



**AeroSpace and Defence**  
Industries Association of Europe



**BUILDING ON BEST PRACTICES – SECTORIAL CASE STUDIES FOR INDUSTRIAL DATA**



**Business value of standards for the Aerospace and Defence sector**

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*Standards in support of the industrial data value chain, 28 September 2021*



**REDUCE COSTS**  
Interoperability between organizations and re-use of engineering solutions across projects is imperative to the elimination of wasted costs and to improve data quality.

## Ensuring digital interoperability through standards

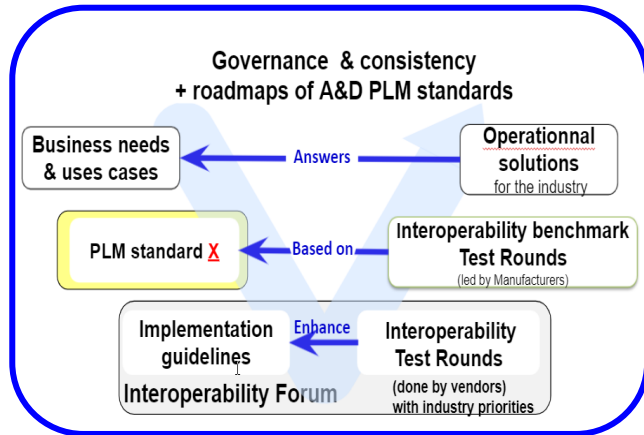


In the 21st century, efficient inter-enterprise digital collaboration has become critical and vital for all main Aerospace and Defence (A&D) programs. In order to enable and speed up the deployment of digital processes and tools across the extended enterprise from the OEM to its supply network and to customers, open standards are mandatory. The cost and complexity arising from the integration of proprietary formats, processes and tools have to be avoided.

Participating in the SSG will allow industries to access information on cutting-edge eBusiness standards and to contribute to their developments, updates and implementation.



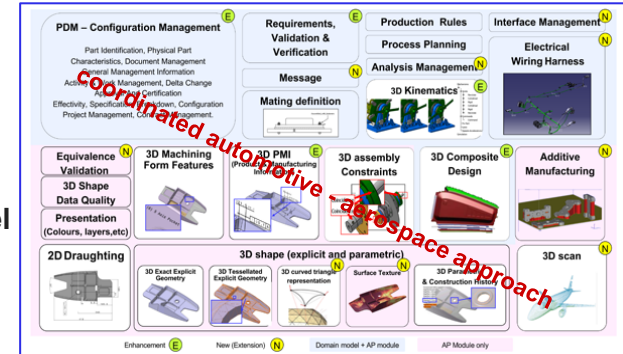
# How aerospace & defence industry develop Interoperability Standards?



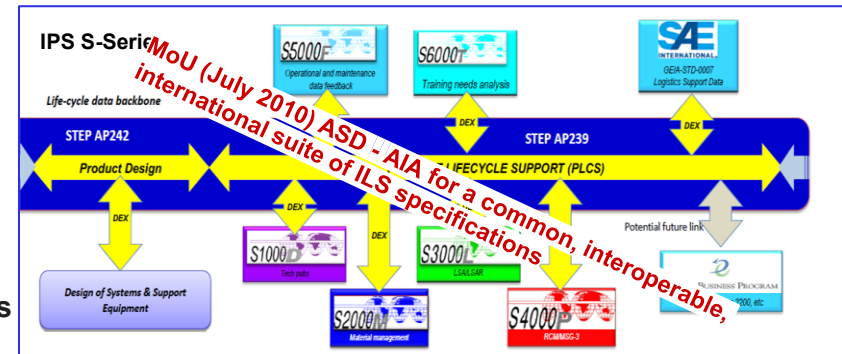
We prioritize Industry requirements for Interoperability Standards

- Product and simulation data interoperability: ISO 10303 STEP AP242 "Managed model based 3D engineering"

- MBSE: ISO 10303 STEP AP243 "MoSSEC"
- EN9300 LOTAR standards
- STEP AP239 edition 3 "Product Life Cycle Support"



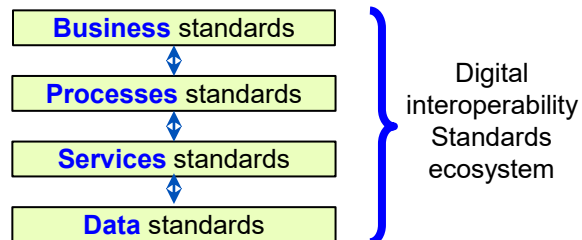
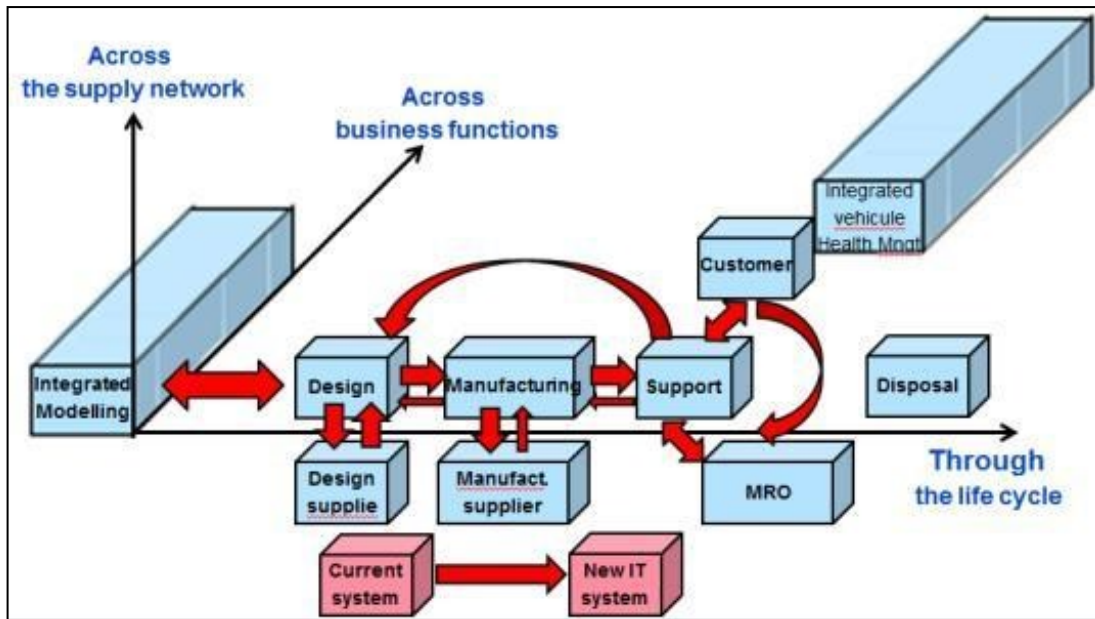
- "Integrated Product Support" IPS S-Series specifications



# Why developing Standards? To leverage Business Value

## Enable digital continuity

- **Optimize Costs** in the product life cycle, throughout the internal functions of the Company, and with the extended enterprise (supply chain)
- **Increase Quality** through digital continuity strengthening
- Contribute to **Certification requirements**
- Minimize customization & maximize **COTS capabilities**
- Increase **obsolescence resilience**
- Enable **future technologies introduction**
- Ensure sustainability for long term Company **digital assets**



## Take-away

The European A&D manufacturers put significant efforts in the development and implementation of ISO - IEC standards

- Leveraging the business value of industrial data interoperability for Aerospace and Defence
- New opportunities for MBSE and for digital factory / Industry 4.0
- Focus on the development of Machine Readable Standards

We see major opportunities of synergies

- Regarding PLM, MBSE, digital factory, integrated product support
- With industries in the sectors of automotive (synergy already active), railway, real estate, nuclear power
- From emerging technologies (Digital Twins, IIoT, Artificial Intelligence)
- Covering the Extended Enterprise (Small and Medium Enterprise)

We promote extended synergies for Data interoperability standards between the European Aerospace & Defence and the Automotive industries

- Building on the joint actions for ISO 10303 STEP AP242, supported by prostep ivip and AFNeT and the related MBx Interoperability Forums
- Taking the opportunity of new European projects (GALILEO, FCAS, GAIA-X)
- Facing common challenges: cybersecurity, european digital sovereignty, sustainability



# Back-Up





E-Business  
SSG

AeroSpace and Defence Industries Association of Europe (ASD) is the European association representing the interests of industries in the aeronautics, space, defence and security sectors. [Link](#)

ASD Strategic Standardisation Group (SSG) is the governance group in charge of Aerospace and Defence digital interoperability. [Link](#)

**IDENTIFYING THE SET OF STANDARDS REQUIRED FOR AEROSPACE AND DEFENCE DIGITAL INTEROPERABILITY.**

#### 1) Governance of A&D digital interoperability capabilities

- [A&D PLM Action Group](#) "Minimum Model-Based Definition for Type Design Certification ed3"
- Outcomes of the 1<sup>st</sup> of July [AIA –ASD Interoperability coordination confcall](#)
- Kick off of the [ATLAS project](#)

#### 2) Systems Engineering interoperability

- Proposal to create an international [MBSE-Interoperability Forum](#)
- [ISO 10303 ISTEP](#): Core model and AP243 MoSSEC to be published, AP239 PLCS in CD ballot

#### 3) Product definition and analysis interoperability

- [CAx Interoperability Forum](#) speeds up the development of interoperable solutions
- 28 Sept. 2021 [CEN-CENELEC-ETSI](#) meeting on "Industrial data" on the 28 Sept. 2021

#### 4) Manufacturing interoperability

- First version of the radar chart of the [ASD SSG Manufacturing Interop. WG](#)

#### 5) Product Support interoperability

- AIA – ASD : The block release of the [Integrated Product Support S-Series](#)

#### 6) Common Interoperability Topics

- [DoD initiative for CMMC](#) Cybersecurity Maturity Model Certification

#### 7) Communications

- [ARNet Standards days](#) 1st and 2nd of June
- Summary of [prostep ivip online Symposium](#), held on the 5 - 6 May 2021

#### 8) Next events

#### A&D PLM Action Group "Minimum Model-Based Definition for Type Design Certification ed3"



The Aerospace and Defence PLM Action Group is an organization made of civil aerospace and engine manufacturers, which sets the direction for the A&D industry on PLM-related topics that matter to members, including common industry PLM processes, practices and open standards. This group, supported by CIMData, is currently made of Airbus, Boeing, Embraer, GE Aviation, Gulfstream, Pratt & Whitney, Rolls-Royce and Safran. Its activities are organized in 5 working groups: 3D MBD and Bill of Materials, Multi View Product Structures and BoMs, Global Collaboration, MBSE Interoperability, and standards

One of the main achievements is the Position Paper "Minimum Model-Based Definition for Type Design Certification ed3.", of interest for the ASD SSG "Model Based definition & simulation interoperability" WG

Link to A&D PLM Action Group website at [www.ad-plm.org](http://www.ad-plm.org)

#### Outcomes of the 1<sup>st</sup> of July AIA –ASD Interoperability coordination confcall

The 1st July saw the latest collaboration call between the [Engineering Management Committee](#) and the [Business Technology Interoperability Committee](#) of the Aerospace Industries Association of the USA and the Strategic Standardization Group of the Aerospace and Defense Industries Association of Europe. In a wide-ranging discussion, through PLM, Systems Engineering and integrated product support, experts on both sides of the pond exchanged information relating to common data exchange standards, digital engineering metrics, and opportunities for joint Interoperability Forums.

There was an agreement that such coordination is useful to increase the synergies between the 2 associations, and that regular conference calls will restart, after the COVID19 break, in order to align on common initiatives in the interest of the USA & Europe Aerospace industries. This will improve the efficiency of the solid aerospace and defense supply chains, reducing business friction for mutual benefit.

#### Kick off of the ATLAS project



ATLAS is a 3-year programme (2021 – 2023), half funded by industrial sectors, half by French public authorities (BPI), intended to provide multidisciplinary digital standards serving as a basis for the Digital Transformation of industrial sectors, to strengthen sovereignty and to facilitate the ecological transition. The Kick-Off took place on March 30, 2021.

Presentations are available at:  
<http://download.arnet.fr/Atlas20208eunionDeJancement/>

#### Proposal to create an international Model-based Systems Engineering-Interoperability Forum



The sharing of Systems Engineering data and models between industry partners and customers is a critical capability for the development of Aerospace and Defence products. Considering the need to converge on common interoperability processes and standards in this field, ASD SSG recently published a [statement](#) supporting the creation of an international Model-based Systems Engineering Interoperability Forum (MBSE-IF).

The MBSE-IF would integrate the several activities already started on the subject, like the [EVI&VIE](#) initiated by ARIS (French chapter of INCOSÉ) and ARNet on the exchange of requirements and V&V data. Creation of the MBSE-IF will be discussed with interested associations and organizations.

Link: <http://www.asd-ssg.org/systems-engineering-interoperability>

## ISO 10303 (STEP): Core model and AP243 MoSSEC to be published, AP239 PLCS in CD ballot



Significant progress made at ISO in the adoption of STEP Extended Architecture and related Application Protocols:

- AP243 MoSSEC has passed its Draft Internal Standard (DIS) ballot and should be published by ISO as an International Standard by the end of the year. MoSSEC provides new capabilities to share model metadata in a collaborative Systems engineering context.
- The Core model, proposed new integration layer between STEP Application Protocols, has passed its CD ballot and should be published by ISO as a Technical Specification by the end of 2021.
- The AP239 e3 (PLCS) Committee Draft ballot is launched. This edition is proposed as reference standard for Product support and is harmonised with AP242/AP243. You are invited to analyse this draft and provide comments by 11<sup>th</sup> August.

Links: [MoSSEC - STEP AP239-ed3](#)

## CAX Interoperability Forum speeds up the development of interoperable solutions



The CAX-IF tests interoperable solutions based on AP242 for 3D Model Based Definition according to prioritized industry use cases. It includes 3D geometry, Product and Manufacturing Information (PMI) and Composite Materials. From 2019, the CAX-IF User Group documents and prioritizes industry use cases. In order to address complex use cases, it now sets up coordination with other interoperability forums to leverage the other STEP AP242 usages. Since 1999, the Implementor Group, made of CAD editors and integrators, intensively tests and publishes recommended practices.

ASD SSG encourages the industry to participate in the CAX-IF user group.

More information on [CAX-IF website](#)

## 28 Sept. 2021 CEN-CENELEC-ETSI meeting on "Industrial data" on the 28 Sept. 2021



The European Standardization Organizations (ESO), CEN, CENELEC and ETSI organize a meeting on the 28 September: "Standards in support of the industrial data value chain".

Industrial data is key to the success of the European competitiveness in the global market. It is a highly strategic field that will provide the foundation of the next wave of digitization in Europe.

This stakeholders' workshop will identify the cross-sectoral gaps and opportunities for the development of new industrial data standards.

The European aerospace industries have to contribute to this event, where upcoming SMART - machine processable standards will be shared between A&D and other industries (automotive, railway, etc).

Link: <https://www.cencenelec.eu/news/events/Pages/EV-2021-31.asp>

## First version of the radar chart of the ASD SSG Manuf Interop. WG



- The ASD-SSG Manufacturing Interoperability working group lead by Steven Carter have issued the first version of RADAR chart of relevant standards current and emerging. The RADAR chart is divided into 4 different viewpoints and associated standards, including 1. Part Design, 2. 3. Equipment-Factory and 4. Operational and Integration.
- Standards identified following initial analysis completed, more in-depth review required to re-confirm position with RADAR chart and dependencies/ links other standards RADAR charts to be developed considering the integration and links or dependencies with other ASD-SSG life cycle RADAR Chart.

The ASD-SSG Manufacturing Interoperability working group also now have a new introduction webpage which provides more details of the WG focus areas and activities

Read more: <http://www.asd-ssg.org/manufacturing-interoperability>

## AIA – ASD : The block release of the Integrated Product Support S-Series



Despite the widely recognised difficulties of the previous 12 months, the ASD Product Services Specification Group, in conjunction with their partners in the Aerospace Industries Association in the USA, have maintained their target to have a block release of the S-Series Specifications in 2021.

Currently undergoing final editorial review, the block release signifies a momentous step forward in the integration of the said specifications and as their adoption becomes more widespread, will lead to improvements in the through life support of complex systems.

Link: <http://www.asd-ssg.org/logistic-support-interoperability>

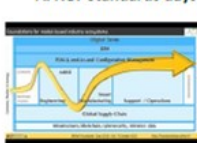
## DoD initiative for CMMC Cybersecurity Maturity Model Certification



Over in the USA, the Department of Defence are seeking to introduce Cybersecurity Maturity Model Certification, CMMC. Clearly, no-one would argue that the threat from Cyber attacks are not real and measures to counteract them are required. The challenge now is to ensure that the NATO alliance and partners take a coordinate stance to ensure secure transactions without disrupting complex global supply chains; the challenge to ensure reciprocity between the USA and partner nations will be significant.

Read more: <https://www.acq.osd.mil/cmmc/>

## AFNET Standards days 1<sup>st</sup> and 2<sup>nd</sup> of June



The AFNET Standard Days took place on June 1<sup>st</sup>, 2<sup>nd</sup> 2021 and has provided an overview of the on-going standards in scope of the digital transformation of our industries.

During these 2 days we had Keynotes and tracks on Gaia-x, Smart Industries, Systems Engineering, PLM, Smart Manufacturing, SCM & traceability, MRO/LS, Digital Twin, Data & Infra and BIM. With 8 Keynotes from Gaia-x, AFNET, Airbus, Schneider Electric, Worldline, Dassault-Systems, LGM, Thales, 11 Sessions, 1 roundtable, 33 speakers, 247 participants in total, and 4 presentations from our IT partners.

16hours of web conferences almost continuous: a real webathon.

All presentations and videos are available here : [First day](#) - [Second day](#)

## Summary of prostep ivip online Symposium, held on the 5 - 6 May 2021



The prostep ivip Symposium was successful with more than 650 participants from all over the world under the motto "Future Driven by Digital Value Creation". The event was based on a live event on 5&6 May, and over 60 on-demand presentations available through May & June 2021. Included were several top keynotes and presentations on the challenges posed by the digital transformation in product creation. Contributions on trends such as the digital twin, the digital thread and artificial intelligence were addressed. Main achievements on the standardization projects supported by the association were presented.

Among other key messages, close links between product and process innovations were visible.

Link: <https://www.prostep-ivip-symposium.org/en/>

## Next events

- LOTAR International meeting: 20 - 24 September 2021
- CEN TC 310 meeting: 5 October 2021
- ASD SSG meeting: 23 - 24 November 2021