

DAIMLER

Tool Supported E/E Architecture Development at Daimler

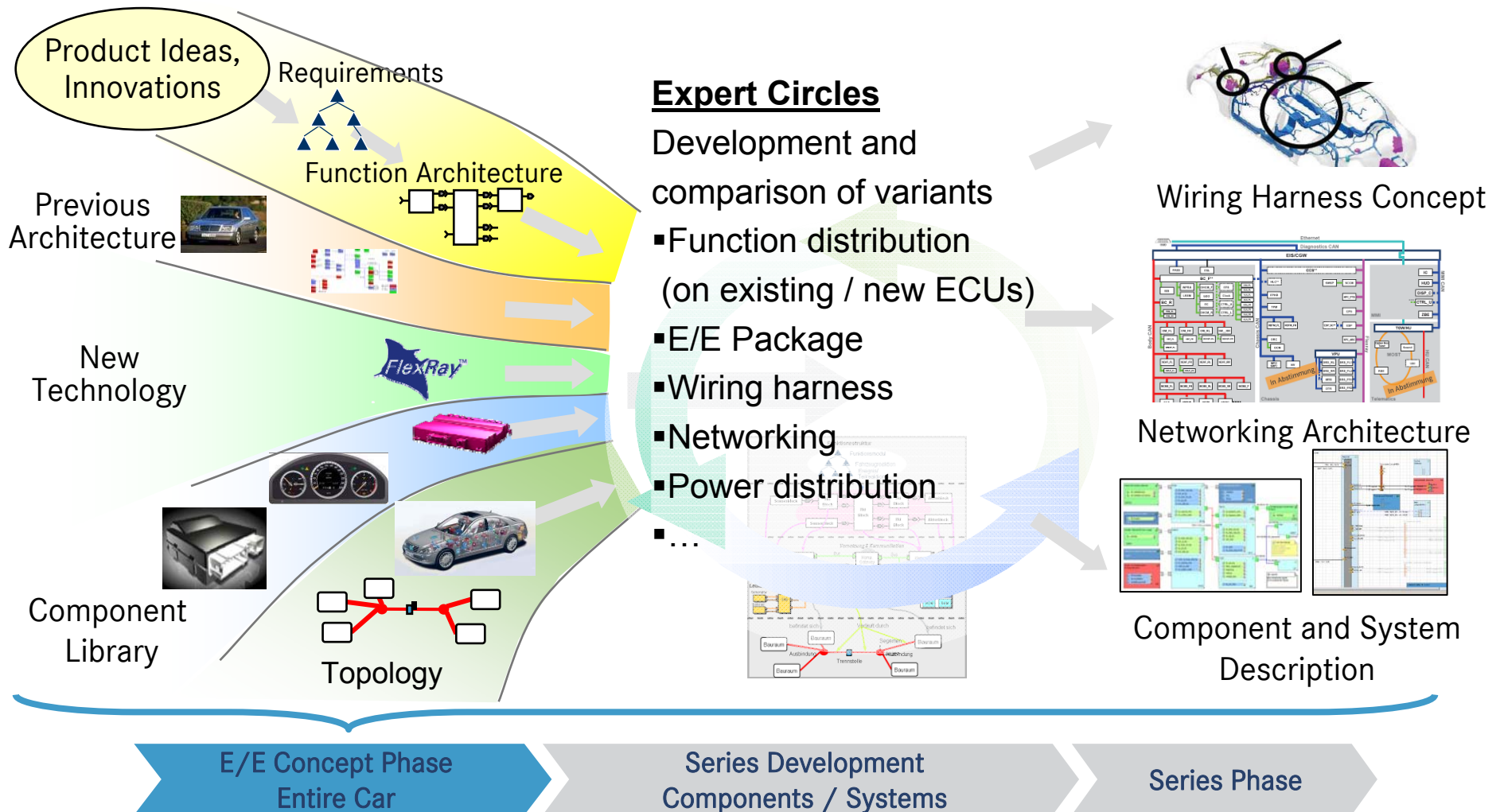
Vector Congress 2010
Stuttgart, 01.12.2010

Agenda

- Motivation: Model based E/E Architecture Development
- Status: PREEvision at Daimler
- Current Topics
- Outlook: Automated Architecture Optimisation

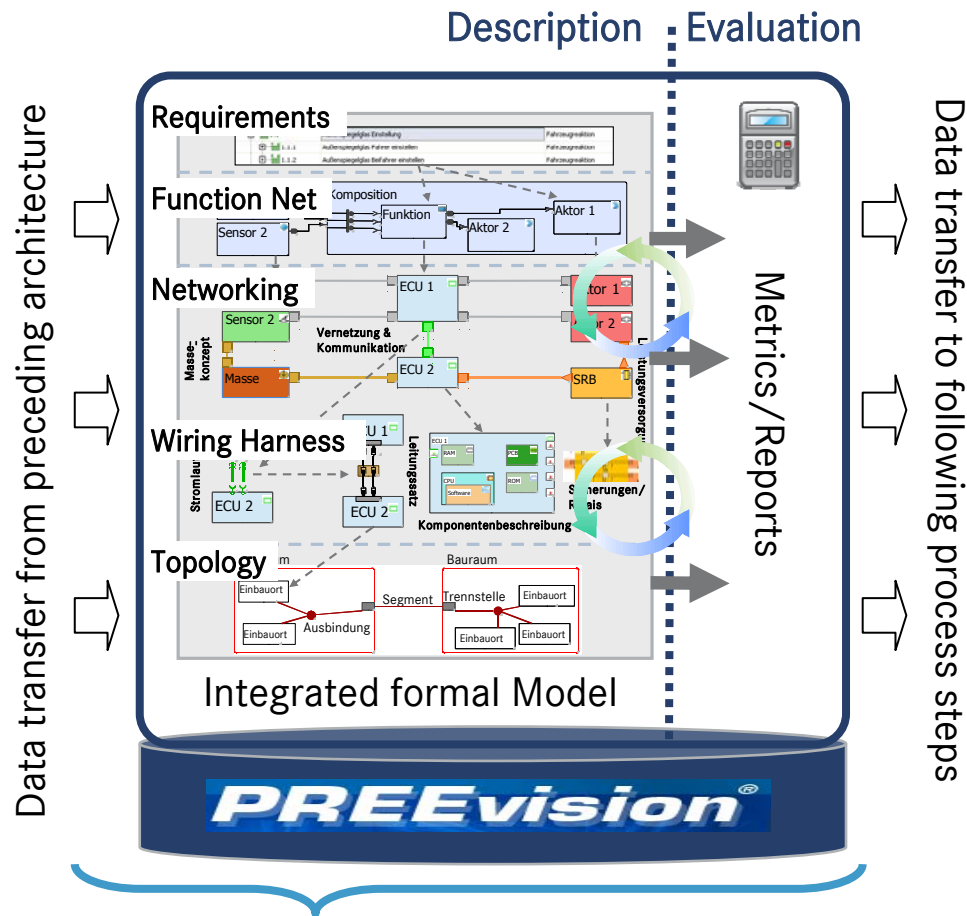
E/E Architecture Development in the Concept Phase

Capturing architecture requirements, elaboration/validation of alternatives and decision about the basic concepts



Model based Architecture Development with PREEvision

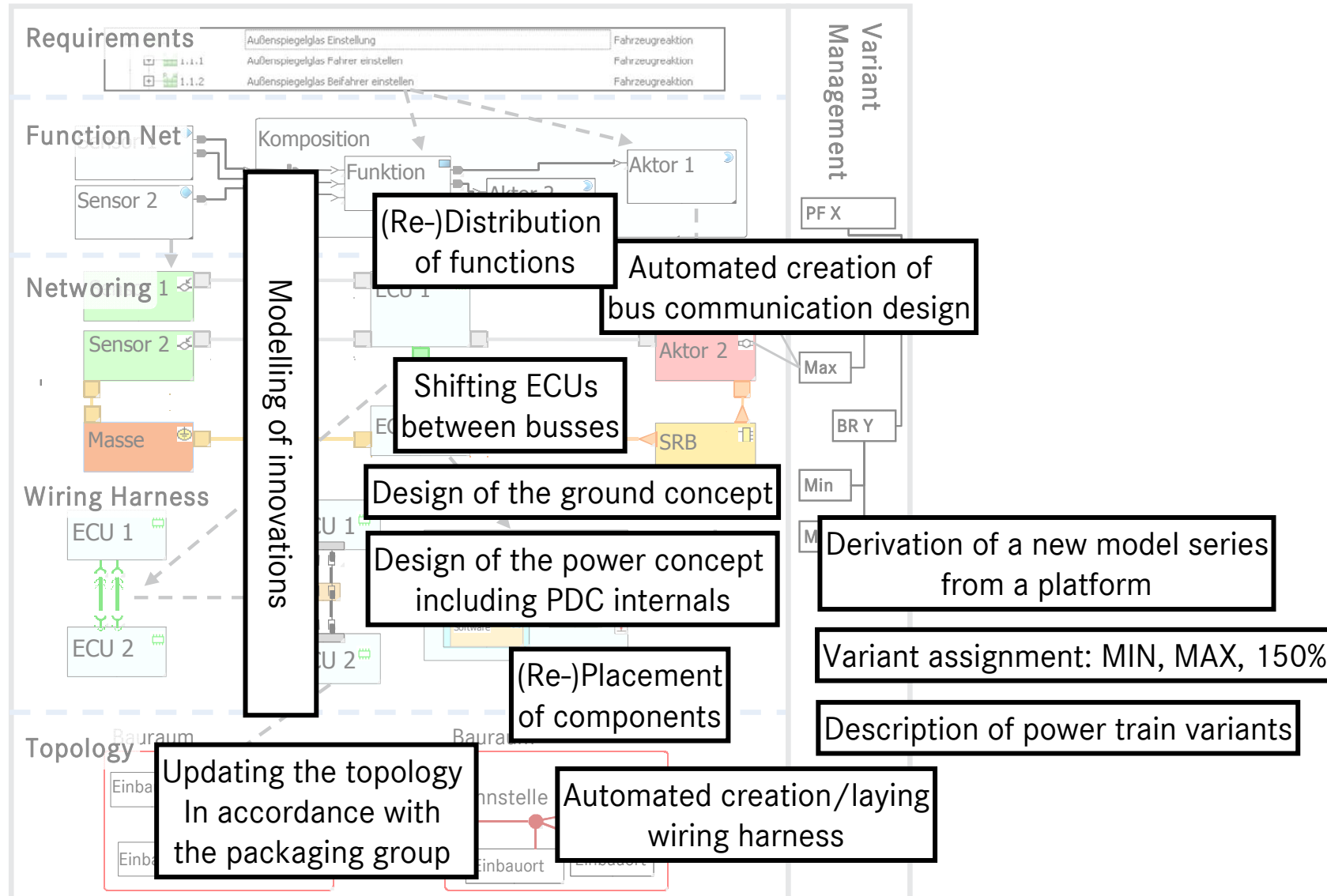
Frontloading: high level of maturity of the E/E architecture in the concept phase by comprehensive description and evaluation



- Integration of the relevant data in a consistent description
- Problem-oriented graphic visualisation
- Computer-based evaluation of the modelled data
- Fast execution and evaluation of architecture changes
- Comprehensive documentation of the E/E architecture



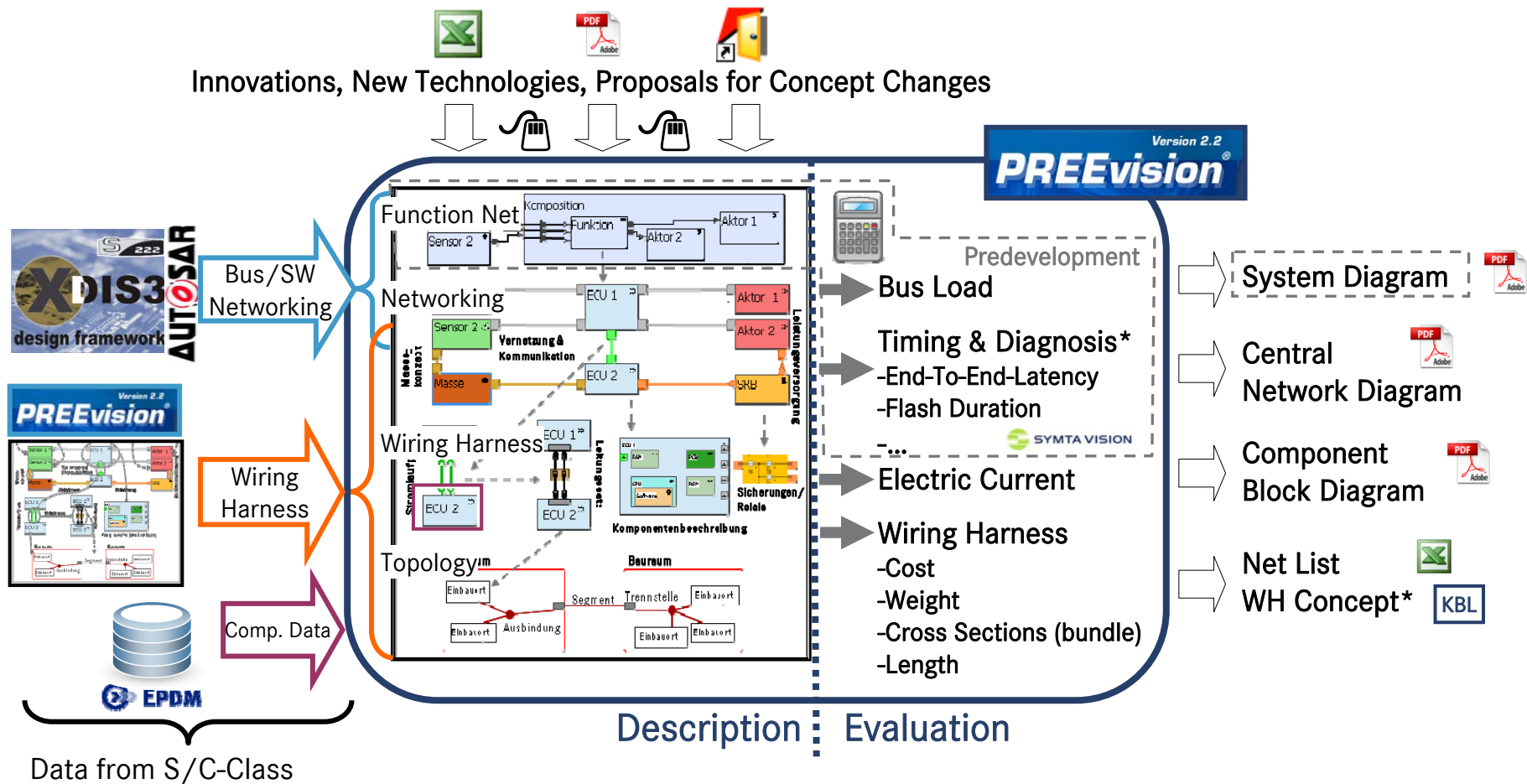
Typical Modelling Activities in PREEvision



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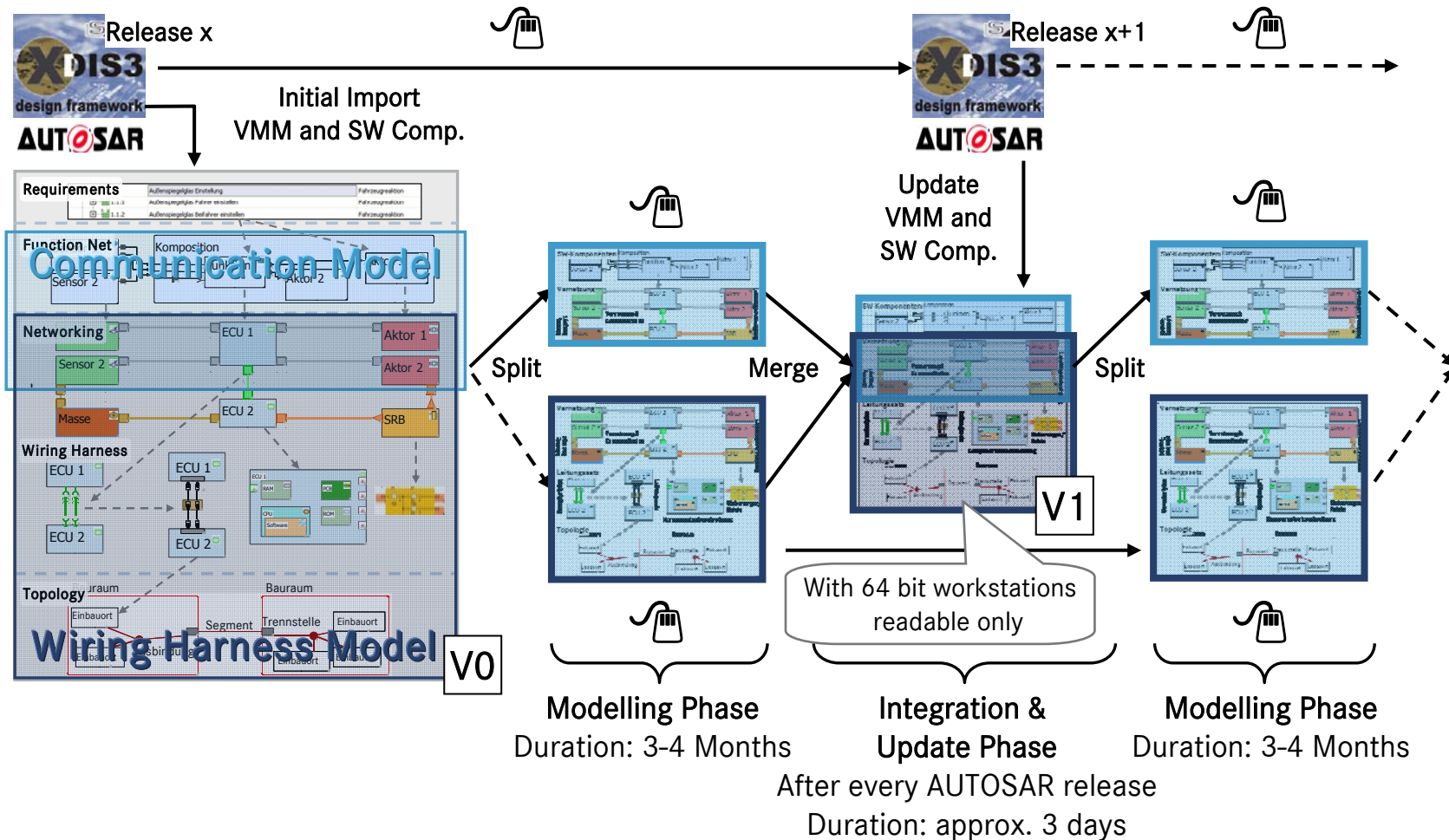
Example: Use of PREEvision for the next E-Class Derivation of a further architecture form the STAR2 platform



*Pilot project

Modelling Infrastructure & Update/Sync Process

Separate models for communication and wiring harness through high memory consumption. Periodic synchronisation and AUTOSAR update.

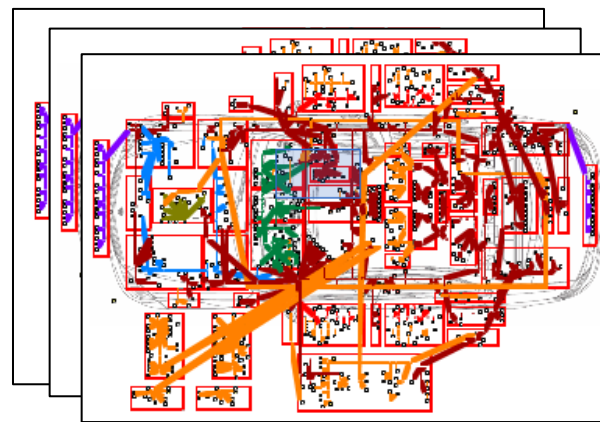


PREvision Modelling Results in STAR2

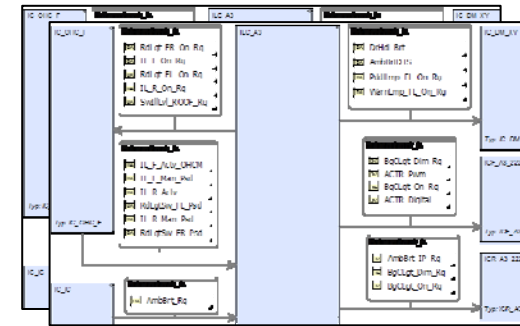
Elements in the integrated model including 3 model series



Central Network Diagram: 3



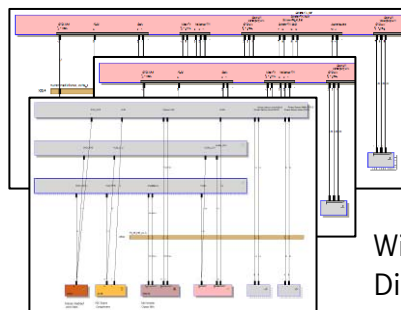
Topology Diagram: 3



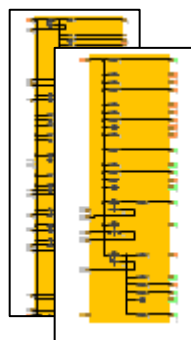
SW System Diagram: approx. 70



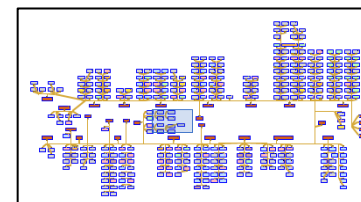
ECU Network Diagram: approx. 120



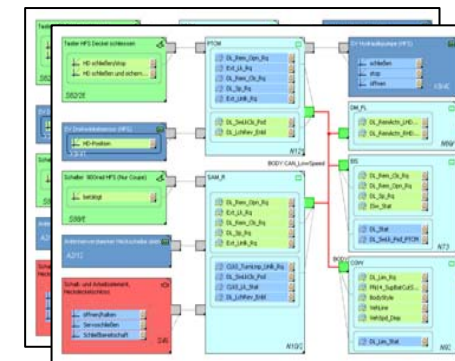
Wiring Harness Diagram: approx. 170



PDC Diagram: approx. 12



Ground Diagram



HW System Diagram: approx. 70

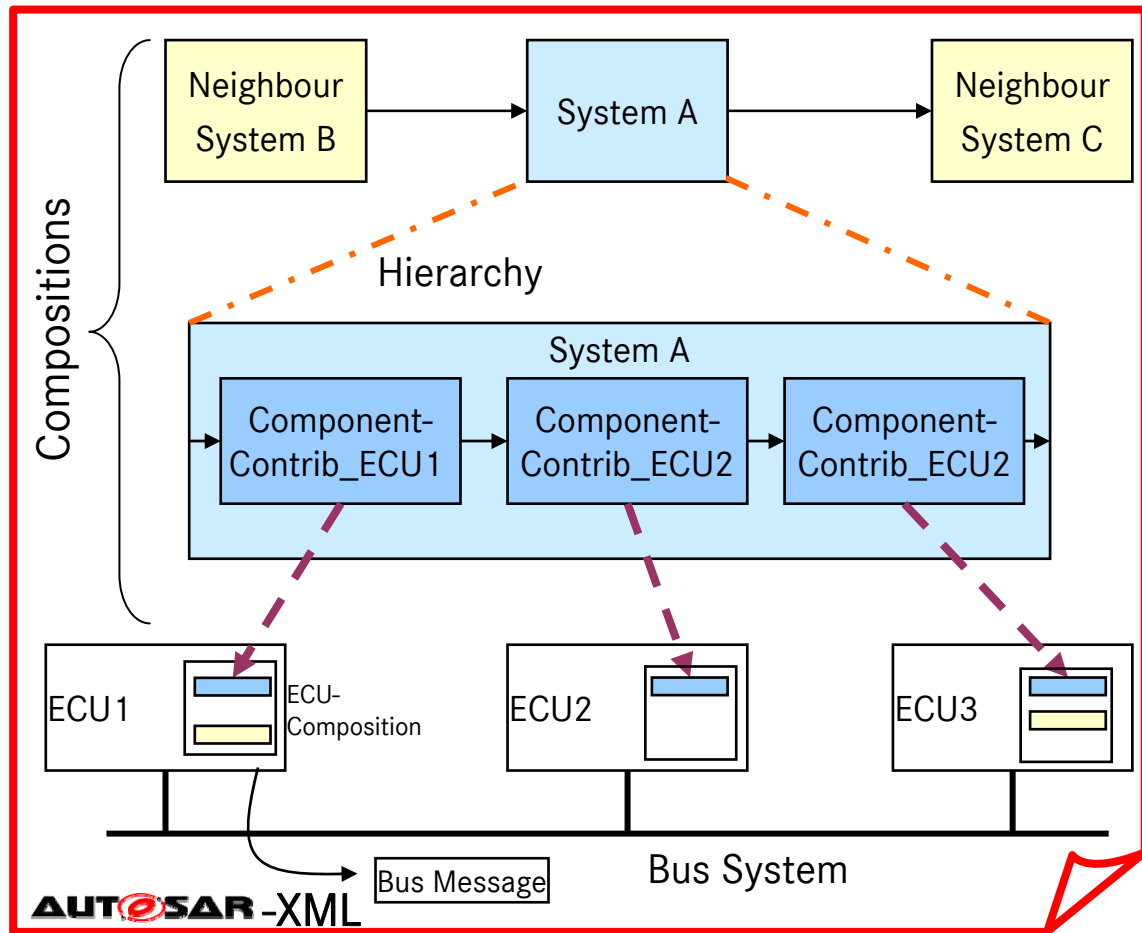
- Electrical Components: approx. 1000
- Wires: approx. 4000
- Pins: approx. 6000

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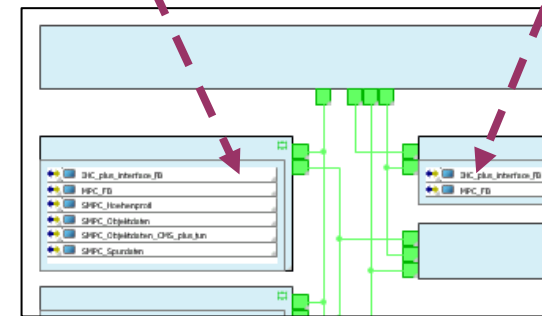
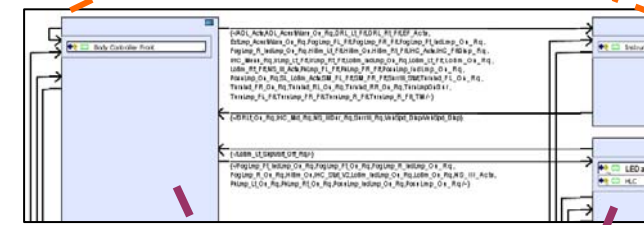
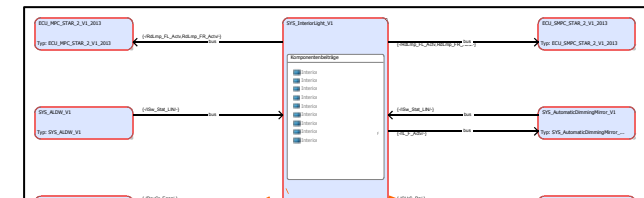
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AUTOSAR System Description at Daimler

Description of ECU contributions and communication interfaces of systems



AUTOSAR System Description



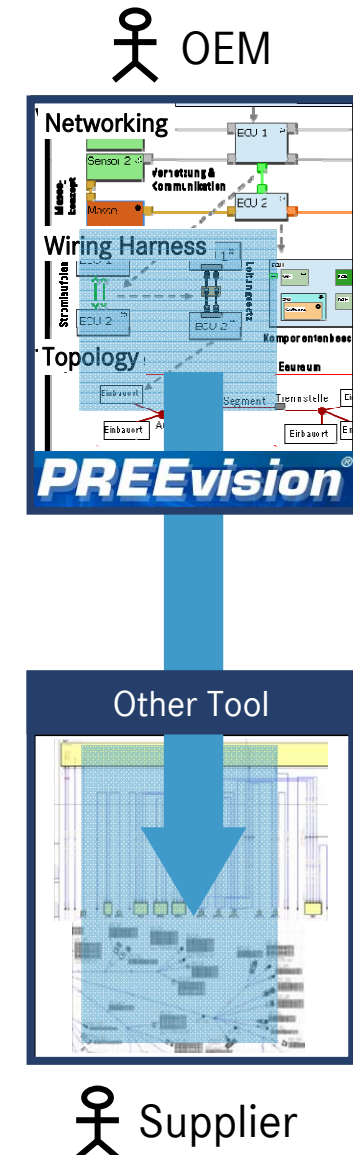
Representation in PREEvision

Collaboration with Wiring Harness Concept Partners

Experiences with the KBL exporter

- Aim: Transfer the wiring harness concept to a development partner for further optimisation
- Data to transfer:
 - Schematics (components, electrical connections, schematic pins)
 - Wiring Harness (connectors, pins, wires, ..., including placement)
 - Topology (installation locations, segments, ...)
- Experiences with KBL Export in PREEvision 3.0: approx. 80% of the desired Data could be transferred after some tool adaptations (remainder in EXCEL)
 - KBL standard not precise enough → errors during data transfer
 - Abstracted concept modelling in PREEvision (e.g.: connectors not typed) leads to import errors at the development partner

→ Data exchange is still too time consuming!
- How can data exchange between development partners be improved?



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Automated Architecture Optimisation

Better architectures by the consideration of more concept alternatives, which are created with a high level of automation

