Properly using Variant Management Software
Systematic Reuse of Engineering Assets

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Variant Management Solution for Systems & Software Engineering
Everything is potentially reusable
Growing complexity of assets, systems and interdependencies
Integrating Tools: Why not use Excel?
The need for Managing Variant Complexity and Systematic Reuse across the Lifecycle
Continuous Engineering Change in the Lifecycle
Variation Points

Problem Space

Solution Space

E-Klasse.

- Limousine
- T-Model
- Coupé

Welkom zu Hause.
Variant Configuration & Transformation

- Feature Model
- 150% "Model" in DOORS, DNG, RQM, Rhapsody
- Variant Description Model

Transformation

- 100% Variant 1
- 100% Variant 2
- 100% Variant 3
pure::variants & PLE positioning

Customer Definition → Requirement Definition → Model and Simulate → Develop → Test → Deploy

Use of pure::variants throughout lifecycle of product line

Simulink, C/C++/Java, DOORS/NG, SCADE
Rational Quality Manager, EMF, Excel, AUTOSAR
XML, Rhapsody, Word, RTC, ALM/PLM, Custom

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Demo

Variant Management with pure::variants across Engineering Assets
Feature Model

Automatic light m...
threshold = ‘70’; ‘60’

[Features]

Regions

[USA]
Requires: "Automatic...

[China]

[EMEA]
Variant Configuration
Variability in Requirements

Light Controller Requirements Specification

1. The lights controller has the input "light_switch".
2. The light_switch can have the following states: OFF (0), ON (1), Automatic (2). There are no intermediate settings.
3. To determine light toggling in automatic mode the lights controller has the input "light_intensity".
4. The light_intensity can have values of 1-10.
5. The lights controller has the output "throughlight".

Headlight Behavior
6. The light_switch has two settings: OFF (0) or AUTO (1).
7. If the light_switch is set to OFF the headlight shall be OFF.
8. If the light switch is set to ON the headlight shall be ON.

Automatic mode
9. If the light switch is set to AUTO the headlight is dependent on the light_intensity.
10. If the light intensity is below Threshold_Off (60) the headlight shall be ON.
11. If the light intensity is larger or equals Threshold_Off (60) the headlight shall be OFF.
Variability in AUTOSAR Models
Variability in System Architecture
Thank You

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