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Interested committees:

Title: Draft BS EN 9300-120 Aerospace series - LOTAR - LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data

Part 120: CAD 3D explicit geometry with product and manufacturing information

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on European discussions in which the UK has taken an active part. Your comments on this draft are welcome and will assist in the preparation of the consequent British Standard. Comment is particularly welcome on national, legislative or similar deviations that may be necessary.

Even if this draft standard is not approved by the UK, if it receives the necessary support in Europe, the UK will be obliged to publish the official English Language text unchanged as a British Standard and to withdraw any conflicting standard.

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Please indicate whether you consider the UK should submit a negative (with reasons) or positive vote on this draft.

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- The guidance given below is intended to ensure that all comments receive efficient and appropriate attention by the responsible BSI committee. **Annotated drafts are not acceptable and will be rejected.**
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- All comments submitted should be presented as given in the example below. Further information on submitting comments and how to obtain a blank electronic version of a comment form are available from the BSI website at:
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	(7)
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/ Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

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ICS: Descriptors: ENGLISH VERSION Aerospace series — LOTAR — LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data — Part 120: CAD 3D explicit geometry with product and manufacturing information <table border="0"> <tr> <td data-bbox="129 994 788 1375"> Luft- und Raumfahrt — LOTAR — Langzeitarchivierung und Bereitstellung digitaler technischer Produktdokumentationen, beispielsweise 3D, CAD und PDM Daten — Teil 120: Explizite CAD 3D Geometrie mit produkt- und herstellungsrelevanten Informationen </td><td data-bbox="788 994 1497 1375"> Série aérospatiale — LOTAR — Archivage Long Terme et récupération des données techniques produits numériques telles que CAD, 3D et PDM — Partie 120 : CAO 3D explicite et informations 3D pour la fabrication du produit </td></tr> </table> This "Aerospace Series" Prestandard has been drawn up under the responsibility of ASD-STAN (The Aerospace and Defence Industries Association of Europe- Standardization). It is published on green paper for the needs of the European Aerospace and Defence Industry. It has been technically approved by the experts of the concerned Domain following member comments. Subsequent to the publication of this Prestandard, the technical content shall not be changed to an extent that interchangeability is affected, physically or functionally, without re-identification of the standard. After examination and review by users and formal agreement of ASD-STAN it will be submitted as a draft European Standard to CEN (European Committee for Standardization) for formal vote.		Luft- und Raumfahrt — LOTAR — Langzeitarchivierung und Bereitstellung digitaler technischer Produktdokumentationen, beispielsweise 3D, CAD und PDM Daten — Teil 120: Explizite CAD 3D Geometrie mit produkt- und herstellungsrelevanten Informationen	Série aérospatiale — LOTAR — Archivage Long Terme et récupération des données techniques produits numériques telles que CAD, 3D et PDM — Partie 120 : CAO 3D explicite et informations 3D pour la fabrication du produit
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Edition approved for publication	Comments should be sent within six months after the date of publication to ASD-STAN		

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Foreword

1. This standard was prepared jointly by AIA, ASD-STAN, PDES, Inc., and the PROSTEP iViP Association.
2. The PROSTEP iViP Association is an international non-profit association in Europe. For establishing leadership in IT-based engineering it offers a moderated platform to its nearly 200 members from leading industries, system vendors and research institutions. Its product and process data standardization activities at European and worldwide levels are well known and accepted. The PROSTEP iViP Association sees this standard and the related parts as a milestone of product data technology.
3. PDES Inc is an international non-profit association in USA. The mission of PDES Inc is to accelerate the development and implementation of ISO 10303, enabling enterprise integration and PLM interoperability for member companies. PDES Inc gathers members from leading manufacturers, national government agencies, PLM vendors and research organizations. PDES Inc. supports this standard as an industry resource to sustain the interoperability of digital product information, ensuring and maintaining authentic longevity throughout their product lifecycle.
4. Readers of this standard should note that all standards undergo periodic revisions and that any reference made herein to any other standard implies its latest edition, unless otherwise stated.
5. The Standards will be published under two different standards organizations using different prefixes. ASD-STAN will publish the standard under the number EN 9300–xxx. AIA will publish the standard under the number NAS 9300–xxx. The content in the EN 9300 and NAS 9300 documents will be the same. The differences will be noted in the reference documentation (i.e. for EN 9300 Geometric Dimensioning & Tolerancing will be referenced in ISO 1101 and ISO 16792, and for NAS 9300 the same information will be referenced in ASME Y14.5M and ASME Y 14.41). The document formatting etc., will follow that of the respective editorial rules of ASD-STAN and AIA.

1 Scope

1.1 Introduction

This document defines 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 single CAD parts. 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.',

The requirements of EN/NAS 9300-110 about the preservation of the 3D explicit shape shall apply within this Part.

The meaning of terms “Presentation” and “Representation”, defined in the EN/NAS Part 100, chapter 3-10, is required to understand this EN/NAS 9300 Part.

1.2 In scope

The following outlines the total scope of EN/NAS 9300 Part 120:

- The Presentation of 3D geometrical dimension and tolerance, and 3D annotation attributes,
- Their possible semantic links with 3D Geometric shape.
- User defined attributes: that are assigned to 3D geometric entities or at the part level.

In this version of the Part 120, the technology used to preserve this 3D information is based on polyline presentation, which is a conversion to lines and curves of all 3D annotations by the STEP interfaces of the CAD system, including validation properties. The main use cases are the Certification and Product Liability of static information, but re-use is also possible after destruction of old Product and Manufacturing Information (PMI) and creation of new PMI. (Refer to section 3 for definition).

For the purpose of this document, the semantic definition is at the level that supports associative “Cross-highlighting” for the purpose of human consumption.

Future versions of this Part will extend the PMI archive of “static” information with “semantic” information (presentation and representation) and extend the scope of use cases of the archive 3D annotated CAD models to other use cases.

1.3 Out of scope

The following is outside the scope:

- Machine-interpretable PMI “Representation”
- PMI Semantic Presentation
- How to preserve additional information:
 - o Property rights
 - o Form features
- CAD Assemblies

2 Normative references

This Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 1101, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 5459:1994, *Geometrical product specifications (GPS) — Geometrical tolerancing — Datums and datum systems*

ISO 10303-42, *Industrial automation systems and integration — Product data representation and exchange — Part 42: Integrated generic resource: Geometric and topological representation*

ISO 10303-203, *Industrial automation systems and integration — Product data representation and exchange — Part 203: Application module: Application protocol: Configuration controlled 3D design of mechanical parts and assemblies*

ISO 10303-214, *Industrial automation systems and integration — Product data representation and exchange — Part 214: Application protocol: Core data for automotive mechanical design processes*

ISO 10303-514, *Industrial automation systems and integration — Product data representation and exchange — Part 514: Application interpreted construct: Advanced boundary representation*

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

ISO/TR 14638, *Geometrical Product Specification (GPS) — Master plan*

ISO 14721, *Space data and information transfer systems — Open archival information system — Reference model*

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

ISO/PAS 26183, *SASIG Product data quality guidelines for the global automotive industry*

CAX-IF Recommended Practices for PMI Polyline Presentation

CAX-IF Recommended Practices for User Defined Attributes

available on the website managed by the CAX Implementer Forum.

3 Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in NAS/EN 9300-007 and NAS/EN 9300-100 shall apply.

The terms below are introduced in this Part.