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First edition
2005-05

TeleWeb application –

**Part 3:
Superteletext profile**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TELEWEB APPLICATION –

Part 3: Superteletext profile

FOREWORD

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International Standard IEC 62298-3 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This standard cancels and replaces IEC/PAS 62298 published in 2002.

This first edition constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/924/FDIS	100/962/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62298 consists of the following parts, under the general title *TeleWeb application*:

Part 1: General description

Part 2: Delivery methods

Part 3: Superteletext profile

Part 4: Hyperteletext profile (in preparation)

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
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A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

The aim of TeleWeb is to deliver World Wide Web-style content to the living-room TV to give the viewer an enhanced television experience. A TeleWeb service broadcasts data files containing text and high-definition graphics to suitable decoders. The data transmitted can be closely linked to events within the accompanying TV programs or can be more general in nature to emulate a traditional, but higher definition, superteletext service. Different profiles are defined.

It is intended that TV-based decoders can be implemented in a cost-effective manner without recourse to the technology normally associated with personal computers. In part, this is achieved by limiting the number of different types of multimedia data that can be used within a service. By careful design of the user interface, decoder manufacturers will be able to offer easy-to-use equipment for accessing TeleWeb services without requiring the consumer to be computer-literate. In addition, they will be able to customize their products to differentiate them from those of their competitors.

This standard specifies the TeleWeb Superteletext profile and focuses on the presentation layer especially the implementation of TeleWeb HTML. It further defines graphical requirements like colours and fonts and the content formats used.

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TELEWEB APPLICATION –

Part 3: Superteletext profile

1 Scope

This part of IEC 62298 specifies the TeleWeb Superteletext profile that allows Web-style text and graphics to be displayed on suitable decoders. A TeleWeb service comprises multimedia data files whose format and attributes are defined by this specification. This specification focuses on the presentation layer especially the implementation of TeleWeb HTML. It further defines graphical requirements like colours and fonts and the used content formats. For information regarding general information and the transport layer, refer to IEC 62298-1 and IEC 62298-2.

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.

IEC 62297-1, *Triggering messages for broadcast applications*

ISO 639-2, *Codes for the representation of names and languages – Part 2: Alpha-3 code*

ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*

ISO 8859-1:1998, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ETSI TR 101 231, *Television systems; Register of Country and Network Identification (CNI), Video Programming System (VPS) codes and Application codes for Teletext based systems*

ETSI EN 300 231, *Television systems; Specification of the domestic video Program Delivery Control (PDC) system*

ETSI EN 300 468, *Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems*

ETSI EN 300 706, *Enhanced Teletext Specification*

ETSI EN 300 707, *Electronic Program Guide (EPG); Protocol for a TV Guide using electronic data transmission*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

button

part of the user interface that enables the viewer to select a page or trigger an event, etc. It may not necessarily exist as a physical button on a remote control handset

3.1.2

CDATA

character data in an HTML document. Character entities and HTML mark-up is not recognized

3.1.3

conditional access (CA)

mechanism by which user access to service components can be restricted

3.1.4

PCDATA

Parsed character data in an HTML document. Character entities (numeric and named entities) as well as HTML mark-up are recognized in the data

3.1.5

signed_integer

positive or negative integer value, in decimal notation. The first digit is preceded by a mandatory plus (+) or minus (–) symbol with no white space between the symbol and the first digit

3.1.6

text_string

sequence of displayable Latin-1 characters

3.1.7

unsigned_integer

integer value, in decimal notation, without a preceding plus (+) or minus (–) symbol

3.2 Abbreviations

ASCII	American Standard Code for Information Interchange
CA	Conditional Access
CDATA	Character Data
CRC	Cyclic Redundancy Check
DTD	Document Type Definition
DVB	Digital Video Broadcasting
ETS	European Telecommunication Standard
GIF	Graphics Interchange Format
HTML	Hyper Text Mark-up Language
JFIF	JPEG File Interchange Format
JPEG	Joint Picture Experts Group
LSB	Least Significant Bit

MJD	Modified Julian Date
MSB	Most Significant Bit
PCDATA	Parsed Character Data between tags
RFC	Request For Comments
URL	Uniform Resource Locator
UTC	Universal Time Coordinated
WWW	World Wide Web

4 Display

This clause defines the minimum requirements of a TeleWeb display. They are applicable to both editing stations and decoders.

4.1 Colour representation

4.1.1 General requirements

A decoder shall be able to display each pixel on the text/graphics, background image and background colour planes in a different colour from a palette of at least 188 colours. Full transparency and one-level semi-transparency to video shall also be supported.

A decoder may be implemented with either a true-colour store or an indexed colour system. To accommodate the latter type of decoder and to define a palette for GIF images that do not specify a palette themselves, a single 188 colour palette is defined in 4.1.5. As a minimum, the text/graphics, background image and background colour planes shall be able to support colours subjectively equivalent to these colours. Content can be authored using other colours, but authors should be aware that some decoders may not be able to reproduce them exactly and may map such a colour to the closest match in the pre-defined colour palette.

For authoring purposes the text/graphics, background image and background colour planes shall support at least 188 colours on the screen at any one time. In practical terms, a decoder is likely to be able to display at least 256 colours, giving the equipment manufacturers at least 68 colours for their user interface.

To get an optimal display, the content should be authored using the TeleWeb default colour palette. The response of a decoder is not defined by this specification if the colours used are not all taken from the pre-defined colour palette. Under these circumstances, colour dithering or matching techniques may need to be applied and the response of decoders may differ.

4.1.2 Colour resolution

Each colour shall be defined by red, green and blue (RGB) components or by a colour constant (see 6.2.5.1).

The authored content shall define colours as 24-bit values, i.e. 8 bits for each component in the order R, G, B.

A decoder is required to have a colour resolution of at least 4 bits per component (12 bits minimum overall).

4.1.3 Gamma

Decoders shall assume that all RGB values defined and invoked by authored content have been gamma pre-corrected for the eye.

4.1.4 Transparency

Decoders are required to implement a minimum of three levels of transparency – opaque, semi-transparency and completely transparent.

The colour palette is optimized for 30 % semi-transparency. Where the decoder cannot implement the value of 30 % semi-transparency, it shall replace it with the nearest value of semi-transparency it can implement. If the encoded value of transparency is in the range between 10 % and 90 %, it shall not be approximated as either 0 % or 100 % transparency. So, 9 % may be approximated as 0 % but 10 % shall be represented with a value in the range 10 % to 90 % such as 30 %. Similarly, 91 % may be approximated as 100 %.

4.1.5 Colour palette

The predefined set of 188 colours is shown in Table 1 and in Annex B. The colours chosen have a perceptually uniform distribution over the colour space. A service provider may choose to author content using only this set of colours.

As a minimum, a decoder shall support these colours up to its resolution limit. It is then the responsibility of the decoder to map the colours defined within the authored content to their closest approximation within the predefined set.

Table 1 – Default colour palette

Transparency level	Total number of entries	Quantization levels for red	Quantization levels for green	Quantization levels for blue
0 % (fully opaque)	135	5 levels: 0, 63, 127, 191, 255	9 levels: 0, 31, 63, 95, 127, 159, 191, 223, 255	3 levels: 0, 127, 255
0 % (fully opaque)	4	4 additional grey-scale colours: R = G = B = 42, 85, 170, 212		
30 %	48	4 levels: 0, 85, 170, 255	6 levels: 0, 51, 102, 153, 204, 255	2 levels: 0, 255
100 % (fully transparent)	1	-	-	-
Decoder definable	68			
NOTE Levels are quoted as decimal values in the range 0 to 255.				

To allow these colours to be used to render a GIF image from which the colour palette information has been omitted, it is necessary to assign a unique value to each colour, as defined in Annex B.

4.2 Text representation

Text is rendered using one proportionally spaced font and one monospaced font, each in five sizes and in two styles – plain and bold. Italics and bold italics styles are optional. The fonts are not defined by this specification. Instead, the metrics of each character cell are defined for all aforementioned sizes to ensure compatibility between equipment.

A service provider who wishes to ensure consistent displays shall author content using the same metrics as implemented in decoders. Content shall be authored with kerning disabled.

4.2.1 Required sizes

Table 2 shows the supported font sizes for the proportional and monospaced font and the assignment to the size attribute of the HTML font tag. The font and character metrics including the width (advance) of all character cells for the proportional and the monospaced font for the different font sizes are specified in Annex F.

Table 2 – Font sizes

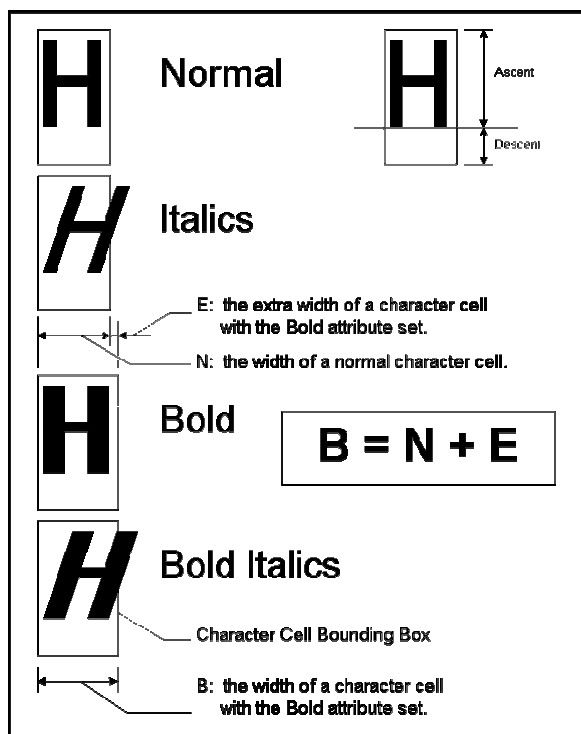
Size pixels	HTML Font tag
22	SIZE = 1 or 2
24	SIZE = 3
27	SIZE = 4
31	SIZE = 5
36	SIZE = 6 or 7

4.2.2 Bold and italic styles

If the font does not support the bold style, a bold version can be emulated by writing a second instance of the required character with an offset by one pixel to the right of the normal position. The bold style should be restricted to small parts of the text, for example, headings. It should not be used for the whole text. The emulated bold style may not be acceptable for certain characters especially for the small font sizes (for example, the double-quote character or the characters with umlaut may be critical). In this case, the bold style should be avoided for these characters.

For the proportional font, the width (advance) of a character cell containing a bold character may be increased by a maximum of one pixel per character, as shown in Figure 1. Content shall be authored with this extra pixel space in mind. For the monospaced font, the width of all characters of a given font size is the same for all styles.

The implementation of the optional italic and bold italic style is left open. However, the corresponding character cell width shall always be the same as for the plain and bold styles respectively.



IEC 686/05

Figure 1 – Character metrics

4.2.3 Character repertoire

Decoders shall support the full ISO Latin-1 character set given in ISO 8859-1 and the EURO sign character (Unicode 0x20AC). The EURO sign can be used by the name character entity (&euro) or the numerical representations (#&X20AC or #&8364). If the character encoding of the HTML file is different from ISO Latin-1 or the character is not defined in ISO Latin-1 and is not the EURO sign the decoder shall display a replacement character represented by an empty square with the size of a capital 'V'.

NOTE The characters 0x00 to 0x1F and 0x7F to 0x9F are not defined by ISO Latin-1; thus, a replacement character will be shown instead.

4.2.4 Default attributes

In the absence of any font, size, foreground colour or background information within the authored content, a decoder is free to set its own default conditions. It is recommended that the decoder follow the default style defined in Annex E.

4.3 Text placement

4.3.1 Text width

To ensure that text will flow identically on different decoders and authoring equipment, regardless of the quality of the character rendering, simple algorithms are defined to determine vertical placement and when to wrap lines of text. The flow is considered identical if lines and words break at the same character position. The calculations allow content creators to provide sufficient space for their strings at authoring time. They make no demands on the particular rendering system employed. The characters can be bit-map or vector fonts, aliased or anti-aliased, etc. The calculations shall be applied in both authoring equipment and decoders.