Systematic Reuse Of Capella Assets with pure::variants – How to Capitalize on Your Assets

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Why MBSE?
Why Reuse?
Bienvenue
Welcome Aboard
Everything is potentially reusable
Quick Time To Market

Engineering Efficiency

Best Solution: Use Product Line Engineering

High Quality

Match for Market Needs
How to do PLE with Capella?
It is a simple equation

\[ N \times \text{Similar Product Engineering} + \text{Systematic Variant Management} = \text{Product Line Engineering (PLE)} \]
Basic Variation Concepts – Existence

- CheapAir
- PureAir

- Listen to Audio Announcement
- Watch Video on Cabin Screen
- Audio Signal
- Displayed Video
- Played Audio Video
- Store
Basic Variation Concepts – Parametric Variation
Helpful Variation Concepts – Propagation

Logical Architecture

Physical Architecture
Controlling Variation with Feature Models
Feature Model – Inflight Entertainment Domain

Legend:

= Mandatory          = Optional        = Alternative      = Or
Basic Variation Concepts Revisited – Existence

Cabin Screens
- Watch Video on Cabin Screen
- Private Screens
  - Watch Video on Private Screen

CheapAir
- Displayed Video
- Watch Video on Cabin Screen
- Played Audio Video

PureAir
- Displayed Video
- Watch Video on Private Screen
- Played Audio Video

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Helpful Variation Concepts Revisited – Propagation

Logical Architecture

Physical Architecture

CheapAir

PureAir

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Removal of this element alone MAY or MAY NOT be the „right“ propagation
Removal of the whole is what should be done.

Propagation has not enough knowledge (yet) to be smart here.
Basic Variation Concepts Revisited – Parametric Variation

The diagram illustrates a comparison between two variants, CheapAir and PureAir, showing differences in aspect ratio values for Cabin Screens and Private Screens in the context of digital and analog converter systems.
pure::variants Integrates With Market Leading Engineering Tools

Integrate engineering tools and management systems throughout lifecycle of product line

- Capella
- DOORS (NG)
- Papyrus
- MagicDraw
- Rhapsody
- RTC
- Rational Quality Manager
- C/C++/Java
- medini analyze
- AUTOSAR
- EMF
- MS Word / Excel
- Simulink
- PTC Integrity
- PLM / CAD / …
pure::variants Connector for Capella
AiO – Capella and pure::variants
Proudly made in Magdeburg, Germany, since 2001
Final Words
Summary

1. Strong Capella semantics ease variation
2. Feature models good match for Capella
3. pure::variants brings together MBSE and PLE in Capella
4. Modularization ongoing topic for Reuse in Capella