Leveraging Interoperability for Improved Project Reporting

Grant Blythe
Mentor Graphics
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Grant Blythe Bio

Grant Blythe is a member of the Systems Engineering Products team at Mentor Graphics where he specializes in solutions for military and aerospace applications.

Prior to joining Mentor Graphics, Grant spent 10 years in systems engineering roles developing both commercial and military avionics. In addition to his role at Mentor Graphics, Grant is a member of the SAE S-18 Airplane System Development Committee which publishes the ARP4754A and ARP4761 standards.

Grant holds a B.S. in electrical engineering from Iowa State University and an M.B.A. from the University of Oregon.
Agenda

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• Intro
• Background (GPDIS 2014 & 2015)
  • Problem
  • Approaches
  • Proposed Solution
• Reporting
  • Project Management
  • Design Documentation
  • Compliance and Auditing
• Next Steps
Standards Compliance…

has become increasingly complex resulting in…

**Development Process Waste**

- **Transportation Waste**
  - Manually moving/importing/exporting data between multiple design tools
  - Manually reformatting/translating data for use in multiple tools

- **Motion Waste**
  - Staff switching & multi-tasking across several unintegrated tools
  - Searching for data in multiple locations

- **Waiting Waste**
  - Attempting to start tasks before inputs are ready
  - Tasks not performed according to priority (off critical path)

- **Over-production Waste**
  - Creating & maintaining multiple copies of the same data

- **Defects Waste**
  - Defects introduced during non-value add activities such as moving, copying, translating data
## Need for a LEAN Development Environment

### Current State
- Disjointed
- Erratic
- Variable
- Complex

### Ideal State
- Seamless
- Consistent
- Predictable
- Simple
But this is not an easy problem to solve.

Past integration approaches provided limited choice and coverage

Single repository

“How can I ever think all those vendors would be able to agree?”

Point-to-point integrations

“How can I ever upgrade one tool without breaking everything else?”

Past integration approaches were disruptive and slow to emerge

Universal metadata standard

“How did I ever think all those vendors would be able to agree?”

Standard implementations

“Did I really believe that every vendor would rewrite their tools on a single framework?”
Context System Design Manager (SDM)

Requirements Engineer

SDM Server

OSLC

Product Manager

Analytics

OSLC

Architecture

(e.g. Rhapsody)

SW Architect

(e.g. Rhapsody)

OSLC

HW Architect

(e.g. DxSD)

System

Requirements

(e.g. DOORS)

Change tool

Requirements

Data Manager

(e.g. ClearCase)

EE Designer

Network Designer

SW Design

(e.g. CSource)

Software Designer

Harness data

AUTOSAR data

C code

EE Design

(e.g. Capital)

Network tool

(e.g. VSA)

EE

Designer

OSLC

SW Architect

Designs

functional

system

architectu

requirements

Designs

network

tools

Designs

hardware

architectu

Develops

functional

system

developers

Develops

software

developers

Partitions

into

design

disciplines
Architect & Plan your project

Connect & Trace your data

Analyze & Report your progress
ARCHITECT & PLAN your project

Select and Define the Project Process

Tailored Context SDM Environment

Select from Available Tools and Services
CONNECT & TRACE your data

A consistent interface allows tracing and connectivity from any tool in your environment
- Designers and Reviewers can access preview data from dependencies and relationships without leaving the current tool.
Architect & Plan
your project

Connect & Trace
your data

Analyze & Report
your progress
Our OSLC Solution

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- **Requirements (e.g. DOORS)**: Systems Engineer
- **Change tool**: OSLC
- **Data Manager (e.g. ClearCase)**: Certification Lead
- **SDM Server**: OSLC
- **EE (e.g. Capital)**: EE Designer
- **Network (e.g. VSA)**: Network Designer
- **HW Architect (e.g. Rhapsody)**: SW Design (e.g. Courier)
- **SW Architect (e.g. Rhapsody)**: SW Architect
- **Product Manager Analytics**: Project Manager
- **Architecture (e.g. Rhapsody)**: Systems Architect
- **Develops functional system architecture**
- **Partition into design disciplines**

- **EE Designer**
- **Network Designer**
- **SW Designer**
- **Certification Lead**
- **Requirements (e.g. DOORS)**
- **Change tool**
- **Data Manager (e.g. ClearCase)**
- **SDM Server**
- **EE (e.g. Capital)**
- **Network (e.g. VSA)**
- **HW Architect (e.g. Rhapsody)**
- **SW Architect (e.g. Rhapsody)**
- **Product Manager Analytics**
- **Architecture (e.g. Rhapsody)**
Our OSLC Solution

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Requirements (e.g. DOORS)

- Systems Engineer

Change tool

- Project Manager

Data Manager (e.g. ClearCase)

- Certification Lead

- SW Architect (e.g. Rhapsody)

- SW Design (e.g. Sourcery)

- SW Design (e.g. Source)

- AUTOSAR data

- C code

- Harness data

- Network Designer

EE Design (e.g. Capital)

EE Designer

Networktool (e.g. VSA)

Hardware (e.g. DxSD)

Software Designer

EE Design

EE Designer

Partition into design disciplines

Develops functional system architecture

Partitions the system architecture and generates the OSLC API.
Our OSLC Solution
Our Stakeholders

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- Systems Engineer
  - Responsible for Product Design/Analysis
  - Must author design documents and reports

- Project Manager
  - Responsible for project budget and schedule
  - Must develop and report project metrics

- Certification Lead
  - Responsible for process compliance and coordination with regulatory authorities
  - Must generate process compliance reports and provide auditors with requested product data
Project Managers and Team Members have live metrics on project progress.
**Systems Engineer**

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- Live, compiled reports eliminate the need to update documentation by hand after design changes
Certification Lead

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- Trace reports enable reviews spanning both tools and domains
Thank you!

For questions, please contact:

Grant Blythe, Mentor Graphics
971-717-1810
grant_blythe@mentor.com