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Standard**

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**Information technology — 3D
printing and scanning — Data
standard operating procedure
(SOP)**

*Technologies de l'information — Impression et numérisation 3D
— Mode opératoire normalisé (SOP) pour les données*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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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.

Introduction

This document was developed in response to the quality management needs of 3D printing and scanning technology, with the aim of taking full advantage of information and communication technology (ICT) in this context.

However, there is currently no standardized evaluation procedure for the process of turning scanned data into consistent and accurate 3D printed objects, making continuous quality assessment and improvement activities impossible. Issues with precision evaluation and inaccurate modelling from 3D scanned data exist, but no agreed standard specifies practically acceptable measurement accuracy or an evaluation process.

Artificial intelligence/machine learning (AI/ML) technology can be used for generating and optimizing 3D models from 3D scanned data, particularly for enhancing design accuracy and efficiency. For the training data of an ML-based model, the collection of as much data as possible (big data) is considered to improve the performance of the model. However, it is not practical to use big data as test data. Therefore, minimal requirements are necessary for achieving rigorous and comprehensive evaluation.

In this context, this document describes the standard operating procedure (SOP) and necessary requirements for curation and quality control of test data for evaluation of modelling from 3D scanned data.

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Information technology — 3D printing and scanning — Data standard operating procedure (SOP)

1 Scope

This document describes a standard operating procedure (SOP) for the curation and quality control of test data, consisting of 3D scanned data and its corresponding label data, for the evaluation of modelling from 3D scanned data.

This document classifies the main task phases and defines the required tasks in each phase of the 3D scanned and labelled data SOP.

This document defines essential requirements for test data for evaluating modelling from 3D scanned data and describes how to verify conformance to these requirements.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

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 Terms and definitions

3.1.1

measure

variable to which a value is assigned as the result of measurement

Note 1 to entry: The plural form “measures” is used to refer collectively to base measures, derived measures, and indicators.

[SOURCE: ISO/IEC/IEEE 15939:2017, 3.15]

3.1.2

measure

make a measurement

[SOURCE: ISO/IEC/IEEE 15939:2017, 3.16]

3.1.3

measurement

set of operations having the object of determining a value of a measure

[SOURCE: ISO/IEC/IEEE 15939:2017, 3.17, modified — Note 1 to entry has been removed.]