
**Information technology — Font
information interchange —**

**Part 4:
Harmonization to Open Font Format**

*Technologies de l'information — Échange d'information sur les polices
de caractères*

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Partie 4: Harmonisation au format de police de caractères ouvert

ISO/IEC 9541-4:2009

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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ISO/IEC 9541-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 34, *Document description and processing languages*.

ISO/IEC 9541 consists of the following parts, under the general title *Information technology — Font information interchange*:

- *Part 1: Architecture* [ISO/IEC 9541-4:2009
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- *Part 2: Interchange format*
- *Part 3: Glyph shape representation*
- *Part 4: Harmonization to Open Font Format*

Introduction

ISO/IEC 9541 is a font information interchange standard and is designed to be independent of any concrete font file format. The Open Font Format (ISO/IEC 14496-22) is a font file format specification that is based on the TrueType font file format. With regard to the handling and utilization of the typographic properties stored in OFF file, ISO/IEC 14496-22 describes the implementations on Microsoft Windows or IBM OS/2 only. Therefore, ISO/IEC 14496-22 does not specify the method for defining a font resource in ISO/IEC 9541 architectures from a given OFF file, because it is out of the scope. ISO/IEC 9541-4 fills the gap between OFF file and font resource in ISO/IEC 9541.

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Information technology — Font information interchange —

Part 4: Harmonization to Open Font Format

1 Scope

ISO/IEC 9541 specifies the architecture of font resources, as well as the formats for font interchange among information processing systems. It also specifies the architecture and formats that can be used to construct font references in general electronic document interchange.

This part of ISO/IEC 9541 specifies the correspondences between ISO/IEC 9541 font resource and ISO/IEC 14496-22 Open Font Format file (OFF), to define ISO/IEC 9541 font resource from a given OFF file. The classification (required or optional), syntax, and possible values of the properties are defined in ISO/IEC 9541-1 and ISO/IEC 9541-2. The glyph shape representation and its interpretation are defined in ISO/IEC 9541-3.

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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/IEC 9541-1, *Information technology — Font information interchange — Part 1: Architecture*

ISO/IEC 9541-2, *Information technology — Font information interchange — Part 2: Interchange format*

ISO/IEC 9541-3, *Information technology — Font information interchange — Part 3: Glyph shape representation*

ISO/IEC 10036, *Information technology — Font information interchange — Procedures for registration of font-related identifiers*

ISO/IEC 10180, *Information technology — Processing languages — Standard Page Description Language (SPDL)*

ISO/IEC 14496-18, *Information technology — Coding of audio-visual objects — Part 18: Font compression and streaming*

ISO/IEC 14496-22, *Information technology — Coding of audio-visual objects — Part 22: Open Font Format*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 9541-1, ISO/IEC 9541-2, ISO/IEC 9541-3, ISO/IEC 14496-22 and the following apply.

NOTE The definitions given in 3.1 and 3.2 take precedence over the definitions of the same terms given in ISO/IEC 9541-1, ISO/IEC 9541-2, ISO/IEC 9541-3 and ISO/IEC 14496-22.

3.1 AFII glyph name

glyph name defined by the Association for Font Information Interchange (AFII)

3.2 italic script typeface

NOTE 1 In ISO/IEC 9541, “italic” does not refer to the oblique typeface that makes the upright typeface slanted.

NOTE 2 In ISO/IEC 14496-22, “italic” means both the script typeface and the oblique typeface synthesized from the normal typeface.

4 Harmonization to Open Font Format

4.1 Harmonization of the elements in OFF “head” table

4.1.1 “Table version number” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

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4.1.2 “fontRevision” element

This element is used to define ISO/IEC 9541-1 DATAVERSION.

4.1.3 “checksumAdjustment” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which is used by the checksum calculation.

4.1.4 “magicNumber” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value because it is constant and specific to OFF file.

4.1.5 “flags” element

The flags element is 16 bit value to describe the feature of the OFF file. The font file of OFF stores this element in big endian and the bit0 means its LSB, bit15 means its MSB. The bit5-10 are used by TrueType fonts designed for Apple Macintosh font manager, but their specification is out of OFF.

a) bit0

Bit0 shows Boolean flag if Baseline is set to y=0 line. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 do not have per-font Boolean flag for the position of Baseline.

b) bit1

Bit1 shows Boolean flag if LeftSideBearing is set to x=0 line. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 do not have per-font Boolean flag for the position of LeftSideBearing.

c) bit2

Bit2 shows Boolean flag if sfnt TrueType glyph procedure depends on pointsize. ISO/IEC 9541-1 and ISO/IEC 9541-2 have no per-font boolean flag for specific glyph shape representation.

d) bit3

Bit3 shows Boolean flag if PPEM is integer. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which depends on glyph shape representation and the glyph shape procedure interpreter.

e) bit4

Bit4 shows Boolean flag if Microsoft instruction to change character width is used. ISO/IEC 9541-1 and ISO/IEC 9541-2 have no per-font Boolean flag for specific glyph shape representation.

f) bit11

Bit11 shows Boolean flag if this OFF file is Agfa MicroType font. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value because this value declares the font file compression technology defined in ISO/IEC 14496-18 and has no effects on font properties.

g) bit12

Bit12 shows Boolean flag if this OFF file is converted file. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value because this value declares the source of font file and has no effects on font properties.

h) bit13

Bit13 shows Boolean flag if this OFF file is designed for Microsoft ClearType rasterizer. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value because it is used by specific implementation.

4.1.6 “unitPerEm” element

This element is used to define ISO/IEC 9541-1 RELUNITS.

4.1.7 “created” element

This element is used to define ISO/IEC 9541-1 DATAVERSION.

4.1.8 “modified” element

This element is used to define ISO/IEC 9541-1 DATAVERSION.

4.1.9 “xMin” element

This element is used to define minx in ISO/IEC 9541-1 MAXFONTEXT.

4.1.10 “yMin” element

This element is used to define miny in ISO/IEC 9541-1 MAXFONTEXT.

4.1.11 “xMax” element

This element is used to define maxx in ISO/IEC 9541-1 MAXFONTEXT.

4.1.12 “yMax” element

This element is used to define maxy in ISO/IEC 9541-1 MAXFONTEXT.

4.1.13 “macStyle” element

The font file of OFF stores this element in big endian and the bit0 means its LSB, bit15 means its MSB. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value. This element is used by Apple Macintosh to declare an OFF file as an embolden typeface of another typeface. In the matching, the combination of FamilyName and macStyle is used. ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 do not provide such mechanism to relate a typeface to another typeface.

a) bit0

Bit0 shows Boolean flag if the glyph in this OFF file is already emboldened. This element is used to define ISO/IEC 9541-1 WEIGHT.

b) bit1

Bit1 shows Boolean flag if the glyph in this OFF file is Italic or oblique. This element is used to define ISO/IEC 9541-1 POSTURE.

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c) bit2

Bit2 shows Boolean flag if the glyph in this OFF file has underline. This element is used to define ISO/IEC 9541-1 DSNGROUP.

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d) bit3

Bit3 shows Boolean flag if the glyph in this OFF file is outlined. This element is used to define ISO/IEC 9541-1 DSNGROUP.

e) bit4

Bit4 shows Boolean flag if the glyph in this OFF file is shadowed. This element is used to define ISO/IEC 9541-1 DSNGROUP.

f) bit5

Bit5 shows Boolean flag if the glyph in this OFF file is condensed. This element is used to define ISO/IEC 9541-1 PROPWIDTH.

g) bit6

Bit6 shows Boolean flag if the glyph in this OFF file is extended. This element is used to define ISO/IEC 9541-1 PROPWIDTH.

4.1.14 “LowestRecPPEM” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value because it depends on output surface. If the information on the resolution of output surface is available, this value can be related with ISO/IEC 9541-1 MINSIZE.

4.1.15 “fontDirectionHint” element

This element is used to define ISO/IEC 9541-1 NOMWRMODE.

4.1.16 “indexLocFormat” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

4.1.17 “glyphDataFormat” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

4.2 Harmonization of the elements in OFF “name” table**4.2.1 “copyright notice” element**

This element is used to define ISO/IEC 9541-1 DSNCOPYRIGHT.

4.2.2 “Font Family Name” element

This element is used to define ISO/IEC 9541-1 FONTFAMILY.

4.2.3 “Font Subfamily Name” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.4 “Unique Font Identifier” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.5 “Full Font Name” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.6 “Version String” element

This element is used to define ISO/IEC 9541-1 DATAVERSION.

4.2.7 “PostScript Name” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which is specific to output surface.

4.2.8 “Trademark” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.9 “Manufacture Name” element

This element is used to define ISO/IEC 9541-1 DSNSOURCE.

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4.2.10 “Designer” element

This element is used to define ISO/IEC 9541-1 DSNSOURCE.

4.2.11 “Description” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.12 “URL Vendor” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.13 “License Description” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.14 “Preferred Family” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.15 “Compatible fullname” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.16 “Sample text” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

4.2.17 “PostScript CID fontname” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value.

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4.3 Harmonization of the elements in OFF “hhea” table

4.3.1 “Table version number” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

4.3.2 “Ascender” element

This element is used to define maxy in ISO/IEC 9541-1 MAXFONTEXT.

4.3.3 “Descender” element

This element is used to define miny in ISO/IEC 9541-1 MAXFONTEXT.

4.3.4 “LineGap” element

This element is used to define ISO/IEC 9541-1 MINLINESP.

4.3.5 “advanceWidthMax” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this statistical value, it should be consistent with the value calculated from per-glyph properties.

4.3.6 “minLeftSideBearing” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this statistical value, it should be consistent with the value calculated from per-glyph properties.

4.3.7 “minRightSideBearing” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this statistical value, it should be consistent with the value calculated from per-glyph properties.

4.3.8 “xMaxExtent” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this statistical value, it should be consistent with the value calculated from per-glyph properties.

4.3.9 “caretSlopeRise” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which is designed for text input user interface.

4.3.10 “caretSlopeRun” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which is designed for text input user interface.

4.3.11 “caretOffset” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which is designed for text input user interface.

4.3.12 “metricDataFormat” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

4.3.13 “numberOfHMetrics” element

ISO/IEC 9541-1, ISO/IEC 9541-2 and ISO/IEC 9541-3 have no predefined property to interchange this value which describes the concrete file structure.

4.4 Harmonization of the elements in OFF “hmtx” table**4.4.1 “advanceWidth” element**

This element is used to define ISO/IEC 9541-1 EX.

4.4.2 “leftSideBearing” element

This element is used to define ISO/IEC 9541-1 MINEX.