Outlook

• Background and Motivation
• Overview of the Interoperability Specifications (IOS)
• The IOS Database
• Life Demo
Today’s situation at industrial companies

- **Fragmented IT**
- **High maintenance costs**

**Tool Layer**
- **Analysis Tools**
- **Functions Database**
- **Testing Databases**
- **Product Definition**
- **Many more...**

**Industrial Workflows**
- **Develop concepts**
- **Plan System**
- **Integrate System**
- **Develop System**

- **High manual effort** to handle data
- **Impact on quality and safety**

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The tool-integration problem

Point-to-point Integrations don’t scale

Monocultures lock you in

Maintenance, management, and change costs go up over time

Ongoing and unexpected costs drain resources

Creating new integrations is unpredictable

Past choices restrict present action and future vision

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Standardized Interoperability Specification (IOS)

- Users get better ways of working
  - Standardized Interoperability Specification
  - Connect tools to expose & link data

Enable New Engineering Methods

Open Integration Platform

Tool Layer

Connect tools to expose & link data
IOS Contents

Interoperability Specifications (IOS)

- Lifecycle Data Integration
- Data Synchronization/Exchange

Bridges

On-going activities from industrial use cases:
- OSLC ↔ FMI
- OSLC ↔ AUTOSAR
- OSLC ↔ ReqIF
- OSLC ↔ STEP

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Life Cycle Data Integration
Open Services for Life-Cycle Integration (OSLC)

Architecture of the Web

Linked Data

Standard Interfaces

"Just Enough" integration
Traditional Data Integration Approach
ALM Example

PLM
- ECAD
- Parts
- Options & Variants
- SW Config
- ECRs
- Configurations

ALM
- Test
- SW Changes
- SW Config
- Variant Specs
- Req
- Releases
- Defects
- Web Services

Java API
- Req
- Systems
- Test
- SW Changes
- SW Config

COM API
- Req
- SW Config
- Variant Specs
- SW Changes

Web Services
- IIS (Web Services)
- Java API
- COM API

MBSE
- Reusable Assets
- Operational Models
- Variation Points
- System Models
- Component Models
- Simulations

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Integration via OSLC
The IOS as a Multi-Standard
(Example: Public Automotive Use Case from the CRYSTAL Project)
IOS Data Base

• A central and cross-project catalog for all specifications of the IOS

• Enable reuse and industrial uptake of project results by other projects, system integrators, tool providers or standardization organizations

• The meta data of all IOS specifications are stored in a uniform format

• Links to the actual specifications are provided

• Enables efficient search and queries

• Maintained by the ICF
Fields of the IOS – Database

- Specification Name
- Version
- Category
- Specification Status (draft, final)
- Character (normative, informative)
- Short Description
- Link to Specification
- Contact Points
- Monitor / Development
- ICF Adoption Status (proposed, tracked, candidate, adopted)
- Associated Standardization Organizations
- Standardization Activities
The IOS Radar Chart

Informative, monitor

Candidate

Adopted

Tracked

Normative, monitor

FMI

OSLC Core

OSLC CCM

OSLC TRS

OSLC QM

OSLC RM

OSLC AsM

OSLC AM

IOS KM

IOS R/S

MBAT IOS AM

MBAT IOS QM

FMU ext

Data Integration & Exchange for Design
Co-Simulation

Informative, ICF member driven development

Normative, ICF member driven development

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Identified Specifications (1)

- OSLC Core Specification Version 2.0
- Requirements Management Specification Version 2.0
- Architecture Management Specification Version 2.0
- Quality Management Specification Version 2.0
- Asset Management 2.0 Specification
- Change Management Specification Version 2.0
- Configuration Management 1.0
- Tracked Resource Set Specification Version 2.0
Identified Specifications (2)

- The MBAT Interoperability Specification
- Formal Requirements Management
- Safety Management
- Draft proposal on EAST –ADL/AUTOSAR for IOS
- Knowledge Management
- Crystal IOS extension – OSLC Requirement Management
- Crystal IOS extension – OSLC Architecture management
- Crystal IOS extension – OSLC Quality management
- Variability management
- Functional Mock-up Interface for Model Exchange and Co-Simulation
- ... more to come
ICF Adoption Process

Horizontal: Specification becomes part of the Multi-Standard

Proposal: any Stakeholder can propose new candidates.

Selection: Expert team evaluates and selects proposals to be tracked.

Evaluation: Evaluation of the proposed parts in industrial scenarios.

Acceptance: Stakeholders vote to accept new part based on evaluation results.

Vertical: Specification becomes part of a formal standard like OSLC, FMI,...
1. You need a Microsoft Account. You can create one at https://microsoft.com/account for free

2. Go to https://safetrans06.sharepoint.com/sites/ICF

3. The first time you access the IOS DB you will be asked to request site-access rights. Please provide information about your intended usage (e.g., just read access)

4. You will be informed via email after access has been granted by the IOS Database administrator
IOS DB HowTo: Propose a new Specification

1. Go to https://safetrans06.sharepoint.com/sites/ICF
2. Open the “IOS Parts” List
3. Click on “New Item”
4. Fill out all required fields
   - (Please note that the “ICF Adoption Status” should be exclusively edited by the IOS Database Administrators)
5. Click “Ok”
6. The new specification (or any new updates to an existing specification) are first in the “Approval Pending” state, which means that they are only visible by you and the IOS DB Administrators
7. After approval by the IOS DB Administrators your are visible to all other users
And now

... the demo!