



## Aerospace and Defence Interoperability – Collaboration between AIA and ASD Teleconference 2017-10-18

0900-1200 EST, 1400-1700 GMT and UTC, 1500-1800 CET

### In attendance

Yves Baudier	Airbus	ASD SSG Chair, AP239e3
Howard Mason	BAE Systems	AIA BTIC Chair, SC 4 Chair
Rusty Rentsch	AIA	VP Technical Operations and Workforce
Gery Mras	AIA	AIA EMC, PSC
Tom Bluhm	Boeing	AP242
Rick Zuray	Boeing	LOTAR
Evelyn Thompson	LM	AIA BTIC – WAWF, X.12
Bob Hawiszczak	Raytheon	AIA EMC
Kenny Swope	Boeing	SC 4 Chair-elect
Rich Forselius	UTC	AIA SGB
Phil Williams	TD-info	ASD SSG
Amanda Santiago	NG	AIA BTIC
Jean-Yves Delaunay	Airbus	ASD SSG, LOTAR
Andy Hall		
Rick Roelecke	L-3	
Chris Carnahan	AIA	Standards Director
Pushpa Merchant	EPS	
Jean Brange	Boost	AP242, SC 4 3D Visualisation
Mike Kelly	NG	AIA PSC
Matt DeLaqui	Harris	
Chris Colp		
Bill Barthel	Plexus	
Vanishi Murthy		
Paul Segura	Boeing	
Judith Crockford	Airbus	MosSEC
Michael Lewis	BAE Systems	

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## 1. Introductions and welcome

Within the scope of the memoranda of understanding governing collaboration between the AIA and ASD on matters related to interoperability, the chairs of the AIA Business Technology Interoperability Committee (Howard Mason) and the ASD Strategic Standardization Group (Yves Baudier) convened the teleconference to review status and progress on existing collaborative efforts and explore the potential for undertaking further tasks to address product and supply chain interoperability to meet the requirements of the aerospace and defence industry.

It was noted that the call had been opened up to the full range of related AIA Committees, including the Technical Operations Council, Engineering Management Committee, Product Support Committee, Quality Assurance Committee and Standards Governance Board, as well as the BTIC.

## 2. Progress on solutions– status, five year plan and issues

- **STEP AP242e2** (Jean Brange – ASD/Tom Bluhm – AIA)

*See presentation [P1](#)*

The project is delivering a number of Change Requests to provide a range of new capabilities in the design and manufacturing domains, although there have been some delays. Additional tasks to complete the harmonization with modules required for AP239, as well as deployment of the enhanced STEP architecture are taking second priority at present. It was to be hoped that future incremental enhancements could be processed much quicker to deliver new editions more rapidly while retaining consistency. It was therefore proposed that work be launched in the second half of 2018 to develop a roadmap showing the capabilities that would need to be added to AP 242 over the next five years to meet industry information needs, with priorities to drive annual capability increments.

In response to a question from Gery Mras on vendor involvement, it was noted that vendors were actively involved in both the development activity and the testing of prototype and production software through implementer forums.

- **LOTAR** (Rick Zuray – AIA/Jean-Yves Delaunay – ASD)

*See presentation [P2](#)*

The current development process and the seven domains of activity were highlighted. Key deliverables for CAE and PDM archiving. Work in 2018 will focus on composites and electrical wiring harnesses. Need extensions to STEP to cover continuously expanding scope of systems, with priority for Model-based Systems Engineering (MBSE) to be defined in March 2018, Engineering Analysis and Simulation, and Electronics. The ISO STEP schedule needs to be driven to meet these needs, and there will need to be new capabilities for the CAX-IF and PDM-IF to support the extended scope. The need to agree on consistent formats for information exchange was emphasised.

- **STEP AP239e3** (Yves Baudier – ASD/Rick Zuray – AIA)

*See presentation [P3](#)*

The business case for the development was presented, covering updates to meet requirements from implementations plus development of Core Technical Capabilities within the STEP New Architecture, as well as a major effort to ensure that the STEP Module and

Resource Library will consistently support both AP 239 and AP242. Harmonisation is under way, but there are some risks due to lack of funding of the later stages. The plan is to complete the harmonisation activity by March 2018.

- **ILS suite of specifications** (Gery Mras – AIA)

Three year plan for development, based on common core data model linked to PLCS It was observed that there was growing interest from MoDs with a trend towards mandating such standards.

- Links with ATA eBusiness activities

It was noted that the development of a second edition of S4000P should further reduce any opportunity for accusations of breach of copyright.

- **MoSSEC** (Judith Crockford)

*See presentation [P4](#)*

Progress on the development of the initial draft was noted. Key challenges are the link to the evolving enhanced STEP architecture, the definition of the required web services, and the associated testing tools. There was a need to bring together the MBSE groups from AIA EMC, MoSSEC, PDES inc, and the ASD SSG to drive requirements definition by March 2018.

- **Geometric Dimensioning and Tolerancing** (Jean-Yves Delaunay – ASD)

*See presentation [P5](#)*

The different development paths in the ISO and US environments were noted, with the implications of divergent requirements in CAD systems, STEP, translators and the testing environment. A gap analysis was available. A further challenge had been identified relating to the definition of PMI associated to features. It would be essential to ensure consistent semantic definitions of such PMI in the future. It was again recognised that aerospace industry involvement in the basic work in ASME and ISO/TC 213 would be required in order to ensure common solutions at the data model level for exchange, sharing and archiving purposes.

- **STEP Enhanced Architecture** (Jean Brangé ASD/Tom Bluhm - AIA)

*See presentation [P6](#) - awaited*

The main principles of the STEP enhanced architecture were presented. It was emphasised that continued investment would be required to sustain the development and automated production infrastructure to ensure the quality of the standard and the underlying STEP Module and Resource Library (SMRL).

### 3. New requirements – functional requirements for next 5 years

- **STEP roadmap** (Jean-Yves Delaunay – ASD/Tom Bluhm - AIA)

*See presentation [P21](#)*

The various requirements already identified in the meeting to address tooling, piping, manufacturing extensions and LOTAR would be covered in the proposed White Paper on AP 242 e3 and the roadmap for the various parts. It was emphasised that the roadmap should include the sustainment of a common resource library, and the development of appropriate PLM services.

- **Proposed ISO/IEC Database of Product Properties and Classification/PLIB** (Howard Mason – global view)

*See presentation [P22](#)*

The report of the joint ISO/IEC task force on the Database of Product Properties and Classifications is seeking to expand the existing IEC common data dictionary to support all types of product characteristics, based on the ISO PLIB standard, and potentially using the ISO 22745 Open Technical Dictionary approach. The report has been accepted by ISO and IEC, and a phased approach is proposed. This could impact on the full range of product standards in both ASD and AIA, as well as ISO/TC 20. It was expected that there would be increased use of such digital part libraries across the supply chain, and that the matter should be reviewed by a joint AIA-ASD task team.

- **XML strategy for transactions** (Evelyn Thompson – AIA)

The US DoD is increasingly using XML data for exchanging contracts, and in other internal systems. It would seem useful to avoid converting this to and from X.12 for external transactions. The various BoostAero messages were in use in the BoostAeroSpace hub after adoption through UN/CEFACT, and were also being adopted by the Japanese automotive industry. A conference call will be convened to explore a common statement of direction.

- **Visualisation** – 14306, PRC, 3D-PDF, X3D (Jean Brange – Global view + ASD)

*See presentation [P23](#) - awaited*

The range of existing 3D visualisation initiatives and the work to permit them to consume STEP geometry was noted. Kenny Swope reported on the work in the PDF environment. It was proposed to launch a new ISO working group under SC 4 on visualisation and other consumption methods for product data, which would link into the various initiatives in a consistent manner. It was proposed that the aerospace industry should address its requirements through participation in the proposed ISO JWG.

- **Other requirements and opportunities**

- AIA is developing a paper on digital transformation which seems to provide a framework for many current hype-cycle initiatives.
- ASD is beginning to look at Smart Manufacturing in more detail
- Aerospace and Defense PLM Action Group (Kenny Swope)

*See presentation [P24](#)*

The group had been established under the CIMdata PLM Community Program, to set a common direction and identify shared requirements avoiding national agendas and providing a bloc to influence standards bodies and vendors. Several white papers had already been produced and ongoing activities were addressing:

- Global Collaboration
- Obsolescence Management
- Multiview BOM - develop a common view of business rules and logic
- Model-based definition for regulators
- MBSE

#### **4. Adoption strategies – vendor, business**

- **Strategy for Implementer Forums** (Jean-Yves – ASD)

*See presentation [P31](#)*

Progress in the various IF was highlighted and a number of future requirements identified. These included new areas of work such as PLCS, electrical, composites, requirements, verification and validation, and the emerging need to consider inter-related sets of data, and to provide benchmarks. Concern was expressed at the possible proliferation of forums and the associated costs, and it was agreed that there was a need for a business case for a multi-industry global view, with a sharing of the risks and rewards. Greater automation of the testing was desirable.

- **Implementation Strategies**

There is an opportunity for organisations such as AFNET and PDES, inc to promote the services for implementer forums. The need for a Forum for requirements management was proposed by Europe, and the scope of PDM-IF could expand to xDM-IF.

## **5. Coordination with other Aerospace and Defence activities**

The role of the Aerospace and Defense PLM group was noted, with the aim to rapidly respond to industry needs to fill gaps in deploying industry standards.

## **6. Conclusions and next actions (Howard Mason/Yves Baudier)**

The key messages of the meeting were summarized for feedback into the AIA and ASD structures.

A number of key standards policy directions were identified:

- Need 5 year roadmap of requirements to drive standards priorities
  - Use cases to drive base standards eg ILS, LOTAR, MoSSEC
  - Strategy required for engagement in external standards activities – GD&T, IT
  - Vendor engagement essential for testing to support new capabilities
  - Customer engagement necessary for adoption, through mandating the use of standards as the preferred approach
- Need to sustain investment in standards to ensure adequate performance of the standards process to deliver to industry requirements
- Need to ensure resources/tools/budget to support infrastructure

Within the context of existing active collaborations:

- Collectively influence the development of STEP standards to support the LOTAR project and the information requirements of implementations such as MoSSEC and the ILS specifications, using the existing mechanisms.
- Need to sustain resources for supporting the STEP publication infrastructure
- Need to sustain a single SMRL for all STEP APs and support the harmonisation effort in AP 239e3
- Continue collaborative development and implementation of ILS specs. Converging requirements for civil and military markets across MSG-3 and S4000P should be used to drive a common process and data model
- Opportunity to interact with A4A over a planned development of configuration management messages, in order to avoid conflict/duplication
- Opportunity to bring together MBSE interests from AIA EMC, MoSSEC, PDES inc, ASD and the ASD SSG to define a consistent set of requirements
- Need to ensure a consistent approach to GD&T standards and feature-based PMI between the US and ISO activities, in order to allow a single approach within STEP

- Support the STEP enhanced architecture to facilitate implementation and deployment

A number of new opportunities should be explored:

- Direction set for AIA/ASD collaboration on XML transactions
- Common approach to be pursued via ISO JWG for definition of 3D visualisation scenarios and solutions for enterprise applications and standard parts (ISO standards mapped to STEP backbone)
- A joint AIA-ASD task team should be established to define the industry requirements for a Database of Product Properties and Classes and how it should be exploited for interoperability and standard parts definitions.
- Opportunity exists for adopting common recommendations on Smart Manufacturing.

Those present considered that the meeting had once again been a very useful exchange to provide visibility of the 2018 work programmes, leading to a number of concrete follow-up actions. It was agreed that such exchanges should continue to take place twice a year.