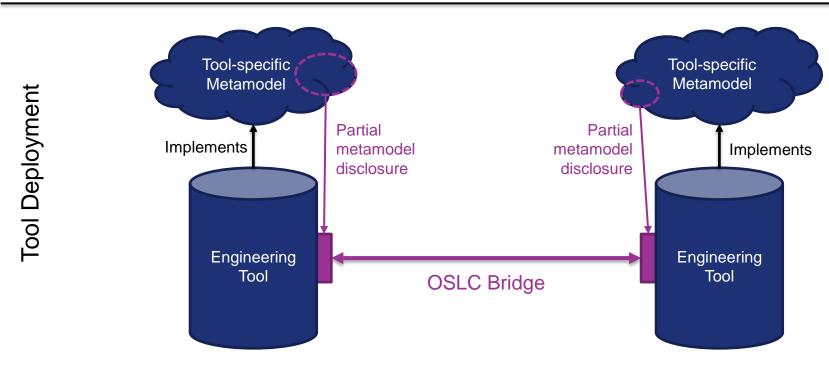# Assessment of OSLC for Managing Big *Engineering* Data

Demonstrating OSLC with the existing Airbus DS Engineering Infrastructure

Airbus DS

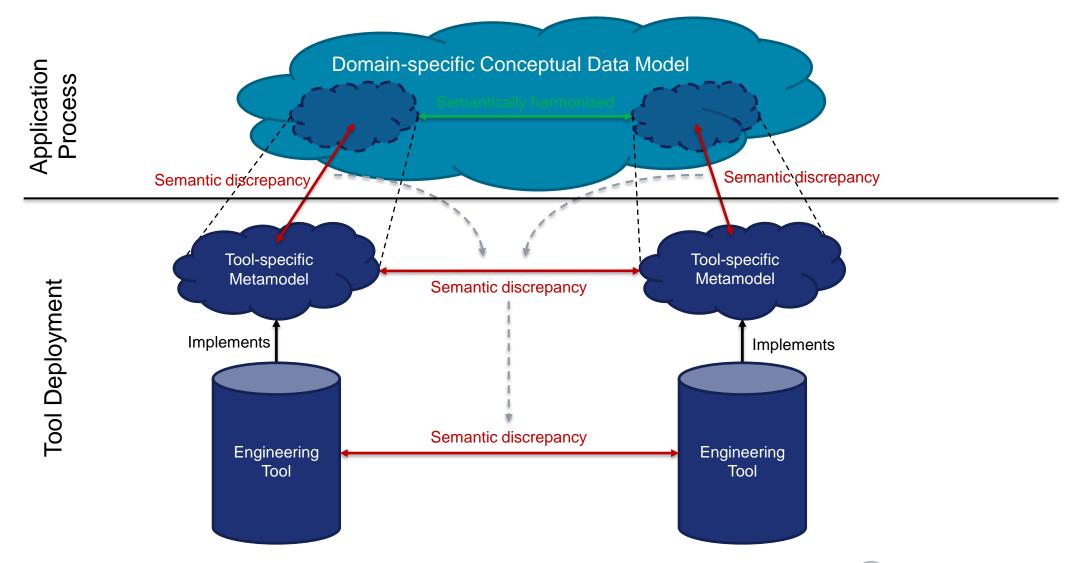Tobias Hoppe, Harald Eisenmann, Christian Hennig

13 October 2014

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OSLC is supposed to ease tool integration by providing a harmonized API that links exposed resources

Tool Deployment

Tool-specific Metamodel

Tool-specific Metamodel

Implements

Implements

Partial metamodel disclosure

Partial metamodel disclosure
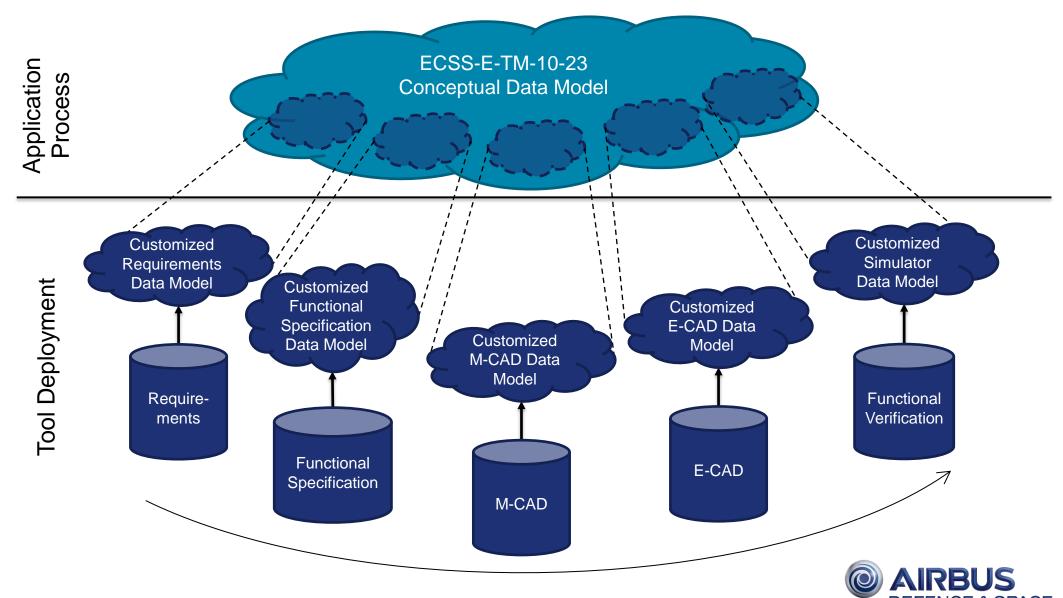
Engineering Tool

Engineering Tool

OSLC Bridge

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Proceeding with model-driven engineering requires a semantic mapping of concepts close to the application domain
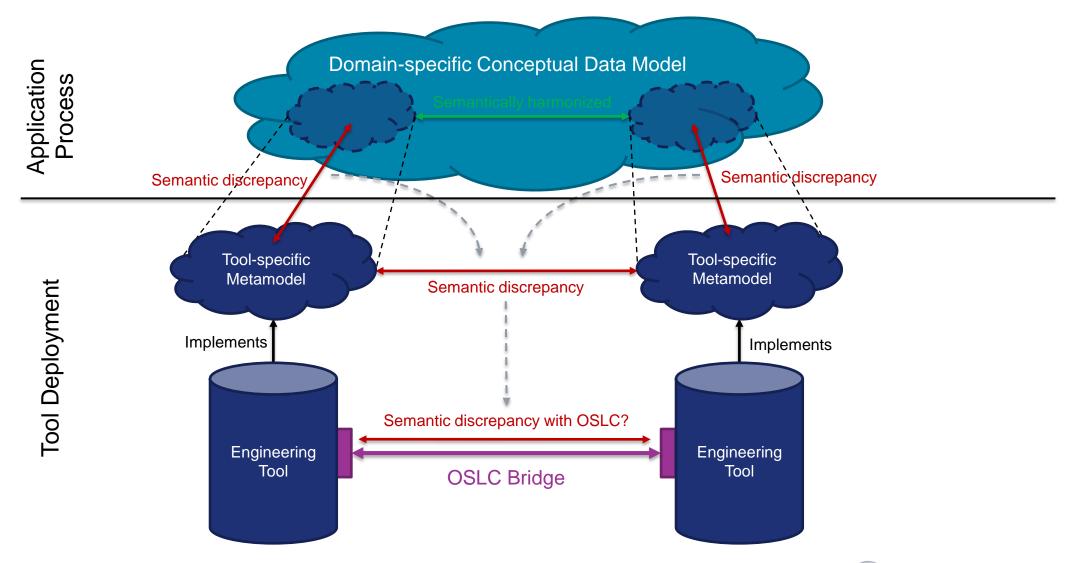
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ECSS-E-TM-10-23 is an emerging European Standard facilitating consistent cross discipline management of data
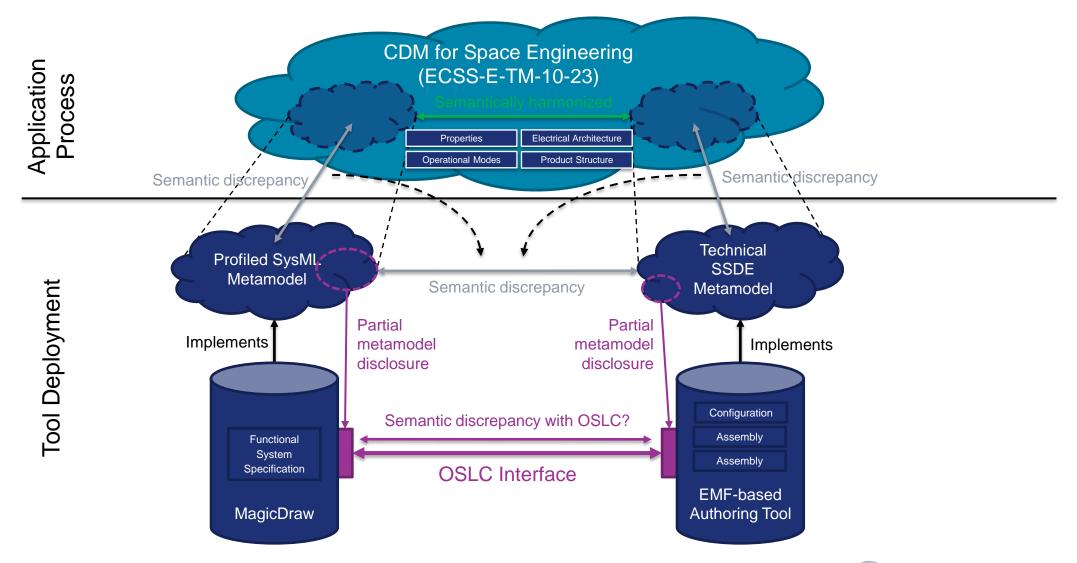
Assessment of managing semantics on tool integration level in the BIG *engineering* data utilizing OSLC technologies

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Proposed OSLC test setup with MagicDraw and an EMF based system authoring tool with different elaboration levels

Application Process

CDM for Space Engineering (ECSS-E-TM-10-23)

Semantically harmonized

| Properties | Electrical Architecture |
| Operational Modes | Product Structure |

Semantic discrepancy

Semantic discrepancy

Tool Deployment

Profiled SysML Metamodel

Technical SSDE Metamodel

Semantic discrepancy

Implements

Partial metamodel disclosure

Partial metamodel disclosure

Implements

Functional System Specification

Semantic discrepancy with OSLC?

Configuration

Assembly

Assembly

OSLC Interface

MagicDraw

EMF-based Authoring Tool

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Proposed activity to investigate the semantic integrity of engineering data over the life-cycle

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The product structure specifies the main system building blocks and their composition

Satellite design

Satellite configuration

Two distinct satellite assemblies with similar configuration
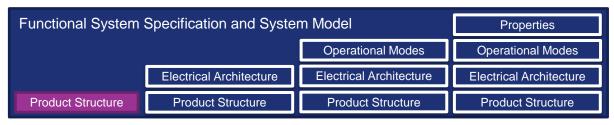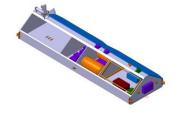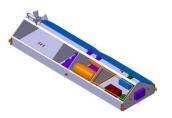
The system's product structure specifies the main system building blocks and their hierarchical composition, differentiating between
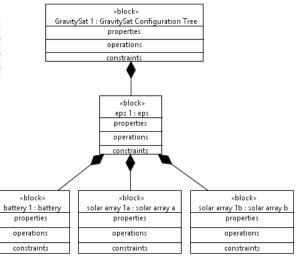
- Elements as designed
- Elements as configured
- Elements as built

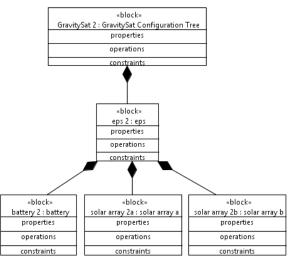Functional System Specification and System Model — Properties, Operational Modes, Electrical Architecture, Product Structure

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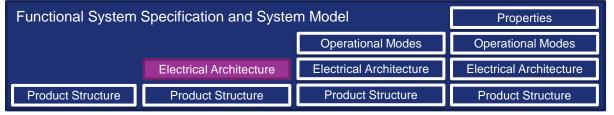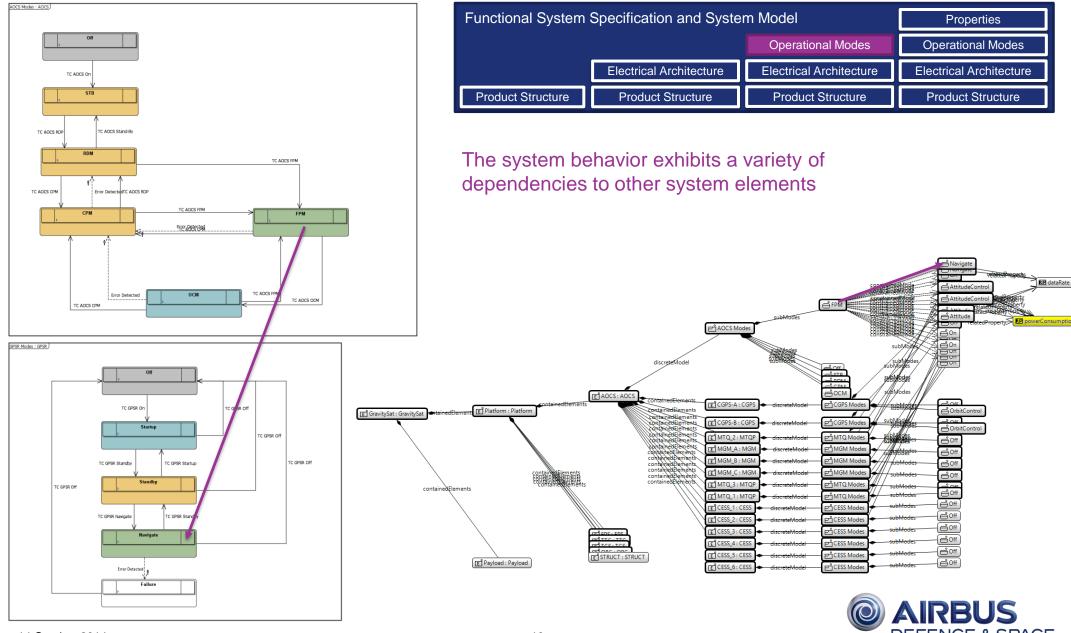# Electrical interfaces are specified in the Electrical Architecture on a functional and physical level

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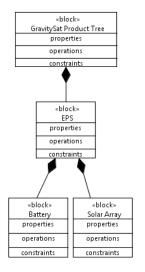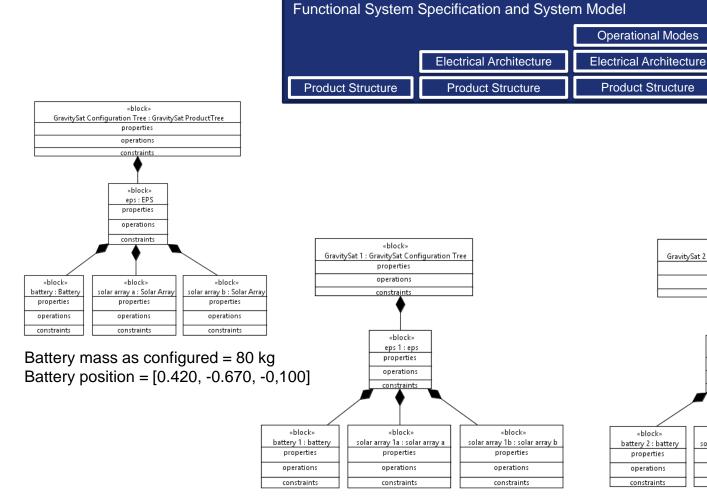
Operational modes specify the behavior of the system

Functional System Specification and System Model

			Properties
		Operational Modes	Operational Modes
	Electrical Architecture	Electrical Architecture	Electrical Architecture
Product Structure	Product Structure	Product Structure	Product Structure

The system behavior exhibits a variety of dependencies to other system elements

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Properties detail physical and non-physical characteristics and central engineering parameters of the system
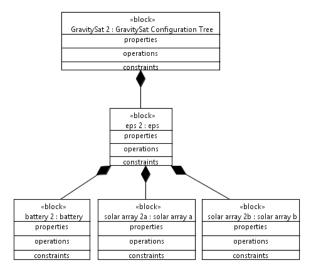
Battery mass
as specified = 80 kg

Battery mass as configured = 80 kg
Battery position = [0.420, -0.670, -0,100]

Battery mass as built = 78.9 kg
Battery position = [0.420, -0.670, -0,100]
Battery serial number = J741AD

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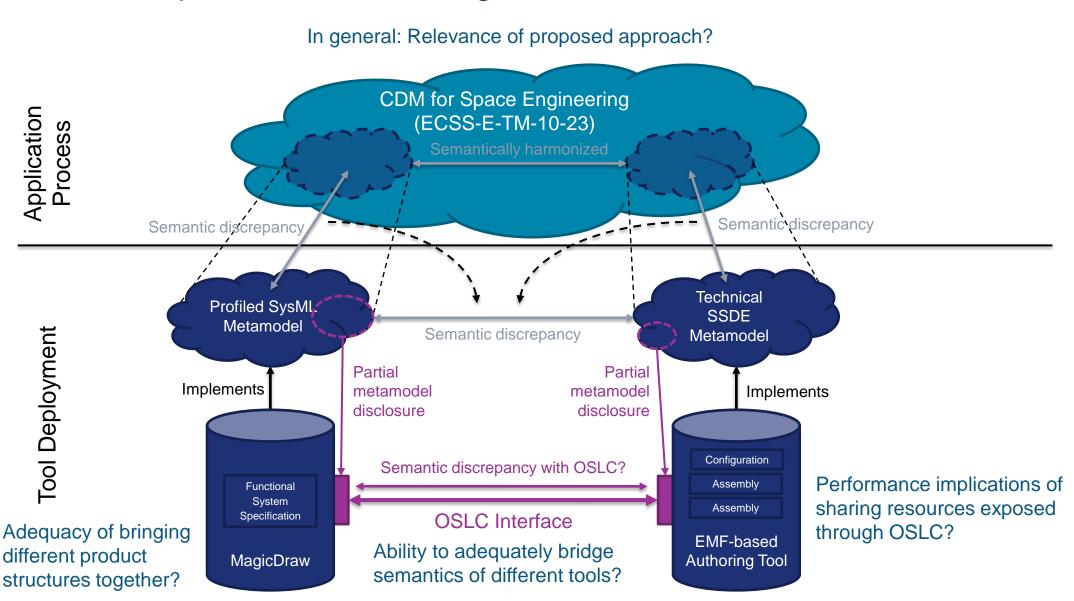
In order to proceed the following issues shall be addressed

In general: Relevance of proposed approach?

CDM for Space Engineering
(ECSS-E-TM-10-23)

Semantically harmonized

Application Process

Semantic discrepancy

Semantic discrepancy

Tool Deployment

Profiled SysML Metamodel

Technical SSDE Metamodel

Semantic discrepancy

Implements

Partial metamodel disclosure

Partial metamodel disclosure

Implements

Functional System Specification

Configuration

Assembly

Assembly

Semantic discrepancy with OSLC?

Performance implications of sharing resources exposed through OSLC?

OSLC Interface

MagicDraw

EMF-based Authoring Tool

Adequacy of bringing different product structures together?

Ability to adequately bridge semantics of different tools?

How detailed does data sharing have to be?

Utility of metadata, e.g. consistency or configuration management data?

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14 October 2014

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