LONG Term Archival & Retrieval of Digital Product & Technical Data (LOTAR)

LOTAR activities, interoperability framework and overall consistency between Work Groups
What is LOTAR?

• The LOTAR International Consortium is a working group, sponsored under a four party Hosting Organization made up of the Aerospace Industries Association (AIA), PDES Inc., Aerospace & Defense Industries of Europe – Standardization (ASD-STAN) and ProSTEP iViP.
LOTAR Organization

LOTAR International Project Group

Voting Members
Associated Members
Contributing Members

Hosting organization
PDES, Inc.

Hosting organization
AIA
AIA-EMC

Hosting organization
ASD-STDAN
ASD-SSG

Hosting organization
ProSTEP iViP

Hosting organization
TAC

Certification Authority
FAA

Regulatory Authority
DoD

Vendors & Implement.
CAx-IF

Vendors & Implement.
PDM-IF

Standardization
ISO, OASIS

Standardization
EN, NAS

Certification Authority
EASA

Regulatory Authorities
National MoDs
LOTAR Organization

Process Steering Council

Hosting Organization

AIA
AIA-EMC

B. Scheidhauer
R. Rentsch

Hosting Organization

PDES Inc.

J. Harris
M. Jahadi

Hosting Organization

ASD-STAN
ASD-SSG

G. Lessmann
Yves Baudier

Hosting Organization

ProSTEP iViP.

R. Pohl
S. Vettermann

Americas Sector

European Sector

Americas Sector Chair
Rick Zuray

Americas Sector Project Coordinator
Jeff Holmlund

Americas Sector Project Coordinator
Barry Hess

Europe Sector Chair
JY Delaunay

Europe Sector Project Coord.
Jochen Boy

PDES Inc Board Chair
Mike Jahadi

PDES Inc MBS Chair
David Williams

CAx-IF Chair
Phil Rosche

Leadership Team
Goal

The long-term archival of technical data is driven by:

• Business cases (e.g. longevity of aerospace & defense products)

• Regulatory requirements (e.g. FAA/DoD–EASA/MoD)

The ultimate goal of LOTAR is standardization:

• Create EN/NAS 9300-xxx series standards for long-term archiving

• Promote the use of International Standards (i.e. ISO) as data formats

LOTAR works on various domains (Mech. Design, PDM, Electrical, Composites, Visualization...).
The project is initially scoped to provide a long term archive and retrieval solution within the standards mechanisms (EN / NAS 9300 Standards Documents). It does not develop application or hardware solutions except for prototyping and validation purposes. Further, the project is scoped to product data and practice standards and recommendations in the aerospace and defense industries.
Scope and Objectives

- The wide range of digital product and technical information is divided up into 3 technical work phases:

  **Phase 1**
  Create EN / NAS standard documents and recommended practices regarding fundamentals & concepts, processes and the first data domain explicit 3D CAD.

  **Phase 2**
  Create EN / NAS standard documents and recommended practices regarding long term archive and retrieval of 3D CAD with PMI, PDM, 3D CAD composite, 3D CAD electrical harness, 3D Light Visualization, governance and planning, functional architecture, security and LOTAR certification for aerospace and defense companies to be measured against.

  **Phase 3**
  Create EN / NAS standard documents and recommended practices regarding system engineering, simulation, 3D CAD with parametric & form features, PLM (as extended PDM) and analysis.
Open Archive Information System - ISO 14721 Management

SIP = Submission Information Package | AIP = Archive Information Package | DIP = Dissemination Information Package
LOTAR Document Structure

Basic Parts 001 – 009
Overview, Reqs, Methods...

Common Process Parts 010 – 099
Common Processes, Data Prep, Ingest, Archive Storage, Retrieval...

Domain Specific Parts
100 – series
200 – series
300 – series
400 – series etc

Legend:
- Development
- Initial Ballot Phase
- Final Ballot Phase
- Published Standard
LOTAR Standard Design and Approval Process

Draft Part EN/NAS 9300-xx

Internal Ballot: LOTAR Members

Comments Resolution

Initial Industry Ballot: AIA / ASD-STAN 4 Month Review Cycle

Comments Resolution

Final Industry Ballot: AIA / ASD-STAN 30 Day Review Cycle

Standard Published
Standards Recently Released

• EN/NAS 9300-002 “Requirements”
• EN/NAS 9300-005 “Authentication and Verification”
• EN/NAS 9300-007 “Terms and References”
• EN/NAS 9300-100 “Common concepts for Long term archiving and retrieval of CAD 3D mechanical information”
• EN/NAS 9300-110 “Long Term Archiving and Retrieval of CAD mechanical 3D Explicit geometry information”
• EN/NAS 9300-115 “Explicit CAD assembly structure”
LOTAR - CAx-IF Alignment

- LOTAR provides requirements to the CAD vendor community (e.g., CAx-IF)
- LOTAR provides test models to demonstrate requirements, as in “this is what I need to transfer”
- LOTAR sets up and runs pilot projects to prototype enabling technologies
  - Service providers are contracted to develop and implement solutions to fulfill requirements (typically two CAD vendors per pilot)
  - The CAx-IF provides technical advice to pilot projects
  - New/improved capabilities documented as enhancements to CAx-IF Recommended Practices (and reported to the vendor community)
  - These may become scope candidates for subsequent CAx-IF test rounds to test these capabilities by a wider range of vendors
  - Pilot results are reported back to the LOTAR members
LOTAR - CAx-IF Alignment

User Community

Vendor Development & Testing

Recommended Practices

STEP Standards

The World

ProSTEP/PDES User Community

Requirements

Status

Approaches & Experience

Guidance & Advice

Approaches

Requirements

Improved Data Model

Interoperable Robust S/W

Results
# LOTAR - CAx-IF Alignment

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US Meetings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDES Offsite</td>
<td><strong>LOTAR</strong></td>
<td><strong>LOTAR</strong></td>
<td><strong>LOTAR</strong></td>
<td><strong>LOTAR</strong></td>
</tr>
<tr>
<td></td>
<td>CAx-IF</td>
<td>CAx-IF</td>
<td>CAx-IF</td>
<td>CAx-IF</td>
</tr>
<tr>
<td><strong>EU Meetings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LOTAR</td>
<td>LOTAR</td>
<td>LOTAR</td>
<td>LOTAR</td>
</tr>
<tr>
<td></td>
<td>CAx-IF</td>
<td>CAx-IF</td>
<td>CAx-IF</td>
<td>CAx-IF</td>
</tr>
<tr>
<td><strong>CAx-IF Test Cycle</strong></td>
<td><strong>Summer Round</strong></td>
<td></td>
<td><strong>Winter Round</strong></td>
<td></td>
</tr>
</tbody>
</table>
LOng Term Archiving and Retrieval - LOTAR

Activities

The objective of LOTAR International is to develop standards for long-term archiving (LTA) of digital data, such as 3D CAD and PDM data. These standards will define auditable archiving and retrieval processes. Use of the standard series by other branches of industry such as the automotive or shipbuilding industry is possible. The results are harmonized with e.g. the Recommendation 4968 for long-term archiving of the German Association of the Automotive Industry (VDA) and are based on the ISO 14721, Open Archival Information System (OAIS) Reference Model. The documents for the standard are published as the EN9300 series and, in cooperation with the AIA, also as the National Aerospace Standard (NAS).

LOTAR International is a project being conducted by leading OEMs and suppliers in the aerospace and defense industry under the joint auspices of ASD-STAN, AIA, PDES Inc. and the ProSTEP ivip Association.
Next Steps

• Looking for people to join our working groups

• Provide help in several ways
  • Review documents
  • Develop requirements, use cases and test cases
  • Attend weekly teleconferences and face to face team meetings

• If you can think of things the LOTAR team could benefit looking into or should be focusing on please contact us.

• We want to know what your specific requirements are, especially in the area of Electrical, Mfg & Quality process information which are new areas we are exploring for data storage, retention, management, exchange, archival and retrieval.
Questions

Rick ZURAY
LOTAR International co-project leader
Technical Principal
Enterprise CAD/CAM Services
The Boeing Company
Phone: 1 (425) 717-2654
Mobile: 1 (206) 778-6730
Mail to: richard.s.zuray@boeing.com

Jean-Yves DELAUNAY
LOTAR International co-project leader
Product & process Information Interoperability
Engineering Methods and Tools architect
Airbus
Phone: (33) (0)5-61-18-31-31
Mobile: (33) (0)6-76-36-50-59
Mail to: jean-yves.delaunay@airbus.com