Dr. Barbara Kempkes

dSPACE GmbH

Automatic SWC Migration from
AUTOSAR Classic to AUTOSAR
Adaptive – A practical case study
What Does dSPACE Do?

- Develop tools (hardware and software) for developing control systems and electronic control units
- dSPACE = digital Signal Processing And Control Engineering

Who Uses dSPACE Tools to Develop Control Systems?

- Automotive industry (80% of our customers) ➔ Development partners
Why Do Carmakers Rely on dSPACE?

- To develop and test more quickly and easily
- To detect errors in the lab, not on the road

We accelerate our customers' success!
Motivation

AUTOSAR Adaptive Platform
Goal

Adaptive Application
Adaptive Application Wrapper

Don’t change the existing code
Automated generation
Little manual effort
A case study

Is it possible to create an Adaptive Application Wrapper for SWCs?
Concept

Adaptive AUTOSAR Foundation

AUTOSAR Runtime for Adaptive Applications

SWC1

SWC2

RTE

OS

(OS: OSEK-POSIX Adapter)

ARACom Adapter

(CP: BswServiceModule)

EcuM

NvM

Execution Management Adapter

Persistency Adapter

ARA::COM

ARA::EM

ARA::PER

AUTOSAR Interface Classic Platform

Standardized Interface Classic Platform

APIs provided by Adaptive Platform
ARACom Adapter

<table>
<thead>
<tr>
<th>AUTOSAR Classic Platform</th>
<th>Autosar Adaptive Platform</th>
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<tbody>
<tr>
<td><code>&lt;SENDER-RECEIVER-INTERFACE&gt;</code></td>
<td><code>&lt;SERVICE-INTERFACE&gt;</code></td>
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<tr>
<td><code>&lt;CLIENT-SERVER-INTERFACE&gt;</code></td>
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<tr>
<td>Top Level Composition</td>
<td><code>&lt;ADAPTIVE-APPLICATION-SW-COMPONENT-TYPE&gt;</code></td>
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The Prototype: Workflow

SystemDesk

- Generate Service Interface Description
- Auto-configure RTE, BSW and Adapter
- Generate RTE, BSW and Adapter Code

AUTOSAR Adaptive Platform Demonstrator

- Generate Interface and Binding Code

Software Component

- .arxml

Service Deployment

- .arxml

Wrapper Code

- .cpp
- .c

Embedded Success dSPACE
Results of the case study

Verification with Daimler SWCs

Prototype

Concept Work

Verification with Daimler SWCs

SystemDesk®
Thank you for your attention!

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