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ORGANISATION INTERNATIONALE NORMALISATION
ISO/IEC JTC 1/SC 29/WG 11
CODING OF MOVING PICTURES AND AUDIO**

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Source: Requirements
Title: Call for Proposals for ISO/IEC 14496-22 "Open Font Format" Color Font
Technology and MATH layout support
Status: Approved

**Call for Proposals for ISO/IEC 14496-22 "Open Font Format" Color Font
Technology and MATH layout support**

Introduction

MPEG, a working group in ISO/IEC, has produced many important standards (MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21, etc.). Some of these standards concern basic technologies such as video, audio, advanced text and 2D graphics, fonts and 3D Graphics compression, transport protocols etc., while others concern system level issues such as scene composition and representation, multimedia application formats and extensible multimedia middleware. ISO/IEC 14496-22 "Open Font Format" (OFF) is one of the standards produced by MPEG Committee that defines font data format representation and is identical to the widely adopted OpenType® industry standard.

In recent years, there has been a significant interest in extending the font format to add support for richer design capabilities such as color and animations. Various approaches have been evaluated by the industry groups, some of them are based on other existing standards such as SVG while other attempts have been made to extend the existing data formats to support new features and functionality.

There have also been shown a clear need to support complex layout of mathematical expressions and equations. While efforts have been made to develop tools that would allow describing the math content at the authoring level (such as e.g. MathML) support at the text layout level is needed to achieve consistency of math expressions in digital publications.

MPEG believes that amending the existing OFF specification to include support for richer design capabilities would be both feasible and desirable. With this document, "Call for Proposals for Color Font Technology and MATH layout extensions", MPEG would like to ask for contribution of technologies that satisfy the requirements outlined in the Annex A of this document.

The proposed timeline for developing Color Font Technology extensions as part of the 3rd edition OFF standard [1] is as follows:

- Publication of the Call for Proposals: **November 2013**
- Submission and evaluation of the responses: **January 2014**
- Development of the new parts of OFF Technology:
 - Working Draft: **January 2014**
 - Committee Draft: **April 2014**
 - DIS: **October 2014**
- Approval / Publication of the standard: **February 2015**

Requirements for the proposals

Those intending to submit a proposal in response to this Call should consider the following aspects:

1. It is not required to be an MPEG member to submit a proposal.
2. Any submission in response to this Call for Proposals shall include the completed information form, as outlined in the Annex B.
3. A proposal need not support all the requirements listed in Annex A. However, a table shall be provided (see Annex B) indicating
 - a. Which requirements are met / not met
 - b. The reason why a requirement could / could not be satisfied.
4. A response may include solutions that *extend* the requirements listed in Annex A. In this case proponents shall justify why an extension should be beneficial to the OFF.
5. A response may propose additional requirements. MPEG may decide to retain the requirements or consider them in a future additional Calls for Proposals.
6. Proposals shall be received no later than January 7, 2014 23.59 GMT by the Chairs of MPEG Requirements Subgroup Joern Ostermann (ostermann@tnt.uni-hannover.de), MPEG System Subgroup Young-Kwon LIM (yklwhite@gmail.com) and by the Chair of AHG on Font Format representation Vladimir Levantovsky (vladimir.levantovsky@monotype.com).

Evaluation Procedure

Proposals will be evaluated at MPEG meeting to be held on January 13-17, 2014 in San Jose, CA, USA. As the evaluation will be based on the discussions and consensus among the experts participating in the evaluation meeting, proponents are invited to come and present their proposals at the evaluation meeting and to participate in discussions about proposals. The evaluation will take the following (not necessarily complete) evaluation criteria into account: degree to which the currently defined requirements are satisfied by a proposal, completeness, extensibility, simplicity, effectiveness, flexibility and scalability.

The evaluation is intended to lead to selecting and/or developing a specification based upon the responses to this Call. However, MPEG reserve the right to adopt none, one, or a combination of several proposals as well as to issue another call for proposals. All decisions will be made by consensus of the experts of MPEG.

Source Code and IPR

Proponents are advised that, upon acceptance by MPEG for further evaluation, MPEG may require that they shall provide reference software implementations of their proposed technologies suitable for integration in the MPEG-4 reference software by a time the OFF standard shall enter DIS stage (October 2014). By responding to this Call, Proponents agree to be bound by the obligations contained in this point. Failure to provide the said software may lead to a removal of their technologies from the standard. Proponents are advised that the reference software should be released according to the ISO/IEC JTC 1/SC 29 Software Copyright Licensing Disclaimer (<http://www.itscj.ipsj.or.jp/sc29/29w7scld.htm>).

Furthermore, proponents are advised that this Call is being made subject to the ISO/IEC/ITU common patent policy (see http://isotc.iso.org/livelink/livelink/fetch/2000/2122/3770791/Common_Policy.htm or [ISO/IEC Directives Part 1](#), Appendix I) and the other established policies of the standardization organizations.

References

- [1] N13962 Working Draft of the 3rd edition of ISO/IEC 14496-22 "Open Font Format"

Annex A: Requirements for Color Font Technology and MATH layout support extensions

General Requirements for OFF extensions

1. Ease of integration with OFF
 - A proposed technology shall be backward compatible with existing OFF rendering / layout engines and shall not break the existing implementations.
2. Low implementation complexity
 - A proposed technology shall not introduce significant burden on implementers and shall be easily implemented on various platforms including devices with limited capabilities and constrained memory / CPU resources.
 - A proposed technology format shall not cause significant increase in font file sizes
 - An ideal solution should be implementable without requiring any levels of connectivity and should be practical for low capability devices such as tablets and e-book readers, consumer appliances, DTV set-top boxes, car infotainment and navigation equipment, etc.

Requirements for Color Font Technology

1. Compatibility with existing OFF glyph description and layout mechanisms
 - A proposed technology shall primarily address presentation aspects of color glyph encoding and shall support / offer an easy way to integrate new functionality with the existing glyph descriptions and glyph layout / positioning mechanisms already defined by the OFF standard.
 - A fallback mechanism shall be defined for those cases when a particular device (e.g. a monochrome printer) or a document format (such as e.g. PDF) is not able to display certain features of new colored and or/ animated glyphs.
2. Rich design capabilities

A proposed color glyph representation format should provide rich design capabilities enabling a font designer to create glyph outlines utilizing various design elements, including but not limited to

 - solid and gradient color with various degrees of opacity
 - multiple color layers
 - animation
 - ability to define both closed contours and open strokes
3. Scalability

A proposed technology for color glyph representation shall support capabilities for high quality scaling of text at any resolution and point sizes with the highest levels of legibility

and readability and should ideally offer the same levels of rendering quality supported by the existing glyph data formats.

Requirements for MATH layout extensions

1. Compatibility with existing OFF layout mechanisms

A proposed technology shall primarily address presentation aspects of mathematical formulas and shall, insofar as rich presentation capabilities permit, support / offer an easy way to integrate new functionality with the existing layout / positioning mechanisms and table formats, and feature tag definitions already defined by the OFF standard.

2. Rich presentation capabilities

A proposed MATH layout table format shall provide rich presentation capabilities enabling support for complex object layout utilizing multiple elements with various metrics, styles and positioning attributes. Also, the support for certain typographic features such as script variants and flatten versions of accent glyphs, and ability to combine multiple glyphs in complex hierarchical objects are required.

Annex B: Information Form to be filled in by the contributor of a proposal for Composite Font Standard

1. Title of the proposal
2. Organization (i.e., name of proposing company)
3. Provide the most prominent use cases your proposal covers.
4. Is your proposal relying on existing standards? If yes, please list them.
5. Indicate availability of any software implementation
6. Is your proposal also submitted to another SDO (Standard Development Organizations) (For informational purposes only)? If yes, please state when and where it was submitted.
7. Do you plan to attend the 106th MPEG meeting and make a presentation to explain your proposal and answer questions about it?
8. Will you provide a demonstration?

To clearly identify the requirements satisfied by each proposal, proponents should complete the table of requirements provided below.

<i>ID</i>	<i>Requirements for OFF Technology extensions</i>	Yes	No	Partial	N/A	Comments
	General requirements for OFF extensions					
<i>G1</i>	Backward compatibility with the existing OFF rendering and layout mechanisms					
<i>G2</i>	Implementation complexity: please provide additional comments describing the estimated additional load on the existing OFF implementations (such as increase in allocated memory, CPU load, expected increase in font file size, etc.					
	Requirements for OFF Color Font Technology					
<i>C1a</i>	Ease of integration with the existing OFF glyph description and layout mechanisms					
<i>C1b</i>	Defined fallback mechanism for traditional glyph rendering for devices / applications with limited capabilities					
<i>C2</i>	Support for rich design capabilities including:					
<i>C2a</i>	a) support for multiple color layers					
<i>C2b</i>	b) support for solid color, color gradients and opacity					
<i>C2c</i>	c) support for both open and closed contours / strokes					
<i>C2d</i>	d) animation capabilities					
<i>C3a</i>	Support for scalable glyph description					
<i>C3b</i>	Support for high quality glyph scaling (such as e.g. hinting capabilities)					
	Requirements for OFF MATH layout extensions					
<i>M1</i>	Ease of integration with the existing OFF and layout mechanisms, table and feature tag description formats					
<i>M2</i>	Support for rich presentation capabilities:					
<i>M2a</i>	Support for complex layout utilizing multiple element with different metrics and positioning attributes					
<i>M2b</i>	Support various typographic features and ability to combine multiple glyphs in complex hierarchical objects					