Airbus Group & Europe A&D strategy for PLM standards

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Content
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1. From EADS to Airbus Group
2. Airbus Group PHC & SSC strategy
3. Europe ASD & SSG strategy
...at a glance
A&D industry consolidation in Europe

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Handley Page
Avro
British Aircraft Corporation
GEC
Rolls Royce

Alfa Romeo
AvioAeritalia
Agusta
Sinai Machete
Otto Breda

Thomson
SAGEM
SNECMA

Dassault
Matra
Aerospatiale

MTU
Dornier
VFW
MBB

CASA
AISA

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CASA
AISA


10/07/2000 01/01/2014
Airbus Group  Revenues in Bn €

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* Sales revenues defence in billions of euros
Airbus Group Top Management structure

Denis Ranque  Chairman of the Board of Directors (BoD)
Tom Enders  Chief Executive Officer (CEO)

Chief Financial Officer  Harald Wilhelm
Chief Strategy & Marketing Officer  Marwan Lahoud
Chief Technical Officer  Jean J. Botti
CEO Airbus Group Inc.  Sean O’Keefe
Chief Human Resources Officer  Thierry Baril

PLM Harmonization Center

Airbus  Fabrice Brégier (CEO)
Airbus Helicopters  Guillaume Faury (CEO)
Airbus Defence and Space  Bernhard Gerwert (CEO)

Total number of employees: 144,061

December, 2013
“PLM (Harmonization) is a common EADS strategic approach and synergy creation for processes, methods, tools and data, supporting product development all along the lifecycle”

Synthesis from PHC Board (Nov, 2013)
Airbus Group PLM & Standardization governance roadmap

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EADS PHENIX Strategic Standardization Committee

ASD Strategic e-business Standardization Group

Yearly PLM Standardization Day

PLM & Standards Days

2007  2008  2009  2010  2011  2012  2013  2014
PLM Harmonization Governance in Airbus Group

1. ETC steers and validates PHC orientations

2. EVCOM defines PHC actions to allow achieving its mission at Airbus Group level
   → decides harmonization activities,…

2. OPCOM manages & operates cross-Divisional harmonization projects. OPCOM consolidates issues and operational needs and promotes common solutions.
   → operates harmonization activities,…

2. … with the support of ENABLERS, the competency network of specialist contributors to PHC projects and to operational deployments in Divisions…

4. … for the overall population of daily and occasional PLM users in Airbus Group
E-business Standards Governance in Airbus Group

SVP Business Improvement & Quality
Soeren Fischer

Strategic Standardization Committee

Airbus Group Chairman

Standardization Panel
AeroSpace & Defense (ASD) European association

20 member countries
30 member associations
Representing more than 2000 companies and around 675,000 employees
Europe ASD SSG members and links
E-business Standards Governance

Concept Development
- « Full virtual concept »

Design, manufacture & Assembly
- « Full 3D configured DMU »

Validation & Certification
- « Full virtual rigs »

Operations
- « Full virtual A/C enabled services »

Strategic Standardisation Group

Business Scenario & Use Cases

Radar Screens

Roadmaps

IT vendors

Standardisation bodies & projects
Aerospace and Defence Industry challenges

- Worldwide global marketplace,
- Small number of large prime contractors,
- Large global multi-tier supply chain shared with other industries (automotive, etc.),
- Very long product and service life cycles vs. life of software, equipment and people,
- Continuous innovation in products, processes and services,
- Often certification driven,
- Development of new service models including electronic customer services based on connection between in-service phase and design phase,
- ...
Increase coordination between A&D manufacturers, with the support of the PLM vendors, for:

- Developing **international open PLM standards**, and management of their evolutions,
- Developing associated **recommended practices** based on use cases and public test cases
- Setting up **Implementor Forums** for interoperability testing and speeding up the availability of applications with the appropriate level of quality

Competing standards and lack of coordination result in:
- *Increase of time / shift of availability*
- *Loss of money and decrease of Return On Investment*
- *Poorer quality and performance*
**ASD SSG “Through Life Cycle interoperability” white paper a strategic lever for A&D industry competitiveness**

**Vision:** ‘All players of the global aerospace value network will be able to share digital information securely throughout the life of the products and services’

**Objectives**

1. **Identify the business requirements** for A&D digital information interoperability, and analyze gaps with existing standards and practices,
2. **Identify a set of coherent standards** to use or to develop in order to cover the full spectrum of needs for interoperability,
3. Propose and **apply governance tools at strategic and technical level** (e.g. radar screen, interoperability framework, assessment process),
4. Develop a network of experts,
5. **Develop liaisons with all relevant standardization organizations**,
6. Identify and communicate the business benefits,
7. **Seek the widest exploitation of these standards** to maximise global benefits.

**Table of content**

1. Introduction
2. The interoperability challenge
3. Status of interoperability standards
4. Required standards architecture
   4.1 Global requirement
   4.2 Interoperability Framework
   4.3 Envisioned standards backbone
   4.4 Proposed recommendations
1. Strengthen the **STEP architecture approach**
   1) ensure interoperability between STEP standards
   2) provide unambiguous implementation methods;

2. Ensure **3D visualisation** format standards consistent with STEP standards;

3. Ensure **common data model for the ILS specifications** consistent with STEP AP239;

4. Promote **ASD-AIA ILS suite of specifications** & manage coherence with ATA specifications;

5. Develop and test the interoperability of next generation **PDM/PLM web services**;

6. Facilitate **data interoperability in the A&D Supply Chain** and align business process in the Supply Chain;

7. Supports **implementer forums** to test and validate operational solutions.
The core suite of STEP standards for PLM interoperability

- AP 209: Multi-disciplinary Analysis & design
- AP 242 (N1): Managed Model Based 3D Engineering
- AP 233: Systems Engineering
- AP 242 (N1): Managed Model Based 3D Engineering
- AP 238: CNC Machining
- AP 239: Product Life Cycle Support (PLCS)
- AP 235 (N2): Engineering Properties for product design & verification
- AP 210 (N2): Electronic assembly, interconnect & packaging design

Based on PLCS

Suite of AIA - ASD ILS Specs (SX000)

N1: STEP AP 242: Convergence of AP 203 and AP 214
N2: Study not started
STEP AP 242 ED1: information model overview

- **PDM**
  - Part identification, Physical part
  - Characteristics, Document Management
  - General management information
  - Activity and work management
  - Effectivity
  - Specification, Breakdown and configuration

- **Production Rules**
  - Requirements
  - Process Planning

- **Mating definition**

- **3D Machining Form Features**

- **3D shape Data Quality**

- **3D shape (explicit and parametric)**
  - 3D exact explicit geometry
  - 3D tessellated explicit geometry
  - 3D parametric & constr. History

- **3D PMI**
  - (Product & Manufacturing Information)

- **3D assembly constraints**
  - Coincidence

- **3D kinematics**

- **3D Composite design**
Radar screen

Available external standards

Candidate

Adopted

Monitor external development

Participate in external development

ASD development

STEP
ASD S-Series
TSCP
3D visualisation
LOTAR

SX000i
S5000i
S5000D
S4000M
S5000D
S3000L
EN9300-3
EN9300-3L
EN9300-4L
EN9300-4V
EN9300-SL
EN9300-1L
EN9300-JT V1
EN9300-JT V2
SN9300 LOTAR

Blip available
Blip in preparation
Current ASD SSG actions

Version: V1.5

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ASD SSG public web site

http://www.asd-ssg.org/

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The ASD Strategic Standardization Group (SSG)

Overview

The Strategic Standardization Group (SSG) was set up in October 2008 by a group of European manufacturers, A&D associations and military governmental agency in order to share efforts of development of common A&D e-Business standards and associated harmonized European policies for operational use.
Next “STEPs” for the European A&D industries

PLM standards

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• Speeding up the availability of COTS applications for:
  – STEP AP 242 E1 “Managed Model Based 3D Engineering”
  – STEP AP 209 E2 “Multi-disciplinary analysis and design”
  – STEP AP 233 “Systems Engineering”

• Development of STEP AP 242 edition 2
  – Extensions to: electrical harness, additive manufacturing
  – Finalization of the PDM harmonization with AP 239 ED3 PLCS
  – Enhancements of: 3D PMI, Composite design, 3D geometry, etc
  – Successful kickoff conference on the 2nd of Sept. 2014

• Preparation of STEP AP 239 ED3 PLCS project
  – Preparation of an international workshop for a white paper

• Launch of the MoSSEC project

• Continuation of the AIA – ASD suite of ILS standards in consistency with ATA e-business

• Extension of the scope of the NAS / EN 9300 LOTAR standards