



White Paper for

Long Term Archiving and Retrieval of Product Data within the Aerospace Industry (LOTAR)

Technical Aspects of an approach for application

of Project Group “LOTAR”:



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Authority

This document has been approved for publication by the project steering committee of project group "Aerospace LOTAR" and represents the consensus of technical agreements of the participating project partners. The document is a result of review and authorization as stated by the project partners.

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Conventions

Within the context of this document the terms "shall" and "may" are used per Code of the US Federal Regulations (CFR) Title 14 Chapter 1, Part 1:

- "Shall" is used in an imperative sense.
- "May" is used in a permissive sense to state authority or permission to do the act prescribed, and the words "no person may ..." or "a person may not ..." mean that no person is required, authorized, or permitted to do the act prescribed.
- Includes means "includes but is not limited to".

Forward

This document describes the results of the project group based on:



- Consolidation, common understanding, legal and business requirements
- Development of a strategy and preferred approach

It has to be seen as a starting point to specify methods, scenarios, applications and process modules for the aircraft industry which support long-term archiving as well as re-use (readability first, furthermore ability for further processing) of product data including 3D geometry.

Since communication processes with suppliers, partners or customers manage archiving-relevant information, scenarios and resulting descriptions of processes are to be developed in a way to be applicable also for these communication processes (data exchange and data integration). The results of the specification shall be submitted first as AECMA standard.

Abbreviations

2D two **D**imensional

3D three **D**imensional

AP214 Application **P**rotocol **214** – ISO 10303-214

AECMA European Association of Aerospace Industries

AIM Application Interpreted **M**odel

AIP Archival Information **P**ackage

ARM Application **R**eference **M**odel

CAD Computer **A**ided **D**esign

CCx Conformance **C**lass **x**; x stays for the number of the CC, e. g. 2 for geometric data or 6 for PDM data

CFR Code of the US **F**ederal **R**egulations

DIP Dissemination Information **P**ackage

DMU Digital **M**ock-up

LOTAR Long **T**erm **A**rchiving and **R**etrieval

OAIS Reference Model for an **O**pen **A**rchival Information **S**ystem

CUSTOMER Original **E**quipment **M**anufacturer

OMG Object **M**anagement **G**roup

PDM Product **D**ata **M**anagement

SIP Submission Information **P**ackage



- STEP** **ST**andard for the **E**xchange of **P**roduct Model Data (ISO 10303)
- UML** **U**nified **M**odelling **L**anguage
- W3C** **W**orld **W**ide **W**eb **C**onsortium

Definition of terms

Archiving: Certified process of writing, storing and retrieval of selected information into an archive.

Assembly: A node in the part structure that is further decomposed into subassemblies or parts. The assembly structure is a non-configurable explicit part structure (i.e., without variations). The assembly structure is a hierarchical structure of arbitrary depth.

Asynchronous Data Exchange: Processes of offline data transferring from one site to another site via file transfer. The data is duplicated on the receiving site with no link to the original data on the sending site.

Business Process: A business process is a process related to an execution e.g. of a product data export and driven by an individual engineering step (e.g., communication of changes, establishing a collaboration).

CAD System: Application for creation and modification of geometric product model data

Digital Mock-up (DMU): Digital Mock-up is a virtual assembly of the complete product or components of the product in a computer system. The purpose of a Digital Mock-up is all kind of simulations concerning the geometric shape, kinematics or design studies.

Data Module: A data module is a set of data types (entities and its attributes) to support a specific functionality.

Design documents: Set of documents relevant for the definition of products.

Designated Community: An identified group of potential Consumers who should be able to understand a particular set of information. The Designated Community may be composed of multiple user communities.

Document: A document is a logical container for defined product data. A document may be associated to an item or another object and is either represented in physical or digital form.

File: A file is a container of data on a computer storage medium.

Geometric Model: A geometric model is a representation of a shape. The geometric data are typically generated by CAD systems in digital form.

Item: An item is an element of a product relevant for a bill of material. An item may be a single item, an assembly, raw material or non-geometrical components, e.g., lubricant.



Part 21 File: See STEP Physical File.

PDM Schema: Internationally harmonized intersectional subset of the STEP application protocols (AP) AP 203, AP212, AP 214 and AP 232.

PDM System: Application for creation and modification of meta data for management of product definition data and its life cycle

Retrieval: Certified process of providing archived data to designated community.

STEP: Is a synonym (see Abbreviations) for the entire set of partial standards (parts) of ISO10303.

STEP Physical File: A file that contains actual product model data encoded as specified in ISO 10303-21. This is the preferred format for the file based asynchronous exchange of product data between heterogeneous tools.

Version: A version is a formal status within the change history of an object, e.g., representing a specific stage of a part, document, geometric model or other objects. Terms like version, revision, iteration or issue are not distinguished within the current scope of document.