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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 3.

ISO/IEC 24754 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 34, Document Description and Processing Languages.

When a structured document is interchanged between an originator and a recipient, the recipient refers to the style specifications that the originator provides to reconstruct the presentation. However, when the recipient does not have sufficient rendering functionality, it may fail to reconstruct the presentation output as the originator expected. In order to preserve presentation output in the course of interchange, the originator and recipient need to negotiate over functionalities referring to the specifications of document rendering systems. To satisfy this requirement, this standard provides the minimum requirements for specifying document rendering systems and document formats.

Minimum requirements for specifying document rendering systems

1   Scope

This International Standard can apply to the document processing environment, where a document is given in a logically structured format which is expressed by a structure markup language, and the visual representation of the document is described by means of the external style and layout specifications which a style and layout specifications language provides. The visual representation of the given document is generated when the style and layout specifications are applied to the logical structure by a document rendering system.

This International Standard provides an abstract list of the features that a document rendering system may have, thus providing a frame of reference, against which the user and implementor can compare the features of a document rendering system. However, this International Standard does not direct how each document rendering system should behave.

This International Standard provides the minimum requirements to specify the features that a document rendering system which transforms formatting objects to rendering output. It may be used as a frame of reference, against which the user, implementer, or software agent may compare the features of a document rendering system. According to these requirements, the user may express what he or she expects of a document rendering system, the implementer may describe the functionality and capability of the document rendering system that he or she implements, and the software agent may negotiate a minimum set of functionality and capability that are shared across different document rendering system implementations.

2   Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of ISO/IEC 10036:1996/Cor 2:2002, *Information technology -- Font information interchange -- Procedures for registration of font-related identifiers*,

ISO/IEC 9541-1:1991, *Information technology -- Font information interchange* ,

ISO/IEC TR 19758:2003, *Information technology -- Document description and processing languages -- DSSSL library for complex compositions*,
. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on

ISO/IEC 10036:1996/Cor 2:2002, *Information technology -- Font information interchange -- Procedures for registration of font-related identifiers*,

ISO/IEC 9541-1:1991, *Information technology -- Font information interchange* ,

ISO/IEC TR 19758:2003, *Information technology -- Document description and processing languages -- DSSSL library for complex compositions*,
are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 10036:1996/Cor 2:2002, *Information technology -- Font information interchange -- Procedures for registration of font-related identifiers*,

ISO/IEC 9541-1:1991, *Information technology -- Font information interchange* ,

ISO/IEC TR 19758:2003, *Information technology -- Document description and processing languages -- DSSSL library for complex compositions*,

3   Terms and definitions

3.1 document rendering system

Software agent which takes in formatted document and generates rendered output.

3.2 rendering

Transforming of a structured document from a certain set of constraints to another set of constraints. In most cases, a rendered document have stronger constraints than a pre-rendering document does.

3.3 feature

that of a document rendering system, particularly at times when the document rendering system negotiate the rendering content with physical boundaries, e.g. line break or page break, of the output media.

3.4 paged media

the form of media, which is divided into one or more smaller repetitive areas, each of which has its own independent geometric attributes.

3.5 region

geometric part of a page that has static position and can appear at the same position on sequential pages.

3.6 area

arbitrary part on a page that may have a floating position or be handled as a flowed object

3.7 header

Set of objects that are positioned at the beginning of each page of a document, which may include such objects as page number, title of document, etc.

3.8 footer

objects that are positioned at the end of each page of a document, which may include such objects as page number, title of document, etc.

3.9 operator

a person who interacts with a document or with the document rendering system in order to print or display the document

4   Features of a document rendering system

4.1   General description of a document rendering system

4.1.1   Supported output device

The output device(s) that the document rendering system supports are described. E.g. Printing systems and browsers.

4.1.2   Supported document formats

The document formats, e.g. XML, RTF, etc., which the document rendering system supports to express the logical structure of a given document are described.

4.1.3   Supported style languages

The style specification languages, DSSSL and other style specification languages, that the document rendering system supports are described.

4.1.4   Rendering media dimension

The dimension of the rendering media, whether it is paged media or non-paged media, is described here. If the rendering media is paged, supported page sizes are described, e.g. A4, Letter, Legal, etc.

4.1.5   Colour support

The level of support for colour is described, refering to whether colour is supported by the document rendering system, and if colour is supported, what colour profiles are supported. Colour system, e.g. RGB and CMYK and depth of colour, e.g. 8-bit (256 colours) and 24-bit (16 million colours).

4.1.6   Dynamic content generation

The support for dynamically-generated content, meaning content calculated by and supplied by the stylesheet either as fixed value or conditionally-generated based on the presense or absense of data at rendering time.

4.1.7   Supported coded character sets and encoding schemes

Supported coded character standards and encoding schemes are described. E.g. UTF-8, SHIFT_JIS, KS-5601, etc.

4.1.8   Composition of combined characters

The level of support for the composition of combined syllabic characters, whether the document rendering system supports the stacking of combined characters and environmental glyph alteration are supported, is described. E.g. Thai, Arabic, etc.

4.1.9   Directionality of text

Support for the inherent directions of the progression of text (from left to right, right to left or top to bottom) and lines (from top to bottom, right to left or left to right) is described.

4.1.10 Rendering of white-space characters

The interpretation of white-space characters, e.g. tab, space, carriage return and line feed, is described. A string of white-space characters may be collapsed or may be interpreted literally. Additionally, white-space characters may be removed before or after line breaks.

4.1.11 Font substitution

Support for font substitution mechanism, e.g. font substitution based on ISO/IEC 9541-1, is described

4.1.12 Font-resourse portability

Capability of embedding and retrieving a font resource is described. If the document rendering system supports font-resource portability, it can extract an embedded font resource from the document and use it for rendering.

4.1.13 Embedding of non-standard characters and glyphs

Support for the embedding of non-standard characters and glyphs, e.g. glyphs registered by ISO/IEC 10036, is described.

4.2   Description of pagination and rendering of page layout

4.2.1   Page geometry

4.2.1.1 Simple page layout

The attributes, e.g. page width and height, and margin and padding on top, bottom, left and right, of a page that the document rendering system supports are described.

4.2.1.2 Columnar pagination

The level of support for columnar pagination, i.e. whether columns are supported, and whether the column gap can be specified, etc. is described.

4.2.1.3 Region setting and positioning

Basic attributes, e.g. width, height, margin and padding on top, bottom, left and right, and positions in the page, of the regions that the document rendering system can specify are described.

4.2.2 Page-geometry sequencing

Support for different types of page-geometry sequencing is described. Example types for page-geometry sequencing are single page ordering, repeatable page ordering, and conditional page ordering. Example types for conditional page ordering are page parity and page position.

4.2.3 Page flow

Support for static content, paginated content and flow maps is described. E.g. document title, page header, page footer, sidebars, multiple flows.

4.3 Layout independent formatting

This subsection provides a list of features that are independent from the layout of the document.

4.3.1 Z-index

Support for the specification of the z-index depth level of an area is described.

4.3.2 Relatively-positioned areas

Support for relatively-positioned areas, or floats, for graphics and other objects is described. Treatments available for surrounding text are described. E.g. tight, box and arbitrary shape.

4.3.3 Absolutely-positioned areas

Support for absolutely-positioned areas for graphics and other objects is described. The available bases for the absolute measurements are described. Treatments available for surrounding text are described. E.g. tight, box and arbitrary shape.

4.3.4 Annotation

Support for footnote, endnote and sidenote, the note body and the reference to the note is described.

4.3.5 Cited content

Support for references to cited content that will be replaced at rendering time is described.

4.3.6 Dynamic content alteration

Support for content alteration that is triggered by the rendering environment, operator interaction or other conditions is specified.

4.4 Tables

This subsection provides a list of features that relates to the rendering of tables.

4.4.1 Table geometry

Supported table geometry, e.g. width, height, padding and margin, is described.

4.4.2 Table caption

Support for table captions is described.

4.4.3 Table header

Support for the table header and its behaviour is described. Support for the orientation of headers and iteration of headers after the page break when the table spans across pages, is described.

4.4.4 Table footer

Support for the table footer and its behaviour is described. Support for the orientation of footers and iteration of footer before the page break when the table spans across pages, is described.

4.4.5 Table background

Support for the types of background for a table, e.g. the placement of an image or the colour, is described.

4.4.6 Complex table compositions

The level of support for complex table compositions is described here, based on the structure set forth in ISO/IEC TR 19758:2002.

4.5 Lists

This subsection provides a list of features that relates to the rendering of lists.

4.5.1 List item dimensions

Support for the geometry of the list, e.g. widths, heights, paddings and margins of the list item label and the list item body, is described here.

4.5.2 List item identification

Support for the identification of list items is described, including techniques such as enumeration and itemisation, and the types of symbols that can be supplied as list item labels.

4.6 Block formatting

This subsection provides a list of features that relates to the rendering of blocks.

4.6.1 Block geometry

Support for the geometry of a block of lines, e.g. width, height, margins, paddings, line leading and line-stacking strategy, is described here.

4.6.2 Wrapping of characters

Support for the wrapping of characters is described, e.g. the wrapping of characters that often takes place for punctuation characters in East Asian scripts, such as Chinese, Japanese and Korean. This is an equivalent feature of Japanese 'Kinsoku'.

4.6.3 Wrapping of words

Support for the wrapping of words, e.g. whether the last word in a line is wrapped to the next line, or kept in the same, etc, is described. Wrapping of words often takes place in English and other European scripts.

4.6.4 Hyphenation

Support for the hyphenation at the line end is described. The principles by which the document rendering system hyphenates and breaks words, e.g. rule-based, dictionary-based and manual.

4.6.5 Wrapping of lines

Support for the wrapping of lines, e.g. controlling widows and orphans, is described.

4.6.6 Wrapping of blocks

Support for the wrapping of blocks, e.g. whether a block which only contains a small number of lines, such as a chapter heading, should be wrapped to the next column or page, is described.

4.6.7 Indentation

Support for indentation, its values and its use, is described.

4.6.8 Content alignment

The types of content alignment, e.g. lines in a block, areas in the flow, areas in marginalia, etc, are described.

4.7 Decoration

This subsection provides a list of features that relates to the decoration of a document.

4.7.1 Graphics support

Support for the rendering of instream and/or external graphics, e.g. the supported formats, scaling, positioning, etc, is described.

4.7.2 Leader

Support for leaders, e.g. the leader length, truncation of the leader, alignment of the leader, etc, is described.

4.7.3 Rule

Support for rules, e.g. orientation, length, types of rule, is described.

4.8 Inline-level formatting

This subsection provides a list of features that relates to the rendering of inline constructs.

4.8.1 Inline object

Support for the control of inline areas in a line, e.g. baseline shift, line height, etc, is decribed.

4.8.2 Bidirectional override

Support for the override of the inherent directionality of characters is described.

4.9 Character-level formatting

This subsection provides a list of features that relates to the rendering of characters.

4.9.1 Character spacing

Support for the types of spacing between characters, e.g. specified behaviours, automatic behaviours, etc, is described.

4.9.2 Word spacing

Support for the types of spacing between words, e.g. specified behaviours, automatic behaviours, etc, is described.

4.9.3 Character variation

Support for character variants, e.g. drop initial cap, small caps, etc, is described.

4.9.4 Character decoration

Support for character decorations, e.g. strike-through, underline, overbar, reverse, etc, is described.

4.9.5 Font selection

Support for selection of fonts, e.g. font family, font style, font weight, etc, is described.

4.10 Linking

Support for the specification of the association between areas of a document and other areas or external locations, e.g. for operator interaction, is described.