ILNAS

Institut luxembourgeois de la normalisation de l'accréditation, de la sécurité et qualité des produits et services

ILNAS-EN 9300-125:2023

Aerospace series - LOTAR - LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data - Part 125:

Luft- und Raumfahrt - LOTAR - Langzeit-Archivierung und - Bereitstellung digitaler technischer Produktdokumentationen, wie zum

Série aérospatiale - LOTAR - Archivage long terme et récupération des données techniques produits numériques telles que CAO, 3D et PDM - Partie 125 :

11/2023

National Foreword

This European Standard EN 9300-125:2023 was adopted as Luxembourgish Standard ILNAS-EN 9300-125:2023.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 9300-125

November 2023

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English Version

Aerospace series - LOTAR - LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data - Part 125: Explicit CAD assembly structure with Graphic Product and Manufacturing Information (PMI)

Série aérospatiale - LOTAR - Archivage long terme et récupération des données techniques produits numériques telles que CAO, 3D et PDM - Partie 125 : Structure d'assemblage CAO explicite avec données graphiques de produit et de fabrication (PMI)

Luft- und Raumfahrt - LOTAR - Langzeit-Archivierung und - Bereitstellung digitaler technischer Produktdokumentationen, wie zum Beispiel von 3D , CAD und PDM-Daten - Teil 125: Eindeutige CAD-Baugruppenstruktur mit grafischen Produkt und Fertigungsinformationen (PMI)

This European Standard was approved by CEN on 22 December 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 9300-125:2023) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Republic of North Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

1 Scope

1.1 General

This document specifies the requirements for the long term digital preservation of the presentation of Product and Manufacturing Information (PMI) with their possible links to the 3D explicit shape and geometry of CAD assembly structure. The goal is to preserve this 3D information, without loss, with respect to the geometry produced by the original CAD system, following the principles laid down in EN 9300-003 'Fundamentals and Concepts'.

This will allow the retrieval of the assembly structure including the placement information.
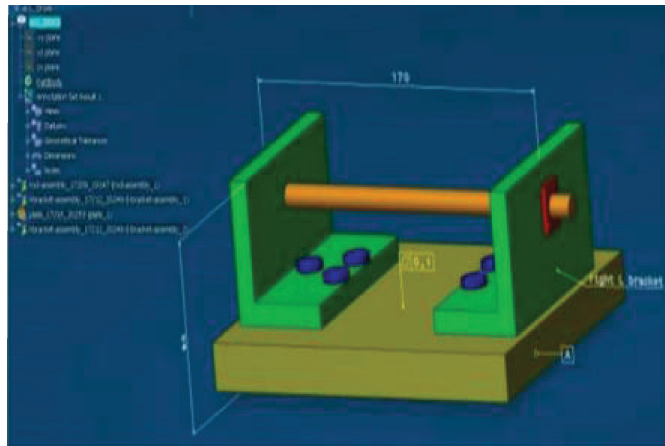

Figure 1 — Assembly structure and geometric assembly model with PMI

This document extends EN 9300-115 "Explicit CAD Assembly Structure" by including assembly level PMI.

PMI for the assembly structure can be recorded in the same file as the geometry, can be in a nested assembly structure or the PMI will be contained in its own separate file (Side-Car).

The PMI elements shall be presented on the graphic level only (i.e. polyline, tessellated).

1.2 Out of scope

The following is outside the scope:

— the archiving of assembly Form Features;

— semantic PMI representation is out of scope for this document;

— the geometry specified at assembly level is out of scope for this edition.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 9300 (all parts), *Aerospace series — LOTAR — LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data*

ISO 10303-21, *Industrial automation systems and integration — Product data representation and exchange — Part 21: Implementation methods: Clear text encoding of the exchange structure*

ISO 10303-242, *Industrial automation systems and integration — Product data representation and exchange — Part 242: Application protocol: Managed model-based 3D engineering*

ISO 10303-519, *Industrial automation systems and integration — Product data representation and exchange — Part 519: Application interpreted construct: Geometric tolerances*

ISO 16792, *Technical product documentation — Digital product definition data practices*

Further applicable documents

CAx-IF Recommended Practices for the Representation and Presentation of Product & Manufacturing Information (PMI) (AP242)

CAx-IF Recommended Practices for User Defined Attributes (UDA)

3   Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in EN 9300-007 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
Side Car
separate file to retain the PMI definition; this file is referenced by the assembly file

4   Applicability

Refer to applicability of EN 9300-001 "Structure", Clause 4.

5   Business specifications for the long term archiving and retrieval of the explicit CAD assembly structure with PMI

5.1   Use cases

The following clauses record the potential use cases for the archiving of an explicit CAD assembly structure with PMI. "Appendix A Ingestion scenarios (informative)" identifies the main archiving scenarios corresponding to these four use cases.

5.1.1   UC1: one file with assembly structure, geometry and PMI

This Use Case represents a scenario with a single file containing the assembly structure, geometry and PMI.
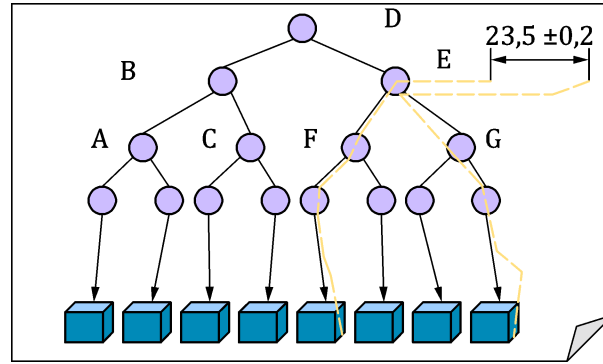
Figure 2 — One file with assembly structure, geometry and PMI

5.1.2   UC2: Assembly Structure with PMI stored in one file separate from the Geometry

This Use Case represents a scenario with a single file containing the assembly structure and PMI separate from the geometry. The Geometry will be stored in separate file(s).
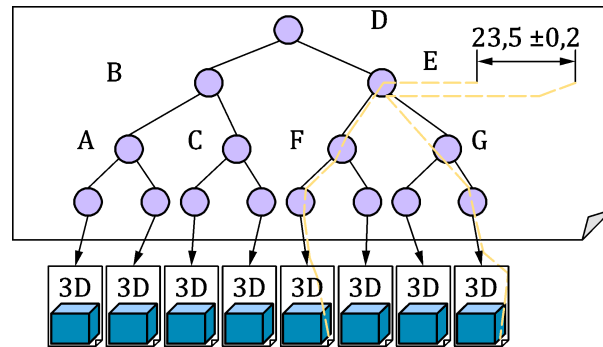

Figure 3 — Separate file for Assembly Structure and PMI

5.1.3   UC3: Nested structure and assembly file with PMI in the structure file

This Use Case represents a scenario with nested files with PMI contained in the assembly structure. The PMI is contained in the file representing the node that is defining the context of the PMI.
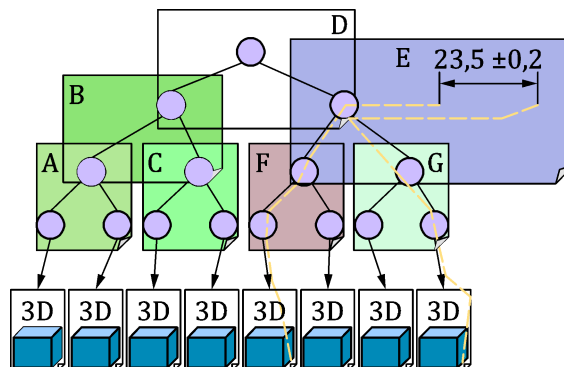

Figure 4 — Nested structure and assembly file with PMI in the structure file

5.1.4   UC4: Nested structure and assembly files with PMI side-car file.

This Use Case represents a scenario where the PMI is contained in a separate Side-car file.