Synchronizer for Telelogic® DOORS
Integration

can be integrated into existing development processes independently from used programming language

Uses

automated resolution of relation conflicts
user specific views on variability models

Benefits

improved complexity management
all benefits of product line based development
The Challenge

- Extension of existing requirements management tools for dealing with variants and variability information:
  - efficiently produced answers for questions like:
    - Which requirement combinations are permitted?
    - Which requirement combinations are used in which product variant? Are there „unused“ requirements?
  - applicable to existing requirements data
Our Answer

Requirements become Features

pure::variants Synchronizer for DOORS

Variants become Requirements

Feature Model

pure::variants

Variant Model
pure::variants Synchronizer for DOORS

- Transforms DOORS Modules into pure::variants feature models
  - Feature models may be updated at any time without loss of information
- Uses pure::variants variability modeling capabilities
  - Powerful rule language
  - Conflict detection and resolution
- Transforms pure::variants Variant Models into DOORS requirements.
- Permits direct integration of variable requirements into software configuration process.
Step 1: Data import from DOORS

The transformation of DOORS Modules is controlled by a pure::variants wizard.
Initial Representation as a Feature Model

All requirements are initially represented as mandatory features.

During the transformation the Module hierarchy is used as the Feature model hierarchy. Requirement attributes can also be imported into pure::variants.
Step 2: Expressing variability

Variability is represented by changing the feature type, by adding restriction rules to features, or through feature relations such as Mutual exclusion.

The Feature model hierarchy may be freely rearranged and new features may be added to the model to represent more detailed variability information.

The Serial and USB connections are mutually exclusive.
This is modelled using the Alternative feature type.

Since Debugging is not mandatory for all products, it becomes an Option.
Step 3: Model Update

At any time requirement feature models may be updated from DOORS. During update feature properties and attributes will be changed if necessary.

Deleting or adding requirements in DOORS will also be replicated in feature models. However, the feature hierarchy will not be changed during update.
Step 4: Variant Definition

Variant definition is performed in a special view permitting selection of features from the defined feature models. Problems in the feature selection for a variant are displayed and, if possible, resolved automatically.

It is possible to attach any number of variant configurations to a requirements feature model.
Step 5: Variant Synchronization

Variants or variant groups can be synchronized back into DOORS.

By default each variant becomes a single requirement (of a specific requirement type) and links to all contained requirements.

Synchronization is initiated from pure::variants
By synchronising variants back into DOORS, users can now analyse variant-specific relations.
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Generation of variant specific *copies* of requirement Modules is also possible. These contain only the objects belonging to the variant and their superordinate objects.
Other Capabilities

- Support for requirement variation
  - Automatic conversion to alternatives in the Feature model
  - Multi-Level Variation
  - Selective import of the original requirement attributes
- Automatic connection of originals and copies through Links.
- Selection of the attributes to import on a per Module basis
pure::variants Synchronizer for DOORS

- Extension module for pure::variants

- Compatibility:
  - pure::variants 2.0 Server Edition/Developer Edition and newer (Win32, Linux, MacOS X)
  - Doors 8.0, [7.1] (support of older versions available on request)

- Availability: now
For More Information

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  the fast path for all your questions

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