

**Aerospace and Defence Interoperability – Collaboration between AIA and ASD**  
**Teleconference 2019-11-25**

0600-0900 PST, 0900-1200 EDT, 1400-1700 BST, 1500-1800 CET

Present

Brian Chiesi	Boeing – Chair AIA BTIC
Yves Baudier	AFNET – Chair ASD SSG and Co-lead AP239e3
Phil Williams	TDinfo – ASD SSG and Chair ASD PSSG
Kenny Swope	Boeing – Chair ISO/TC 184/SC 4
Rick Zuray	Boeing – Co-lead LOTAR and AP239e3, member AIA-BTIC
Pari Aliyeva	Director ASD-STAN
Jean Brangé	AFNET, Co-lead AP242e2 and member JWG16, ASD SSG
Adrian Murton	Airbus – ASD SSG, Co-lead AP243 MoSSEC and LOTAR MBSE
Mark Williams	Boeing – Lead PDES MBSE WG
Tom Bluhm	Boeing – Co-lead AP242e2
Samy Scemama	Boost Aero International – ASD SSG
Jean-Yves Delaunay	Airbus – ASD SSG, Co-chair LOTAR, Chair ASD-STAN Domain 7
Steve Carter	RR – ASD SSG, UK TDinfo, Chair CEN/TC
Martin Hardwick	President, STEP Tools
Frédéric Darré	Airbus – PDM-IF, ASD SSG
Pierre Duchier	Airbus – CAx-IF, ASD SSG
Sophie Herail	CIMPA – EWIS-IF
Leif Gyllstroem	SAAB – Lead DMEWG, ASD PSSG
Ramon Somoza	Airbus – ASD-SSG and ILS Council

Apologies

Pierre Faure	Dassault Aviation – Co-chair ASD SSG
Bernhard Seidel	ASD PSSG and ILS Council

The meeting was held in the context of the memoranda of understanding governing collaboration between the AIA and ASD on matters related to interoperability, to review status and progress on existing collaborative efforts and explore the potential for undertaking further tasks.

Participants were welcomed by the chairs – Brian Chiesi – AIA BTIC and Yves Baudier – ASD-SSG

## **Presentation of respective groups**

Brian Chiesi and Yves Baudier presented their respective groups. See:

- [Att01\\_AIA BTIC Overview.pdf](#)
- [Att02\\_ASD\\_data\\_interoperability.pdf](#)

**Both associations target the same objective in regards to data interoperability for Aerospace and Defence.**

## Progress on solutions

- **STEP AP242e2** (Jean Brangé – ASD/Tom Bluhm – AIA) - [See Att03\\_Status\\_AP242-ed2.pdf](#)
  - Successful ballot of ISO 10303 STEP AP242 edition 2
  - Several enhancements and extensions compared to ed1
  - ISO IS publication expected early 2020
  - STEP AP242 ed3 project in preparation

**Brian and Yves congratulate the team for the outstanding result.**

- **STEP AP239e3** (Yves Baudier – ASD/Rick Zuray – AIA) – [See Att04\\_AP239 ed3 Project report.pdf](#)
  - Core Model (Part 4000):
    - Harmonisation activities continue; submission of Core Model (Part 4000) CD planned Q1 2020
    - Core Model is an essential integration layer for AP242, AP243 AP239 and all future APs (or new versions) developed using the STEP Extended Architecture
  - AP239 ed3:
    - Will build on Core Model, adding PLCS-specific Core Technical Capabilities
    - Plan to map with AIA-ASD ILS Specifications.
    - AP230 ed3 NWI (with draft CD) to be submitted at ISO Q1 2020
    - Required resources still to be secured (e.g. project charter in progress at PDES, Inc.)

**Action: AIA and ASD companies to be urged to contribute to AP239 ed3 by providing experts/resources**

- **AP243 MoSSEC** (Adrian Murton – ASD / M. Williams – AIA) – [See Att05\\_AP243\\_MoSSEC.pdf](#)
  - DIS planned end of 2020
  - Use of OpenAPI as a mechanism for specifying and testing web services
  - Continued coordination across MBSE activities required

**Action: AIA and ASD to continue engagement with AP 243 development and other MBSE initiatives**

- **LOTAR** (Rick Zuray – AIA / Jean-Yves Delaunay – ASD) – [See Att06\\_LOTAR.pdf](#)
  - Rolling programme of enhancements defined in 5-year roadmap
  - Process changes may be needed to fit with enhanced AIA and CEN procedures, noting NWI procedure

**Action: AIA and ASD to support the development of LOTAR specifications in relation with certification authorities (FAA and EASA)**

- **ASD-AIA IPS suite of specifications** (Phil Williams – ASD) – [See Att07\\_ILS Spec Overview.pdf](#)
  - Developed in collaboration between ASD and AIA through a specific MoU
  - Name changed from ILS (Integrated Logistic Support) to IPS (Integrated Product Support) to reflect extension to In-service support
  - Data model in support seen as a differentiator
  - Planned mappings with AP239 ed3
  - Growing interest from Defence industries and DoD/MoDs

**Action: AIA and ASD to support the development of shared IPS specifications and their mapping with AP239 ed3**

- **XML strategy for Supply Chain transactions** (Samy Scemama – ASD) – [See Att08\\_Boostaero.pdf](#)
  - Deployed on European side, it would make sense that is used also by US industries.
  - Need to look at range of messages supported in BoostAero, including VMI
  - Need to look at interface to WAWF, including S2000M

**Action: specific AIA/ASD call to be organised in January 2020**

- **Visualisation** – 14306, PRC, 3D-PDF, X3D (Jean Brange – ASD/ Kenny Swope AIA) – [See Att09\\_JWG16 & visualisation.pdf](#)

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**Action: AIA and ASD to engage with JWG16 with specific use cases**

- **STEP extended architecture** (Jean Brangé – ASD/Tom Bluhm – AIA) – [See Att10\\_STEP Extended Architecture.pdf](#)
  - Required for harmonisation purposes and interoperability of STEP Application Protocols
  - Modelling methods and languages (SysML, OWL) inspired from OASIS PLCS
  - Integrated development environment (Git)
  - NDocs to be balloted at ISO in the next weeks.

**Action: Companies to support continuing development of STEP technology – and contribute to maintenance costs.**

## New requirements

- Model Based Systems Engineering
  - **Model Based Verification** (Kenny Swope AIA) – [See Att11\\_ModelBasedVerification.pdf](#)
    - New Prostep project supported by A&D PLM Action Group
  - **LOTAR MBSE** (Adrian Murton – ASD / M. Williams – AIA) – [See Att12\\_LOTAR MBSE.pdf](#)
    - List of targeted LOTAR procedures for MBSE data archiving is defined
    - NAS9300-500 (Fundamentals and concepts) is 90% complete, NAS9300-520 (Long term archiving and retrieval of analytical models) is 50% complete.
  - **STEP AP233 ed2** (Yves Baudier – ASD) – [See Att13\\_AP233 ed2.pdf](#)
    - Opportunity and benefits expected from a future AP233 ed2 project
- Smart Manufacturing
  - IEC/TC 65/WG 23 **Smart Manufacturing Framework and System Architecture** (Steven Carter – ASD) – [See Att14\\_STEP Extended Architecture.pdf](#)
    - Work in progress at ASD SSG to initiate a Manufacturing data interoperability WG (incl. Digital Thread, Digital Twin, ALM 3D printing)
    - Manufacturing Digital standards of interest covers a wide range of standard bodies and various ISO/SC's
  - JWG 21 **Smart Manufacturing Reference Model(s)** (Kenny Swope AIA) – [See Att15\\_Smart Manufacturing Reference Model\(s\).pdf](#)
    - Objective is to prepare a standardized unified Reference Model to support ISO TC184 and IEC TC65 activities in Smart Manufacturing
  - ISO 23247 **“Digital Twin Framework for Manufacturing”** (Martin Hardwick) – [See Att16\\_Digital Twin Framework.pdf](#)
    - The Digital Twin framework for manufacturing will be finished by the end of 2020. The standard is ISO 23247 which you can remember as being something that will save you money not just 23 hours a day, but 24 hours a day, 7 days a week.
    - The key is the delivery of digital twin models to your customers and the regulators which will enable many efficiency savings and automation opportunities.
    - WG15 is holding a meeting at Boeing Longacres from February 3 to 7 to start working on digital twin use cases – to be promoted.

**Action: AIA and ASD to monitor progress of these initiatives, to orient and contribute when needed and to consider for adoption.**

## Adoption strategies

- Strategy for Implementer Forums
  - **CAX IF** (Pierre Duchier – ASD / Brandon Sapp – AIA) – See [Att17\\_CAx-IF.pdf](#)
  - **CAE IF**: no presentation
  - **EWIS IF** (Sophie Hérail – ASD / Dan Ganser – AIA) – See [Att18\\_EWIS-IF.pdf](#)
  - **PDM IF** (F. Darré – ASD / Jeff Klein ?? – AIA) – See [Att19\\_PDM-IF.pdf](#)
  - Preparation of an **MBSE-IF** focused on the archiving and retrieval of analytical models – See LOTAR MBSE presentation ([Att12\\_LOTAR MBSE.pdf](#))
  - Preparation of the **RV&V IF** (Yves Baudier – ASD) – See [Att20\\_RV&V-IF.pdf](#) (not presented)
  - **Implementer Forum strategy** (Jean-Yves Delaunay – ASD) – See [Att21\\_Implementer Forum Strategy.pdf](#) (not presented)
- **Public test cases** (just mentioned, not discussed)
  - Bicycle test case
  - Stratoliner test case
- **Training strategies** for standard adoption and deployment (not discussed)
- **Mentoring of young engineers** to develop next capabilities (not discussed)

**Action: AIA and ASD to coordinate and put in place all elements (implementer forums, training, expert network) to ensure the data interoperability solutions are deployable with the right quality and the related knowledge is maintained.**

## Coordination with other Aerospace and Defence activities (All)

- **A&D PLM Action Group “Standards” WG** (Kenny Swope – AIA / Jean-Yves Delaunay – ASD) – See [Att22\\_AD-PLM-AG\\_Standards-WG.pdf](#) (not presented)

## Conclusions

The call was an opportunity to review AIA and ASD organisation for data interoperability as well as the whole set of activities where AIA and ASD members are engaged.

Due to the lack of time it was not possible to discuss all items in the agenda.

It is decided to organise another meeting in January 2020 with a small group to agree on next actions and agenda and dates of next AIA-ASD collaboration calls.

NB: some items from the January 2019 call that were not discussed during this call:

- Update to AIA PDM recommendation: ASD interest in supporting review and update as necessary. Proposal to circulate current edition for “Systematic Review” in ASD and SSG to gather comments as input for joint revision project
- Common standards procedures. ASD now having to adopt New Work Item procedure, AIA now accredited by ANSI, need to understand implications for joint voting procedures