

**ASD-STAN STANDARD**  
**NORME ASD-STAN**  
**ASD-STAN NORM**

**ASD-STAN prEN 9300-120**  
Edition P 1  
February 2019



PUBLISHED BY THE AEROSPACE AND DEFENCE INDUSTRIES ASSOCIATION OF EUROPE - STANDARDIZATION  
Rue Montoyer 10 - 1000 Brussels - Tel. + 32 2 775 8126 - Fax. + 32 2 775 8131 - [www.asd-stan.org](http://www.asd-stan.org)

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 graphic product and manufacturing information**

**Luft- und Raumfahrt — LOTAR - Langzeit-Archivierung und - Bereitstellung digitaler technischer Produktdokumentationen, wie zum Beispiel von 3D-, CAD- und PDM-Daten — Teil 120: Eindeutige 3D-CAD-Geometrie mit grafischen Produkt- und Fertigungsinformationen**

**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 graphiques 3D pour la fabrication du produit**

*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 for the needs of the European Aerospace 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, the ASD-STAN prEN will be submitted as a draft European Standard (prEN) to CEN (European Committee for Standardization) for formal vote and transformation to full European Standard (EN).*

*The CEN national members have then to implement the EN at national level by giving the EN the status of a national standard and by withdrawing any national standards conflicting with the EN.*

*ASD-STAN Technical Committee approves that: "This document is published by ASD-STAN for the needs of the European Aerospace Industry. The use of this standard is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."*

*ASD-STAN reviews each standard and technical report at least every five years at which time it may be revised, reaffirmed, stabilized or cancelled. ASD-STAN invites you to send your written comments or any suggestions that may arise.*

*All rights reserved. No parts of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of ASD-STAN.*

**Order details:**      E-mail: [sales@asd-stan.org](mailto:sales@asd-stan.org)  
                                Web address: <http://www.asd-stan.org/>

**Edition approved for publication**

**1<sup>st</sup> February 2019**

Comments should be sent within six months  
after the date of publication to  
ASD-STAN

**Digital Domain**

## Contents

|   | Page      |
|---|-----------|
| <b>Foreword .....</b>   | <b>4</b>  |
| <b>1 Scope .....</b>  | <b>5</b>  |
| <b>1.1 Introduction.....</b>  | <b>5</b>  |
| <b>1.2 In scope .....</b>   | <b>5</b>  |
| <b>1.3 Out of scope .....</b>   | <b>5</b>  |
| <b>2 Normative references .....</b>   | <b>6</b>  |
| <b>3 Terms, definitions and abbreviations .....</b>   | <b>6</b>  |
| <b>3.1 Product and Manufacturing Information (PMI).....</b>                                 | <b>7</b>  |
| <b>3.2 Geometric Dimensioning and Tolerancing (GD&amp;T).....</b>                           | <b>7</b>  |
| <b>3.3 Semantic Representation .....</b>  | <b>8</b>  |
| <b>3.4 Presentation.....</b>  | <b>8</b>  |
| <b>3.4.1 Character-based Presentation.....</b>  | <b>9</b>  |
| <b>3.4.2 Graphic Presentation.....</b>  | <b>9</b>  |
| <b>3.5 Saved View.....</b>  | <b>10</b> |
| <b>3.6 Cross-highlight:.....</b>  | <b>10</b> |
| <b>3.7 Polyline Presentation of PMI .....</b>   | <b>11</b> |
| <b>3.8 Tessellated Presentation of PMI:.....</b>  | <b>12</b> |
| <b>3.9 PMI Validation Properties: .....</b>   | <b>13</b> |
| <b>4 Applicability .....</b>  | <b>13</b> |
| <b>5 Business specifications for the long term archiving and retrieval of CAD PMI .....</b> | <b>14</b> |
| <b>5.1 Introduction .....</b>   | <b>14</b> |
| <b>5.2 Description of use cases for retrieval of 3D PMI entities.....</b>                   | <b>15</b> |
| <b>6 Essential Information of Product and Manufacturing Information (PMI) .....</b>         | <b>15</b> |
| <b>6.1 Dimensional tolerancing .....</b>  | <b>16</b> |
| <b>6.2 Geometric tolerances.....</b>  | <b>16</b> |
| <b>6.3 Other PMI related data (non-exhaustive) .....</b>                                    | <b>17</b> |
| <b>6.4 User Defined Attributes associated to CAD 3D Geometry .....</b>                      | <b>17</b> |
| <b>6.5 Saved view .....</b>   | <b>18</b> |
| <b>6.6 Associativity between the shape and PMI .....</b>                                    | <b>18</b> |
| <b>7 Definition of Core Model for Product and Manufacturing Information (PMI) .....</b>     | <b>18</b> |
| <b>8 Verification rules for Product and Manufacturing Information .....</b>                 | <b>20</b> |
| <b>8.1 Introduction .....</b>   | <b>20</b> |
| <b>8.2 Level of Verification .....</b>  | <b>20</b> |
| <b>9 Validation rules of Product and Manufacturing Information .....</b>                    | <b>20</b> |
| <b>9.1 Introduction .....</b>   | <b>20</b> |
| <b>9.1.1 Unicode String Validation Properties per PMI entity .....</b>                      | <b>21</b> |
| <b>9.1.2 Application of Unicode String Validation Properties .....</b>                      | <b>21</b> |
| <b>9.2 Levels of Validation .....</b>   | <b>21</b> |
| <b>9.3 Comparison of the PMI Validation Properties (PMIVP) .....</b>                        | <b>23</b> |
| <b>9.4 Results of the Validation.....</b>   | <b>23</b> |
| <b>9.4.1 At the ingest process (qualify).....</b>   | <b>23</b> |
| <b>9.4.2 At the retrieval process (comparison) .....</b>                                    | <b>24</b> |