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Information technology — 3D printing and scanning — Technical requirements for product data protection of an additive manufacturing service platform (AMSP)

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Classification of product data information on additive manufacturing service platform **3**
4.1 General 3
4.2 Categories of product data information on an AMSP 3
4.2.1 General 3
4.2.2 Product identification information 4
4.2.3 Product attribution information 4
4.2.4 Product geometric information 4
4.2.5 Product manufacturing information 4
4.2.6 Product transaction information 4
5 Protection levels **4**
5.1 General 4
5.2 Level I 5
5.3 Level II 5
5.4 Level III 5
6 Protection for different categories of product data information **5**
7 Technical requirements for product data information protection on an AMSP **6**
7.1 General 6
7.2 Data collection stage 6
7.3 Data display stage 6
7.4 Data transfer stage 6
7.5 Data deletion stage 7
8 Responsibilities and obligations assumed by different entities **7**
8.1 General 7
8.2 Responsibilities and obligations of 3D model providers 7
8.3 Responsibilities and obligations of 3D model receivers 7
8.4 Responsibilities and obligations of AMSPs 7
Bibliography **9**

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

Additive manufacturing (AM) has been used for rapid prototyping for many years and is increasingly being applied to volume production, mass customization and spare parts production, among other use cases. In recent years, the additive manufacturing service platform (AMSP) has developed rapidly. Especially with the integration of the internet, AMSP makes AM technology accessible to ordinary customers and helps to realize the development model from traditional mass production to personalized customization.

Meanwhile, it is noted that AM technology has brought many challenges to intellectual property protection. As the foundation of AM technology, 3D models are subject to both deliberate and accidental threats, including being stolen illegally during the transmission process on the internet or being distributed and printed without permission after they are sent to AM centres, which can cause a financial loss to the model provider and is also harmful to the healthy development of AMSPs. Currently, AMSPs lack the protection mechanism for product data information, especially for 3D models.

The purpose of this document is to provide requirements to effectively protect the intellectual property of 3D models, stimulate the innovative enthusiasm of designers and accelerate the adoption of AM technologies in the manufacturing ecosystem at large, thus better meeting the growing needs for personalized customization.

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Information technology — 3D printing and scanning — Technical requirements for product data protection of an additive manufacturing service platform (AMSP)

1 Scope

This document specifies the technical requirements for product data protection of an additive manufacturing service platform (AMSP). The following elements are within the scope of this document.

— Classification of product data information of an AMSP and the protection levels.

— Product data protection at four data-processing stages, i.e. data collection, data display, data transfer and data deletion.

— Responsibilities and obligations of different entities.

This document is applicable when individuals or organizations (e.g. commercial enterprises, government agencies and non-profit organizations) build an AMSP or improve existing ones to provide additive manufacturing (AM) and other services specific to the submission, design, and creation of AM parts.

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.

ISO/IEC 23510, *Information technology — 3D printing and scanning — Framework for an Additive Manufacturing Service Platform (AMSP)*

ISO/IEC 27017, *Information technology — Security techniques — Code of practice for information security controls based on ISO/IEC 27002 for cloud services*

ISO/IEC 29151, *Information technology — Security techniques — Code of practice for personally identifiable information protection*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology 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
additive manufacturing service platform
AMSP
platform that uses additive manufacturing (AM) technology and information technology to provide services according to *users'* (3.2) requirements

Note 1 to entry: Examples of services provided include objects/parts manufactured by AM technology, 3D model designs and other services specific to the submission, design, and creation of AM parts.

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Note 2 to entry: A typical AMSP usually consists of an online platform to gather requirements of users, a group of skilled staff to deal with users' requirements, 3D scanning equipment, AM machines as well as different kinds of feedstock.

Note 3 to entry: A typical AMSP can sometimes cooperate with individuals or organizations professionalized in specific industries (e.g. aerospace, medicine, etc.).

[SOURCE: ISO/IEC 23510:2021, 3.1]

3.2
user
individual or organization that needs parts manufactured by additive manufacturing (AM) technology and would like to turn to an *additive manufacturing service platform (AMSP)* (3.1) for service

[SOURCE: ISO/IEC 23510:2021, 3.2]

3.3
designer
individual or organization that performs 3D modelling and 3D scanning assigned by agreement between *user* (3.2) and *additive manufacturing service platform (AMSP)* (3.1)

[SOURCE: ISO/IEC 23510:2021, 3.3]

3.4
additive manufacturing centre
AM centre
place where additive manufacturing (AM) parts are manufactured according to the *user's* (3.2) requirement

Note 1 to entry: An AM centre may consist of several kinds of AM systems and corresponding feedstock.

Note 2 to entry: An AM centre can be operated by organizations that manage the *additive manufacturing service platform (AMSP)* (3.1) or by organizations/ individuals who operate AM systems qualified to be registered on the AMSP.

[SOURCE: ISO/IEC 23510:2021, 3.6]

3.5
3D model
3-dimensional design model
3D design model
data set that contains 3-dimensional geometric elements representing object/part to be manufactured

Note 1 to entry: These models include those which *users* (3.2) upload to *additive manufacturing service platforms (AMSP)* (3.1) that they already have or create online (using online design apps or 3D scanning equipment to scan existing objects/parts), or even find *designers* (3.3) on an AMSP to help create.

[SOURCE: ISO/IEC 23510:2021, 3.7, modified, — Note 1 to entry has been added.]

3.6
product data information on additive manufacturing service platform
information related to a *3D model* (3.5) that can be processed by the application software of *additive manufacturing service platform (AMSP)* (3.1) in the process of providing additive manufacturing (AM) products and relevant services

3.7
3D model provider
individual or organization that provides 3D model data to an *additive manufacturing service platform (AMSP)* (3.1) and has the ownership of 3D model data or obtains partial or all rights and interests after being legally authorized by the owners of 3D design data, including *users* (3.2) and *designers* (3.3)

3.8
3D model receiver
individual or organization that receives 3D model data from an *additive manufacturing service platform (AMSP)* (3.1) for manufacturing purposes, usually referred to additive manufacturing (AM) centres

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