

<b>STN</b>	<b>Letectvo a kozmonautika LOTAR Dlhodobá archivácia a získavanie digitálnej technickej dokumentácie výrobku ako 3D, CAD a PDM údaje Časť 100: Spoločné pojmy pre dlhodobú archiváciu a získavanie technických informácií CAD 3D</b>	<b>STN EN 9300-100</b>  31 1060
------------	--	---

Aerospace series - LOTAR - Long Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data  
- Part 100: Common concepts for Long term archiving and retrieval of CAD 3D mechanical information

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/18

Obsahuje: EN 9300-100:2018

**127727**

EUROPEAN STANDARD

**EN 9300-100**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2018

ICS 01.110; 35.240.10; 35.240.30; 49.020

English Version

**Aerospace series - LOTAR - Long Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data - Part 100: Common concepts for Long term archiving and retrieval of CAD 3D mechanical information**

Série aérospatiale - LOTAR - Archivage Long Terme et récupération des données techniques produits numériques, telles que CAD 3D et PDM - Partie 100 : Concepts communs pour l'archivage long terme et la récupération des données CAD 3D mécanique

Luft- und Raumfahrt - LOTAR - Langzeit-Archivierung und -Bereitstellung digitaler technischer Produktdokumentationen, wie zum Beispiel von 3D-, CAD- und PDM-Daten - Teil 100: Allgemeine Konzepte für die Langzeitarchivierung und -Bereitstellung von 3D-CAD-Mechanik-Informationen

This European Standard was approved by CEN on 15 October 2017.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN 9300-100:2018 (E)**

<b>Contents</b>	Page
<b>European foreword</b> .....	4
<b>Foreword</b> .....	5
<b>1 Scope</b> .....	6
<b>2 Normative references</b> .....	7
<b>3 Terms, definitions and abbreviations</b> .....	7
<b>4 Applicability</b> .....	10
<b>5 Fundamentals and concepts for Long Term Archiving of CAD 3D mechanical information</b> .....	10
<b>6 Document structure of EN 9300-1XX family</b> .....	18
<b>7 Qualification methods for long term preservation of archived CAD information</b> .....	20
<b>8 Preservation planning of archived CAD information</b> .....	23
<b>9 Administration and monitoring</b> .....	25
<b>10 Definition of Archive Information Packages for CAD data</b> .....	26
<b>Annex A (informative) The Evolution of CAD Systems</b> .....	33
<b>Annex B (informative) Overview of the main types of CAD 3D mechanical information</b> .....	34
<b>Annex C (informative) Overview of CAD mechanical assembly structure information</b> .....	37
<b>Annex D (informative) Template for the table of contents of a part of the family EN 9300-1xx</b> ....	40
<b>Annex E (informative) Considerations for long term preservation of CAD 3D information</b> .....	42
<b>Annex F (informative) Definition of a representative sample of test cases</b> .....	51
<b>Annex G (informative) Example of performance indicators used to manage longevity of CAD archived information</b> .....	54
<b>Annex H (informative) Overview of maturity of the main components for long term archiving of CAD mechanical information</b> .....	57

## Figures

Page

<b>Figure 1 — 3D annotation</b> .....	<b>9</b>
<b>Figure 2 — Illustration of the major generations of CAD systems</b> .....	<b>10</b>
<b>Figure 3 — Type of CAD essential information to archive, depending on the CAD methods used</b> .....	<b>12</b>
<b>Figure 4 — Links between Use Cases, essential information and EN 9300 1xx parts</b> .....	<b>13</b>
<b>Figure 5 — Different levels of commonality of business requirements and use cases</b> .....	<b>14</b>
<b>Figure 6 — Long term preservation of CAD and risk management</b> .....	<b>16</b>
<b>Figure 7 — Migration strategies</b> .....	<b>17</b>
<b>Figure 8 — Detail level of EN 9300 part related to description of fundamentals &amp; concept</b> .....	<b>19</b>
<b>Figure 9 — Relationship / linking between the EN 9300-1xx Family</b> .....	<b>20</b>
<b>Figure 10 — Mapping of OAIS information package objects onto EN 9300</b> .....	<b>27</b>
<b>Figure 11 — Main files of the PDI with the associated 3D model shape</b> .....	<b>30</b>
<b>Figure A.1 — Illustration of generations of CAD systems for mechanical design</b> .....	<b>33</b>
<b>Figure B.1 — Definition of a 3D explicit shape representation</b> .....	<b>34</b>
<b>Figure C.1 — 3D CAD assembly structure</b> .....	<b>37</b>
<b>Figure C.2 — Example for a nested CAD assembly</b> .....	<b>37</b>
<b>Figure C.3 — CAD assembly using coordinate placement</b> .....	<b>38</b>
<b>Figure C.4 — CAD assembly using mating conditions</b> .....	<b>38</b>
<b>Figure C.5 — Explicit 3D CAD assembly structure information which includes GD&amp;T</b> .....	<b>38</b>
<b>Figure C.6 — Use cases of CAD assembly archiving</b> .....	<b>39</b>
<b>Figure E.1 — Tolerance distance for points</b> .....	<b>43</b>
<b>Figure E.2 — Engineering tolerance vs. CAD kernel tolerance</b> .....	<b>44</b>
<b>Figure E.4 — View of different levels of information in 3D CAD design</b> .....	<b>46</b>
<b>Figure E.5 — Failure to preserve shape following a new CAD system release</b> .....	<b>47</b>
<b>Figure E.6 — Representation change due to change of CAD system release</b> .....	<b>47</b>
<b>Figure E.7 — CAD archived model as the master model for the released design</b> .....	<b>48</b>
<b>Figure E.8 — Main types of use cases of CAD models (STEP archived and native) after release</b> .....	<b>49</b>
<b>Figure G.1 — Example of performance indicators used for the Ingestion process</b> .....	<b>55</b>
<b>Figure G.2 — Example of performance indicators used for the Retrieval process</b> .....	<b>56</b>
<b>Figure H.1 — Current level of maturity of components for the main types of CAD mechanical information</b> .....	<b>58</b>

**EN 9300-100:2018 (E)****European foreword**

This document (EN 9300-100:2018) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, 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 January 2019, and conflicting national standards shall be withdrawn at the latest by January 2019.

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, Former Yugoslav Republic of 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.

## Foreword

This European standard was prepared jointly by AIA, ASD-STAN, PDES Inc and the PROSTEP iViP Association.

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.

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 European standard as an industry resource to sustain the interoperability of digital product information, ensuring and maintaining authentic longevity throughout their product lifecycle.

Readers of this European 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.

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 Y 14.41). The document formatting etc, will follow that of the respective editorial rules of ASD-Stan and AIA.

## EN 9300-100:2018 (E)

# 1 Scope

## 1.1 Introduction

This European Standard defines common fundamental concepts for Long Term Archiving and Retrieval of CAD mechanical information for elementary parts and assemblies. It details the “fundamentals and concepts” of EN 9300-003 in the specific context of Long Term Archiving of CAD mechanical models.

CAD mechanical information is divided into assembly structure and geometrical information, both including explicit and implicit geometrical representation, Geometric Dimensioning and Tolerancing with Form Features.

The EN 9300-1XX family is organized as a sequence of parts, each building on the previous in a consistent way, each adding a level of complexity in the CAD data model. This includes the detailing of relationships between the essential information for the different types of CAD information covered by the EN 9300-1XX family.

As technology matures additional parts will be released in order to support new requirements within the aerospace community.

## 1.2 In scope

The present part describes:

- the fundamentals and concepts for Long Term Archiving and Retrieval of CAD 3D mechanical information;
- the document structure of the EN 9300-1XX family, and the links between all these parts;
- the qualification methods for long term preservation of archived CAD mechanical information; more specially, principles for the CAD validation properties and for verification of the quality of the CAD archived file;
- specifications for the preservation planning of archived CAD information;
- specific functions for administration and monitoring of CAD archived mechanical models;
- the definition of Archive Information Packages for CAD data.

## 1.3 Out of Scope

The following are out of scope for this part:

- Long Term Archiving of CAD 2D drawings;
- other CAD business disciplines, such as piping, tubing, electrical harnesses, composite, sheet metal design, kinematics.

This version does not include:

- fundamental and concepts for parts EN 9300-120 version 2, EN 9300-125, 1 EN 9300-130.

## 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 10303-203:2011, *Industrial automation systems and integration — Product data representation and exchange — Part 203: Application protocol: Configuration controlled 3D design of mechanical parts and assemblies*

ISO 10303-214:2010, *Industrial automation systems and integration — Product data representation and exchange — Part 214: Application protocol: Core data for automotive mechanical design processes*

ISO 10303-239:2005, *Industrial automation systems and integration — Product data representation and exchange — Part 239: Application protocol: Product life cycle support*

ISO 16792:2006, *Technical product documentation — Digital product definition data practices*

ISO 1101:2004, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**