Increasing Acceptance of the AUTOSAR Philosophy at Daimler

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Agenda

>> Status Quo – AUTOSAR Methodology at Daimler

Changing Approaches for a Changed Context

Propagation of AUTOSAR Methodology in the Organization

Summary – Lessons Learned
System & Communication Design at Daimler
Collaboration Platform Success Story

Change Management

User Group

Design Prerequisites and Constraints

Current S-Class has been developed by utilization of almost pure

System & Communication Design

Xchange

ECU Extract of System Configuration

Configure ECU

Supplier Side

Generate Executable

User Group

Configure ECU

Generate Executable

ECU Configuration Description

Mercedes-Benz

Increasing Acceptance of the AUTOSAR Philosophy at Daimler
Change Management of Former Platforms

Strong Focus on Static Network Design

- Change management has been put into action prior to XDIS supporting AUTOSAR
- No AUTOSAR methodology implemented
- Changes are applied on bus level

Benefits
- Long-term experience
- Sufficient approach for legacy bus systems like CAN or LIN

Problems
- No holistic system view in Xchange
- Steady increasing complexity
- Thinking only from a local component based view
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Summary – Lessons Learned
Next Generation In-Vehicle Communication Concepts
New Technologies Affect the Way We Design and Manage Communication

**Direct links** instead of broadcast communication

- Describing 1:n communication means describing n communication paths

**Decoupling of domains introduces abstraction in communication**

- Application routings prohibit E2E path analysis

**Shift in complexity** from COM stack to application

- Transmission modes and timeout monitoring have to be done in application

**Configuration is achieved dynamically** (SOME/IP)

- Signals and frames no longer main anchor for design process and change management
More Abstraction in the Change Management Process

Physical vs. Logical Communication

I want ECU 2 to receive additional data from ECU 1.

How to provide data on the source bus by ECU 1?

How to route data on transfer busses in the best way?

How to guarantee ECU 2 receiving the data in time?
I want ECU 2 to receive additional data from ECU 1.

**Change Management User Group**

- Consider change requests from a system view!
- Describe the logical data structure the software expects!
- Define the timing requirements of the software!
More Abstraction in the Change Management Process

Physical vs. Logical Communication

Change Management User Group

Design / Configuration User Group

ECU 1

GW

ECU 2

Ethernet

SWITCH

CAN
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Summary – Lessons Learned
Challenges and Capabilities of Collaborative Work
Different Roles and Expertise Distributions

Collaboration Platform

Expertise Distribution

Component Manager
System Manager
Networking Manager
Platform Developer
AUTOSAR Consortium

AR Methodology
Networking

Components

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Different Views – Unified Model
Bridging the Gap

Change Management Entry Point

- Changes applied on VFB level
- Changes processed on network level
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>> Summary – Lessons Learned
Summary – Lessons Learned

Key Success Factors

Challenges

• Increasing networking complexity
• New communication paradigms

• Yet no AUTOSAR in change management
• Insufficient penetration of methodology

• User groups are spread across different organizational units
• Each having their own focus and knowledge

Conclusion

• Shift from network to system design
• Consider end-to-end requirements

• Provide a combined approach of networking and system view (use case dependent)
• Take advantage of users’ expertise

• Common collaboration platform to reach users even beyond departmental boundaries
• Comprehensive shared database

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Thank you