ISO/IEC JTC1/SC34/WG2

Liaison statement to SC29/WG11 on ISO/IEC 14496-4:2004/ FPDAM 26 (ISO/IEC JTC 1/SC 29/WG 11 N9373)

SC34/WG2 reviewed ISO/IEC JTC1/SC29/WG11 N9373, Text of ISO/IEC 14496-4:2004/FPDAM 26 "Conformance levels and bitstreams for Open Font Format". We recognized that the text is written for ISO/IEC 14496-4 conformance test of an OFF object embedded in MPEG-4 bitstream, or another conformance test of a MPEG-4 decoder to testify its features to deal the OFF object embedded in MPEG-4 bitstream, and it defines nothing for a generic OFF decoder or the structure of the embedded font objects (e.g. a decoder for TrueType font embedded in PDF (ISO 32000) document is out of scope of the text). Although it is focused to the utilization of OFF in MPEG-4 bitstream, there are a few points to be clarified. We provide the list of them in following.

1 Conformance test should clarify the implementation-specific notes in ISO/IEC 14496-22.

In ISO/IEC 14496-22, there are many implementation-specific notes. The referred implementations are Microsoft Windows (its various versions), IBM OS/2, Apple Macintosh and Adobe ATM. A decoder of OFF embedded in MPEG-4 bitstream can be different from all of them.

- According to ISO/IEC 14496-22 p. 6 "3.6 TrueType Collections", TrueType Collection of CFF outline OFF is permitted, but it notes that "the CFF rasterizer does not currently support TTC files". If a decoder without TTC support can claim the conformance level 3, it should be noted.
- According to ISO/IEC 14496-22 p. 9, a few requirements of 'cmap' subtables are noted for Windows and Macintosh platform. For example, Windows can ignore 'cmap' subtable if platformID=1 and encodingID=0, and Macintosh can ignore 'cmap' subtable if platform=3 and encoding=1. A decoder for OFF embedded in ISO/IEC 14496 bitstream is permitted to ignore a 'cmap' subtable if specific platformID and encodingID are used? In addition, a decoder for OFF embedded in ISO/IEC 14496 bitstream requires a format 4 'cmap' subtable for platformID=3, encodingID=1 as Windows requires?
- According to ISO/IEC 14496-22 p. 15, Windows does not support cmap subtable in format 8 for UCS-4 encoding. A decoder for OFF embedded in ISO/IEC 14496 bitstream is required to support this format?
- According to ISO/IEC 14496-22 p. 17 note on "head" table's "flags" entry bit 11, the font file format defined by ISO/IEC 14496-22 is already decompressed. Therefore, it is expected that: a MicroType compressed font file format itself is not conformant to ISO/IEC 14496-22, and a decoder for ISO/IEC 14496-22 is not required to implement MicroType decompression. If this is correct, it should be noted that the conformance for ISO/IEC 14496-18 font compression is out of the scope of ISO/IEC 14496-22 conformance.
- According to ISO/IEC 14496-22 p. 59 "4.5.1.2.4 Format 4: metrics in EBLC, compressed data", there is no specification of the data structures of format 4 EBLC. A decoder for OFF embedded in ISO/IEC 14496 bitstream is required to support this format?

2 Words "optional" and "and/or" are not clear.

The word "optional" is used for 'VORG' table support in 4.15.1, conformance level 3. If a decoder just ignores 'VORG' table, it can conform level 3? Or, "optional" means that 'VORG' table is not essential table for CFF OpenType (as the second paragraph in ISO/IEC 14496-22 4.4.2 tells) and a decoder conforming level 3 must deal 'VORG' correctly if it is found? If latter, is there any reason to drop other optional tables (e.g. vertical-writing related tables: 'VDMX', 'vhea', 'vmtx', and rasterization control related tables: 'gasp', 'LTSH', 'hdmx', and DRM related tables: 'DSIG') from the definition of conformance levels? If the support of 'VORG' is required, it means the definition

of conformance level should be aware of vertical writing mode, but no conformance level mentions TrueType vertical tables.

The word “and/or” is used for complex script tables in 4.15.1, conformance level 4. It is not clear if a decoder ignoring “additional optional advance typographic tables” is permitted to claim the conformance level 4.

3 Conformance “level” is not in the inclusion relation.

The word “conformance level” should be used when the conformance levels are designed in an inclusion relation. For example, a claim “decoder XXX conforms level 2” is expected, but a claim “decoder XXX conforms level 2 and 3” is not expected. Figure 1 is a Venn diagram illustration of the structure of 4 conformance levels described in 4.15.1. The conform level 1/2 and level 3 are in parallel. Separation of TrueType based conformance level and PostScript based conformance level would be easier to indicate the available features of a decoder.

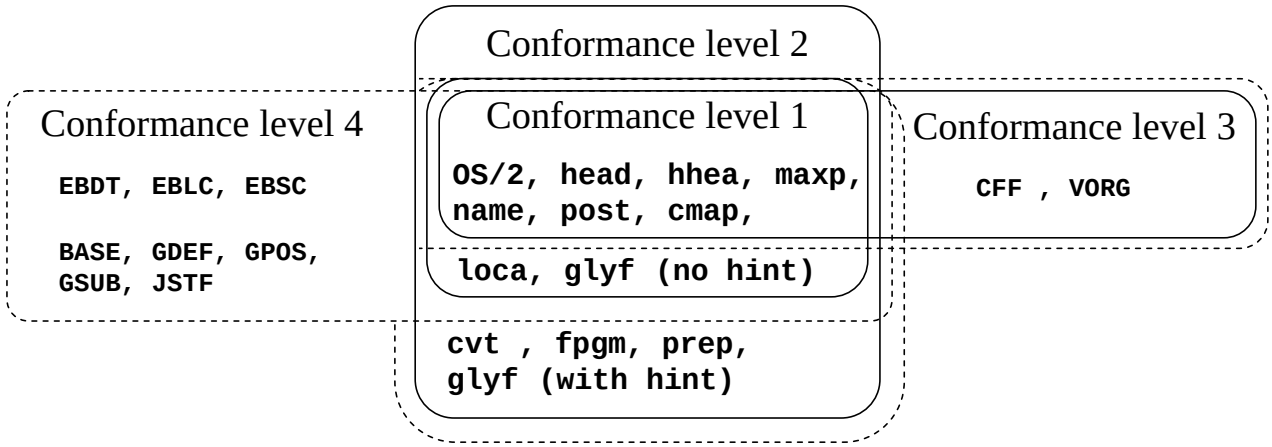

Figure 1: ISO/IEC 14496-4/FPDAM 26 Conformance level

4 The feature for bitmap font is classified in too higher level.

From the point of view for the decoder implementation, the support for traditional TrueType (bitmap and TrueType outline) is remarkably easier than the support for complex script support (‘BASE’, ‘GDEF’, ‘GPOS’, ‘GSUB’, ‘JSTF’). The separation of complex script support and bitmap support in different level is convenient for the existing TrueType font rasterizer to claim its feature correctly.

5 The classification of advanced typographic tables is too comprehensive.

According to OFF layout tag registry (ISO/IEC 14496-22, 5.4) and Microsoft documents for script-specific development, ‘GSUB’ and ‘GPOS’ tables are classified as essential tables to support complex script layout. BASE is also important to support the layout defined in CSS, SVG etc. The ‘GDEF’ and ‘JSTF’ tables may be required by the text layout in higher quality. Moving them ‘BASE’, ‘GDEF’ and ‘JSTF’ to higher conformance level may be convenient to implement the minimum Unicode renderer.

6 The separation of level 1 and level 2 is arguable.

One of the reasons to divide level 1 and level 2 is the simplification of TrueType scaler to exclude hinting, grid-fitting features. Except of ‘cvt’, ‘fpgm’ and ‘prep’, there are left a few tables related to the features: ‘gasp’ and ‘LTSH’. These tables should be listed as optional in level 2.

However, from the viewpoint of content producer, it is not easy to make an OFF bitstream for level 1 decoder from a full-featured TrueType font resource. Especially, ‘fpgm’ table can be used to common subroutine which is used in many glyphs, regardless with the utilization of TrueType

hinting. If a content producer simply strips ‘cvt’, ‘fpgm’ and ‘prep’ tables from TrueType font, the result may be broken font. The content producer must check the content of ‘cvt’, ‘fpgm’, ‘prep’ and ‘glyf’, then it must reorganize ‘glyf’ table which can be rasterized without ‘cvt’, ‘fpgm’ and ‘prep’. The cost of such reorganization may be too expensive and sometimes such reorganization is impossible due to the font license.

If the separation of level 1 and level 2 is introduced only for hinting technology, the more permissive definition of the conformance level 1 is expected: ‘cvt’, ‘fpgm’, ‘prep’ etc are permitted, but the execution of TrueType hinting instructions are dependent with the implementations.

If the separation of level 1 and level 2 is not only for the hinting technology but also for the simplification of TrueType instruction interpretation, we guess the support of composite glyph may be arguable if it should be included in conformance level 1.

7 The conformance level for CFF Open Font is arguable.

The data structure of ‘CFF’ table was originally designed to be a self-standing font file, therefore some 8bit character sets for Latin characters can be supported without ‘cmap’ (especially for 8bit character sets fitting to Adobe PostScript StandardEncoding and ExpertEncoding). Hence, some decoder implementation of CFF Open Font derived from existing PostScript font decoder may use ‘CFF’ table only and discard other tables’ contents. Such implementation cannot claim the conformance level 3?

8 Some digital data designed for final form use embedded TrueType without cmap.

SC34/WG2 recognizes that the purpose of the introduction of OFF into ISO/IEC 14496 is a standardization of the font resource to render Unicode string, it is a significant advantage from existing font resource for digital televisions, e.g. Portable Font Resource which is based on one-to-one mapping model from a character code to a glyph. However, among proposed conformance levels, this advantage is available only at the highest level 4. In the lower conformance level, the decoder seems to be based on one-to-one mapping model from a character code to a glyph. In addition, considering that ‘cmap’ table is always required, the decoder may be expected to access a glyph via a character code always.

In the case of digital data for final form, e.g. PDF and/or PCL, a document producer determines exact glyph shape and position of a character, and a document renderer simply retrieve a specified glyph by TrueType glyph index (not by character code) and put it at specified position. The embedded TrueType in such final forms can lack cmap table (see Adobe TechNote #5012 “Type 42 Font Format Specification” p. 12 “4.7 Required TrueType Tables”, and/or Hewlett Packard “PCL 5 Printer Language Technical Reference Manual” 11-41 “Formats of Data Segments”), because the document renderer does not use character code anymore.

Although ISO/IEC 14496 has no document coding method by such mechanism at present, the reservation of conformance level for such cmap-less TrueType font will enable the flexible document interchange via MPEG-4 in future.