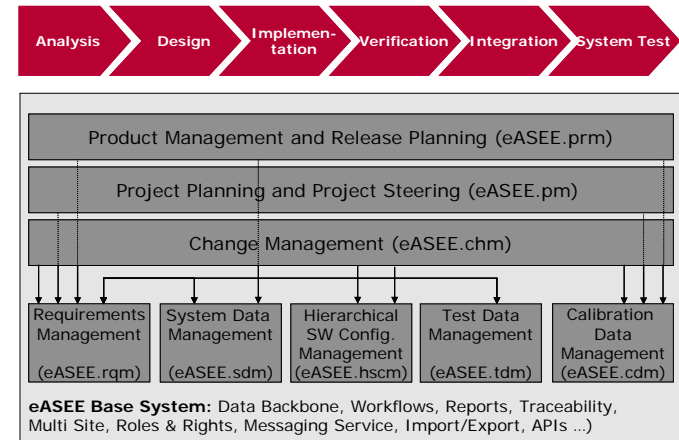
## eASee Modules

- ❑ The eASee modules offer pre-implemented functionality for the most important Automotive process disciplines.

- ❑ Data Model
- ❑ Authoring Tool
- ❑ Import / Export established data formats

- ❑ eASee modules ...

- ❑ cover the Automotive mainstream functionality.
- ❑ implement the best practices from many customers.
- ❑ reduce development efforts at the customers.
- ❑ are developed in a close collaboration with noted development partners (Bosch, MAN, Volvo Car, Ford Research, Blaupunkt).



Introduction

Automotive System Engineering Challenge

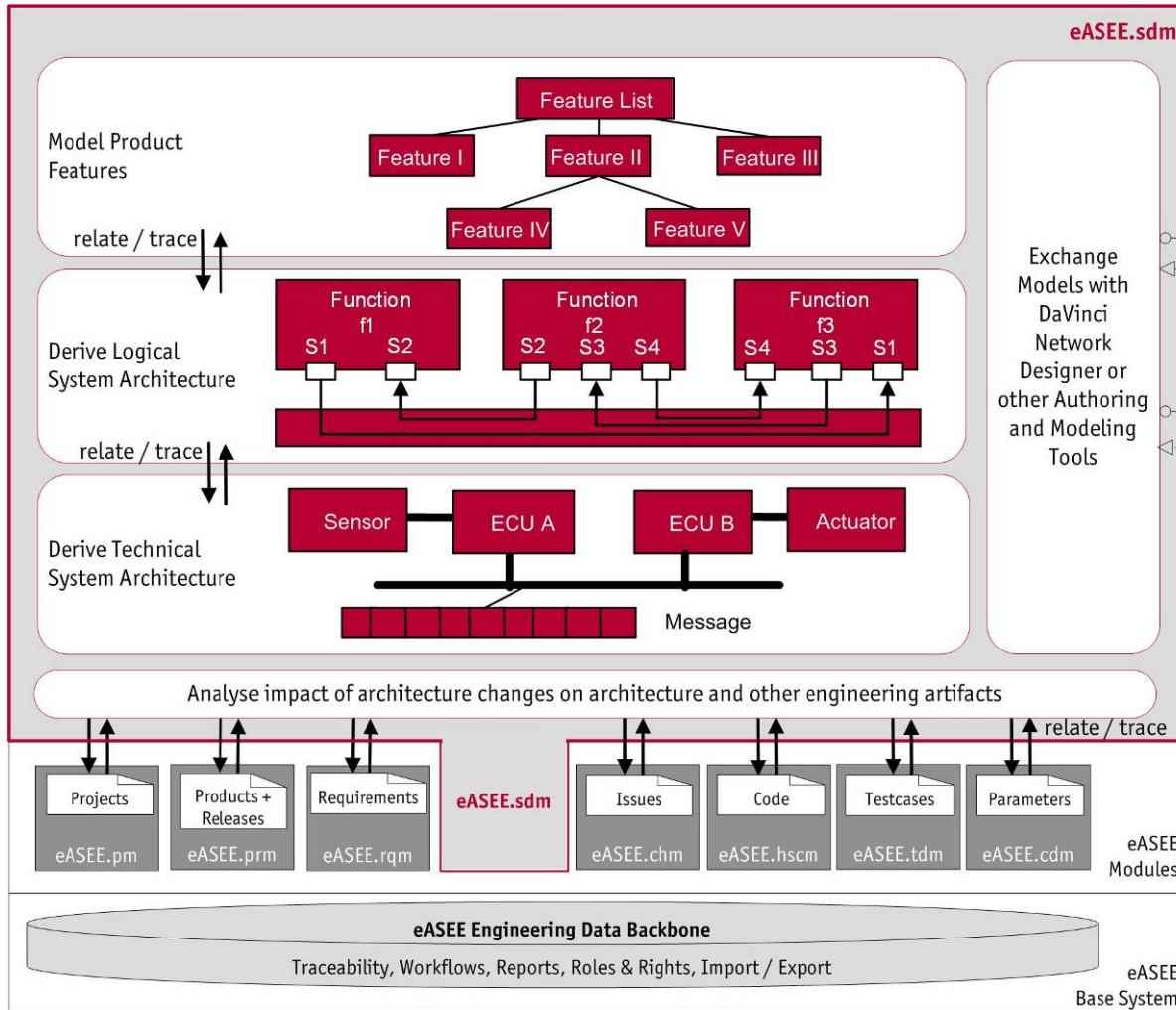
The eASEE Tool Suite

**> eASEE.sdm : System Data Management Module**

Conclusion

# eASEE.sdm : System Data Management Module

## Imported / Exported formats



eASEE.sdm

AUTOSAR XML

MSR XML

DBC

LDF / NCF

FIBEX

ODX

A2L

Exchange Models with DaVinci Network Designer or other Authoring and Modeling Tools

DaVinci Network Designer

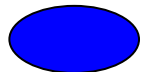
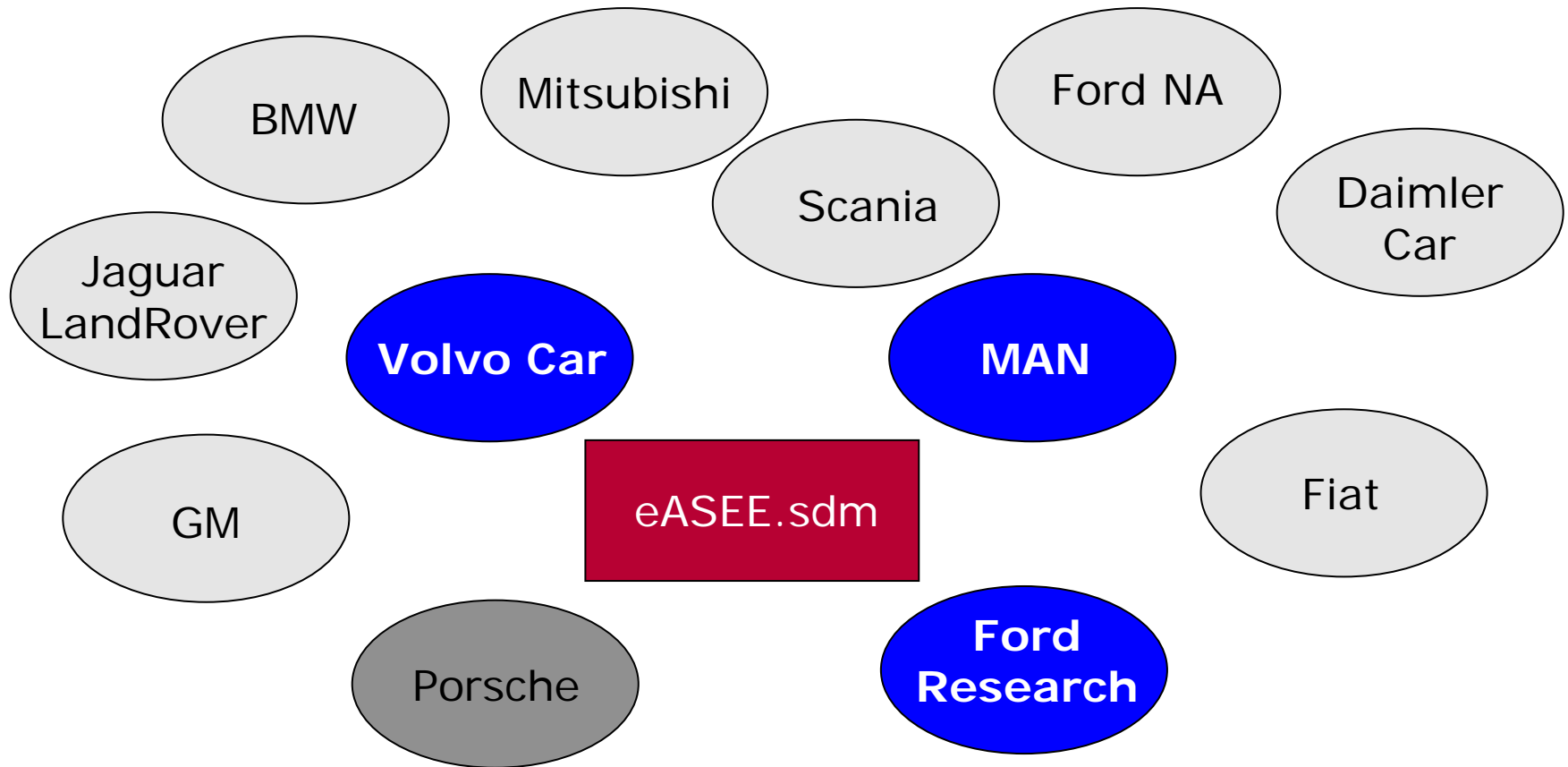
Other Architecture Authoring and Modeling Tools

- ❑ From basic elements
  - ❑ Data types, Axes, Constants, ...
  
- ❑ To high level elements
  - ❑ Signals, Ports, ...
  - ❑ Signal Groups, PDU, Frames, ...
  - ❑ Features, Functions, ...
  - ❑ Calibration elements
  - ❑ Vehicles, Networks, ...
  - ❑ ECU, Sensors, Actuators, ...

# eASEE.sdm : System Data Management Module

Customers

Status September 2008



Development Partner



Pilot Customer



Interested Customers

# eASEE.sdm : System Data Management Module

## Product Roadmap 2008

### eASEE Base System

August 2008

Release  
eASEE 3.8

### eASEE.rqm/ eASEE.chm

April 2008

Prototype  
eASEE.rqm/chm 1.0

August 2008

Beta  
eASEE.rqm/chm 1.0

December 2008

Release  
eASEE.rqm/chm 1.0

### eASEE.sdm

March 2008

Prototype

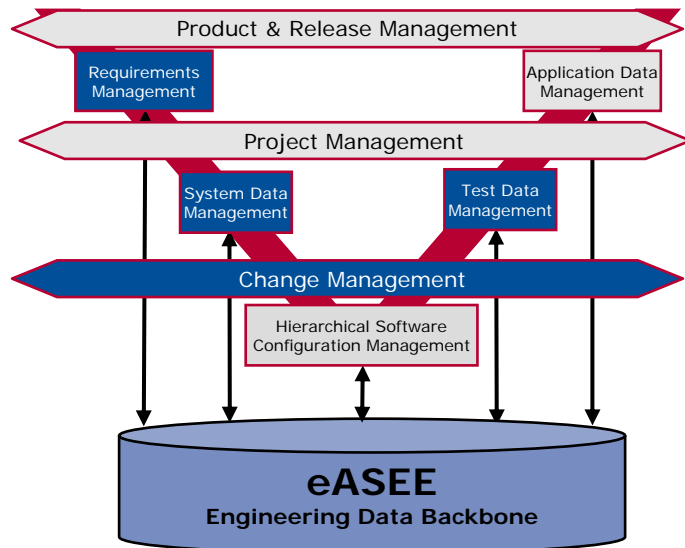
November 2008

Release  
eASEE.sdm 1.0

# eASEE.sdm : System Data Management Module

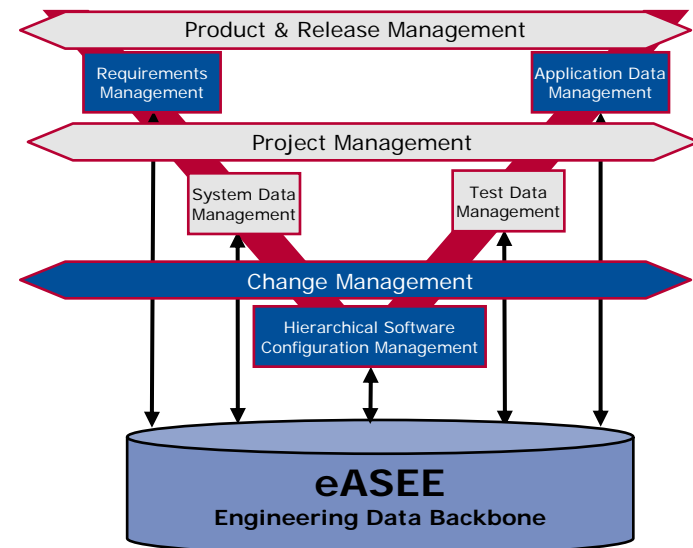
From eASEE modules to eASEE "Out-of-the-Box" solutions

## eASEE Solution for Automotive Systems Engineering



Pilot Customers: **MAN**, **Volvo Car**

## eASEE Solution for Automotive ECU Development



Pilot Customer: **Bosch**

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**> Conclusion**

# Conclusion

- ❑ AUTOSAR impacts the Automotive System Engineering processes
- ❑ Efficient process tool support is needed
  - ❑ To support migration to AUTOSAR
  - ❑ To support the global team's actors
  - ❑ To improve System Engineering Efficiency and Quality
- ❑ Vector's eASEE is ready to fulfil those needs



Thank you for your attention.

For detailed information about Vector  
and our products please have a look at:

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