OSLC-based Integration

Traceability Architecture <> Code
Our Experience: MID has implemented various OSLC Connectors

**OSLC Connectors**
- codeBeamer (RM, QM)
- Jama Connect (RM)
- Jira (CCM)
- Confluence (Consumer only)
- Smartfacts (Modeling Tool Connector for Cameo, Enterprise Architect, Innovator, MagicDraw, Simulink, Rhapsody)

**Frameworks**
- #genOSLC (OSLC provider and consumer programming framework)
- Tool Independent Link Index
Realizing a digital thread information model with OSLC vocabulary

Example: Automotive Spice (ASPICE)
Motivation

• Software Code is an important part of the digital thread
• Regulatory standards like ISO 26262 demand full traceability from the requirement into the implementation details of the code
• We use the OSLC standard, to establish traces from code to other OSLC domains (AM, CCM, QM, RM)
• We aim to support the use of various IDEs and various programming languages
Challenge: Linking OSLC Artifacts to Code

Cameo (AM)

DOORS Next (RM)

codeBeamer (QM)

Jira (CCM)

Eclipse

GIT

Bi-directional traceability Based on OSLC

Linking a use case to a function

```c
public void testMaxAcceleration()
{
    double v = 0;
    double t = 30;
    double f = 0.1;
    v = u / t;
    double p = v / t;
    assert (v < max);
}
```
Solution:

- Cameo (AM)
- DOORS Next (RM)
- codeBeamer (QM)
- Jira (CCM)
- Eclipse
- GIT

**Central Link Index**
- Retrieve the list of links
- Provide the delegated UI of model elements and diagrams
- Links
  - (Artifact Index)
  - (Local Config Index)
  - Link Validity
  - (Global Configurations)
- Stream the links into the Central Link Index

**OSLC Consumer**
- Add links into the code
- Consume Delegated Uis of link targets
- Generate a Traceability Report
- Language Profiles for C, C++, Java, XML

**OSLC AM Provider**
- View linked code as a delegated UI
- (Add Links)

**#genOSLC (Consumer)**
- TRS 2.0 Provider

**#genOSLC (Provider)**
Demo
Architecture
The #genOSLC Programming Framework allows to add an OSLC consumer and a provider to a tool with only a few days of effort.
#genOSLC Provides Large Parts of the Framework

## Framework functionality

### Configuration
- Manage root services
- Manage link types
- Manage friends
- Manage consumer white-listing

### Authentication mechanisms
- OAuth1a
- OAuth2
- OIDC
- SSO

### Functions available via REST
- Select a project by instance
- Select a "Component" by a project

### OSLC Functionality
- List the links on an item
- Set a Jazz GC as global context and filter the links by GC
- Add and remove a link
- Show a delegated UI of an item
- Allow to select an item via a delegated search & select UI
- Allow to navigate to an item
- Handle link validity
- Provide TRS streams for links and items
Next Steps

• Finalize the Link Index for GIT Links
• Add delegated code UIs
• Allow to add links from the link partner (AM, CCM, QM, RM)