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Document management — 3D use of Product Representation Compact (PRC) format —

Part 1: PRC 10001

Gestion de documents — Utilisation en 3D du format compact de représentation de produit (PRC) —

Partie 1: PRC 10001



Reference number
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Contents

Page

Contents iii

Foreword v

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Document syntax conventions 2
4.1 Conventions 2
4.2 Example Structure 2

5 PRC file concepts 3
5.1 The PRC file 3
5.2 Versioning 5
5.3 Unique identifiers 6
5.4 Current data values 7
5.5 Userdata 7
5.6 Units 8
5.7 Tolerances 8
5.8 Compressed file sections 9
5.9 Compressed geometry 9
5.10 Compressed tessellation 9

6 PRC file contents 9
6.1 Fileheader 9
6.2 Filestructure 11
6.3 PRC Schema 13

7 PRC basic types 13
7.1 General 13
7.2 Uncompressed types 14
7.3 Compressed types 15

8 Base entities 21
8.1 General 21
8.2 Abstract root types 21
8.3 Structure and assembly 25
8.4 Miscellaneous Data 45
8.5 Graphics 56
8.6 Representation items 72
8.7 Markup 77
8.8 Tessellation 83
8.9 Topology 114
8.10 Curve 150
8.11 Surface 182
8.12 Mathematical Operator 209

9 Schema Definition 213
9.1 General 213
9.2 Enumeration Of Schema Tokens 214

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9.3 Schema Processing **216**
9.4 Schema Requirements and Examples **222**

10 I/O Algorithms **225**
10.1 Getnumberofbitsusedtostoreunsignedinteger **225**
10.2 Makeportable32bitsunsigned **225**
10.3 Writebits **225**
10.4 Writestring **226**
10.5 Writefloatasbytes **226**
10.6 Writecharacterarray **227**
10.7 Writeshortarray **228**
10.8 Writecompressedintegerarray **229**
10.9 Writecompressedindicearray **229**
10.10 Writeunsignedinteger **230**
10.11 Writeinteger **230**
10.12 Writeintegerwithvariablebitnumber **230**
10.13 Writeunsignedintegerwithvariablebitnumber **231**
10.14 Writedoublewithvariablebitnumber **231**
10.15 Writenumberofbitsthenunsignedinteger **232**
10.16 Writecompressedentitytype **232**
10.17 Writedouble **233**
10.18 Procedure For Writedouble **270**

11 Tessellation Compression Support **274**
11.1 General **274**
11.2 Huffman Algorithm **275**
11.3 Basis Pseudocode **277**

Annex A (informative) **Example: Triangle** **281**

Annex B (informative) **List of figures and tables** **283**

Bibliography **284**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 171, *Document management applications*, Subcommittee SC 2, *Application issues*.

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Introduction

The data representations in PRC allows 3D design data, typically created in CAD and PLM systems, to be viewed and interrogated by visualization applications and to be integrated into complex documents.

This document specifies a wide range of data forms. The wide range is necessary to:

— Achieve a high fidelity, visually equivalent representation of 3D design data produced by an advanced CAD or PLM system without requiring the original application.

— Allow applications to compute high accuracy product shape measurements.

PRC is intended to complement native or open standard CAD and PLM formats as a compact, concise binary form for visualization and documentation. PRC is not intended as a data format for CAD interoperability or use in factory automation systems, e.g. automated manufacturing and inspection systems, which is addressed by the ISO 10303 standards.

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Document management — 3D use of Product Representation Compact (PRC) format —

Part 1:
PRC 10001

1 Scope

This International Standard describes PRC 10001 of a product representation compact (PRC) file format for three dimensional (3D) content data. This format is designed to be included in PDF (ISO 32000) and other similar document formats for the purpose of 3D visualization and exchange. It can be used for creating, viewing, and distributing 3D data in document exchange workflows. It is optimized to store, load, and display various kinds of 3D data, especially that coming from computer aided design (CAD) systems.

This International Standard does not apply to:

— Method of electronic distribution

— Converting CAD system generated datasets to the PRC format

— Specific technical design, user interface, implementation, or operational details of rendering

— Required computer hardware and/or operating systems

2 Normative references

The following referenced documents are indispensable for the application 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 12651:1999, *Electronic imaging — Vocabulary*

ISO 24517-1:2008, *Document management — Engineering document format using PDF — Part 1: Use of PDF 1.6 (PDF/E-1)*

ISO 32000, *Document management — Portable document format*

IEEE 754, *Floating-Point Arithmetic*

The OpenGL Graphics System, A Specification, Version 4.1 (Core Profile), July 25, 2010[1]

[1] Available at http://www.opengl.org/registry/doc/glspec41.core.20100725.pdf

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 32000-1, ISO 24517-1 and ISO 12651 and the following apply.

3.1
PRC File Writer
software application which writes a particular PRC file

3.2
PRC File Reader
software application which reads a particular PRC file

3.3
byte
group of eight bits processed as a single unit of data

4 Document syntax conventions

4.1 Conventions

The following conventions are used within this document to describe data within a PRC File.

Terms highlighted in bold within this document signify field names in the description of entity types. Entity types are denoted in *italic*.

A table with three columns is used to describe the data within a contiguous portion of the file.

The first column indicates the name of the field. Field names are not unique and can be considered to have a scope limited to the data class.

The second column describes the type of the data. This might be

— A simple data type such as a Boolean, UnsignedInteger, or Double

— A simple class of data such as PRC_TYPE_TOPO_Body or PtrTopology where the name of the class is used to define the data stored for that class

— An Array<data class>[<size>] which indicates an array of data of the specified class. An array has <size> elements. Elements of an array are referenced beginning at 0.

The third column indicates if the field is required or optional. If the field is optional a condition is described when the field is present. The field may also be described.

4.2 Example Structure

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