

NAS9300-120

Long Term Archiving and Retrieval
of digital technical product documentation
such as 3D, CAD and PDM data

PART 120: CAD 3D Explicit Geometry with Graphic Presentation of
Product and Manufacturing Information

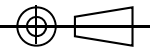
THIRD ANGLE PROJECTION 	CUSTODIAN ENGINEERING MANAGEMENT COMMITTEE	REVISION NEW
PROCUREMENT SPECIFICATION NONE	TITLE LONG TERM ARCHIVING AND RETRIEVAL OF DIGITAL TECHNICAL PRODUCT DOCUMENTATION SUCH AS 3D, CAD AND PDM DATA PART 120: CAD 3D EXPLICIT GEOMETRY WITH GRAPHIC PRESENTATION OF PRODUCT AND MANUFACTURING INFORMATION	CLASSIFICATION STANDARD PRACTICE NAS9300-120 SHEET 1 OF 19

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FOREWARD

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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.
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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 EN9300-120. AIA will publish the standard under the number NAS9300-120. The content in the EN9300 and NAS9300 documents will be the same. The differences will be noted in the reference documentation (i.e. for EN9300 Geometric Dimensioning & Tolerancing will be referenced in ISO 1101 and ISO 16792, and for NAS9300 the same information will be referenced in ASME Y14.5 and Y 14.41). The document formatting etc., will follow that of the respective editorial rules of ASD-STAN and AIA.

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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 NAS9300-110 about the preservation of the 3D explicit shape shall apply within this Part.

The meaning of terms "Presentation" and "Representation", defined in the NAS9300 Part 100, chapter 3.10, is required to understand this NAS9300 Part.

1.2 In scope

The following outlines the total scope of NAS9300 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 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", to illustrate the portion of the geometry to which a PMI element applies.

Future versions of this Part will extend the PMI Presentation capabilities by adding other implementation approaches besides using Polylines and possibly extend the scope of the archived 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
 - o 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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NAS9300 Aerospace series – LOTAR – Long Term Archiving and Retrieval of digital technical and product documentation such as 3D CAD and PDM data. Other parts are applicable as required.

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ISO standards

ISO10303 – Part 42: Geometric and topological representation

ISO10303 – Part 203: Configuration controlled design

ISO10303 – Part 214: Core data for automotive mechanical design processes

ISO 1101 – Geometrical Product Specifications

ISO 16792 – Technical product documentation — Digital product definition data practices

ISO/PAS 26183: SASIG PDQ Guideline.

ISO 5459 – Geometrical product specifications (GPS) -- Geometrical tolerancing -- Datums and datum systems

ISO 14638 – Geometrical Product Specification (GPS) -- Master plan

ISO 14721 – Open Archival Information System.

ASME Standards

ASME Y14.5: Dimensioning & Tolerancing

ASME Y14.41: Digital Product Definition Data Practices

Further applicable documents

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 standard, the terms, definitions and abbreviations given in NAS9300-007 and NAS9300-100 shall apply.

The following diagram illustrates the terms introduced in this Part:

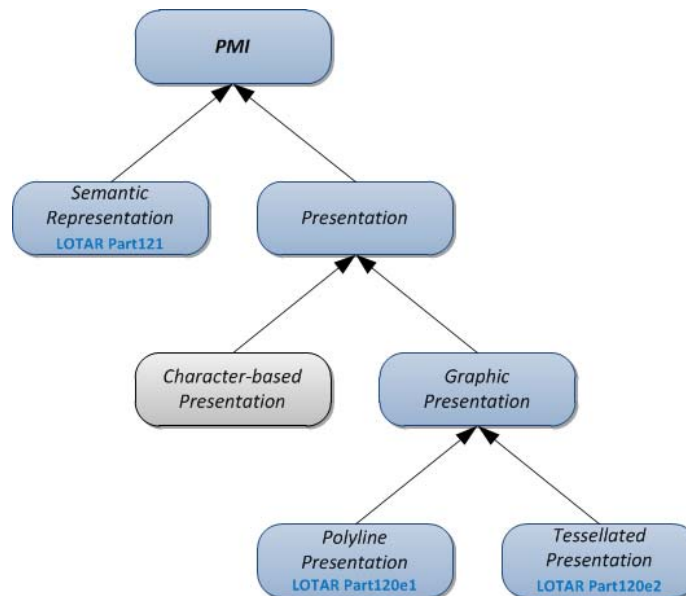


FIGURE 1 – HIERARCHY OF PMI TERMS

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