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First edition
2005-10

TeleWeb application –

**Part 4:
Hypertext profile**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TELEWEB APPLICATION –

Part 4: Hypertext profile

FOREWORD

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International Standard IEC 62298-4 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.

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

FDIS	Report on voting
100/1000/FDIS	100/1023/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 applications*:

- Part 1: General description
- Part 2: Delivery methods
- Part 3: Superteletext profile
- Part 4: Hyperteletext profile

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- withdrawn;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
- amended.

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 programmes, or can be more general in nature to emulate a traditional, but higher definition, super teletext service. Different profiles are defined.

It is the intention 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 document specifies the TeleWeb Hypertext profile and focuses on the presentation layer especially the implementation of TeleWeb HTML and scripting. It further defines the graphical requirements like fonts and the content formats used.

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TELEWEB APPLICATION –

Part 4: Hypertext profile

1 Scope

This part of IEC 62298 specifies the TeleWeb Hypertext 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 standard is backwards compatible with IEC 62298-3 and extends it with features like scripting and style-sheets. The graphical capability is extended with features like frames and forms. 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 62298-1: *TeleWeb application – Part 1: General description*

IEC 62298-2: *TeleWeb application – Part 2: Delivery methods*

<https://standards.iteh.ai/catalog/standards/sist/20d0cd94-096e-445a-96b0-1d6ced7f386c/iec-62298-2-2005>

IEC 62298-3: *TeleWeb application – Part 3: Superhypertext profile*

ISO/IEC 11172-3:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 3: Audio*

ISO/IEC 14496-3:2001, *Information technology – Coding of audio-visual objects – Part 3: Audio*

ISO 8601:2004, *Data elements and interchange formats – Information interchange – Representation of dates and times*

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

W3C Recommendation, *Cascading Style Sheets, level 1 (CSS1)*

W3C Recommendation, *HyperText Markup Language, version 4.0*

SMPTE 363M:2002, *Television – Declarative Data Essence – Content Level 1*

SMPTE 366M:2002, *Television – Document Object Model Level 0 (DOM-0) and Related Object Environment*

IETF RFC 2046, *Multipurpose Internet Mail Extensions (MIME) – Part Two: Media types*

PFR v1.2, *Bitstream Inc. Coding of Outline Fonts – PFR Specification, version 1.2*

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 is recognized in the data

3.2 Abbreviations

CATV	Cable TV
CRC	Cyclic Redundancy Check
DECT	Digital European Cordless Telecommunications
DTD	Document Type Definition
DVB	Digital Video Broadcasting
GIF	Graphics Interchange Format
GSM	Global System for Mobile Communication
HTML	Hyper Text Mark-up Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Security
IDL	Interface Definition Language
ISDN	Integrated Services Digital Network
LMDS	Local Multipoint Distribution Service
MJD	Modified Julian Date
PSTN	Plain Old Telephone System
RFC	Internet Request for Comment
SMATV	Satellite Master Antenna Television
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTC	Universal Time Coordinated
WWW	World Wide Web

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4 Mandatory Superteletext profile features

This clause identifies the features listed as optional in IEC 62298-3, which are made mandatory for receivers conforming to this specification. All other optional features of IEC 62298-3 remain optional in this profile.

4.1 Font issues

Support of "bold", "italics" and "bold italics" is mandatory for all Latin fonts whether fixed or proportional, resident or downloaded.

4.2 Dithering

If the content is authored without reference to the TeleWeb default colour palette defined in IEC 62298-3, and a decoder is unable to reproduce a colour faithfully, the decoder shall employ a dithering algorithm and shall not use colour-matching techniques.

NOTE Examples of such algorithms are ordered dithering or error-diffusion algorithms (for example, Floyd-Steinberg).

4.3 TeleWeb EPG

A TeleWeb EPG as described in IEC 62298-3, Clause 5, is mandatory in the decoder.

4.4 Cross-linking between services

Cross-linking refers to the ability to navigate between different TeleWeb services or to Teletext services.

[IEC 62298-4:2005](https://standards.iteh.ai/catalog/standards/sist/20d0c194-026e-445e-96b0-2024c67a8686/iec-62298-4-2005)

A decoder shall support cross-linking between any TeleWeb services through absolute TeleWeb URLs defined in IEC 62298-3. It is up to the device to decide if user activation of a cross-link will result in a channel switch.

It is good practice to inform the user of the consequences of a possible re-tuning.

The usefulness of cross-linking is ultimately a question of resources in the device. A larger memory capacity and an extra tuner will significantly enhance the cross-linking capability of the device and therefore the user experience.

In a DVB-compliant device cross-linking is more useful than in an analogue device, since cross-linking within the same multiplex does not result in re-tuning. The same holds for cross-linking between short and full TeleWeb services of the same channel.

Code of Practice: if the service is not available in the memory, the decoder can try to retrieve the content through the return channel.

4.5 Memory requirements

The broadcast size for a full service according to this profile shall not exceed 9,8 Mbytes, including up to 4,9 Mbytes of Superteletext profile data.

The broadcast size for a short service according to this profile shall not exceed 0,2 Mbytes, including up to 0,1 Mbytes of Superteletext profile data. The maximum transmission cycle time for the short service shall remain at 60 s.

A device according to this profile shall support at least one full TeleWeb service and one short TeleWeb service providing storage for the specified broadcast sizes (9,8 + 0,2 Mbytes). If a full service and/or a short service exceed the indicated cache sizes, the behaviour of the decoder is not covered by this specification.

A device according to this profile must provide some persistent storage to store at least the following parameters: user group Id, decoder configuration data, user profiles, ISP information. Decoder configuration data might include channel presets, preferred TeleWeb provider, etc.

NOTE The term broadcast size refers to the data transmitted and may include compressed data.

5 General display-related extensions

5.1 Downloadable fonts

In order to support fonts other than the resident one(s) and character sets other than Latin-1, this profile shall support downloadable fonts. Downloadable fonts can also be used to gain access to true bold or italic styles. The requirements are as follows.

- Fonts shall be bitmap fonts.
- Unicode character encoding shall be used.
- Replacing a built-in font with a downloaded font shall be supported.
- Font data shall not be encrypted.
- Font data may be compressed through methods allowed by this profile.
- Only the used characters shall be downloaded (provided by the service provider).
- Supplementing a built-in or downloaded font shall be supported.

Downloadable fonts shall use the file format specified in PFR V1.2.

5.2 Support for non-Latin alphabets

HTML documents can specify the character set to use for rendering them, by using the META tag. See 6.3.1. This data shall be copied to the http header.

5.3 Page size and page scrolling

Horizontal scrolling shall not be supported.

Vertical scrolling must be limited to 1 440 pixels vertically (3 × 480).

The choice to limit vertical scrolling to three pages greatly simplifies its implementation.

The implementation details of vertical scrolling is at the discretion of the decoder manufacture, hence it is up to the manufacturer to decide whether scrolling is done one line at a time or a display size at a time, etc.

6 Hypertext extensions

A decoder shall parse the full syntax of the 3 DTDs of HTML 4.0, as extended by IEC 62298-3. Unless specified in the HTML document metadata, the default DTD shall be “transitional” plus the extensions of IEC 62298-3. Certain constraints are imposed as further defined in this clause.

6.1 HTML frames

A decoder shall support HTML frames.

A restriction is placed on the way the content is authored. Each direct selection key (colour keys and digit keys) shall be referenced only once within all the frames displayed at any one time. If the same key is referenced more than once, the behaviour of the decoder is not specified by this document.

6.1.1 Cursor navigation within frames

HTML frames introduce a navigational problem on a device without a freely moving cursor. To overcome these problems, navigational rules must be enacted. Those rules are described in this clause.

The following general rules apply to the use of frames.

- Only one frameset per page is allowed. The maximum number of frames in the frameset shall not exceed four. If these rules are broken, the behaviour of the decoder is no longer specified.
- Only one of these frames can have a vertical scrollable area. This frame is further referenced as the main frame.
- The whole content presented by the frameset shall not host more than one instance of each direct selection link (0..9, colour links). In case this happens, the behaviour of the decoder is no longer covered by this specification.
- When the frameset is rendered the first time, the cursor is always positioned within the main frame. If not overruled by cursor control, the cursor will be positioned on the link closest to the upper left corner of the main frame.

For navigating, the whole frameset shall be seen as one screen in which the cursor navigates over the frame borders, which may be invisible to the user. The result of this behaviour removes the need for frame selection buttons on the remote. Two main navigation behaviours can be identified: "Navigation in a frame without scrolling content" and "Navigation in a frame with scrollable content, the main frame".

The cursor position wrap-around at the borders of the screen is an option of the decoder manufacturer.

The way in which scrolling is implemented is defined by the decoder manufacturer. It can be a smooth pixel scroll or a more jumpy scroll moving bigger parts of the content (for example, one-quarter screen) at once.

6.1.1.1 Navigation in a frame without scrolling content

The navigation of such a frame is fully compliant to the navigation defined for a screen content without frames, the only difference being the size of the content, which will be at the most 640 × 480. Upon reaching the border of a frame, the cursor will cross the border to the adjacent frame.

6.1.1.2 Navigation in a frame with scrollable content, the main frame

The horizontal navigation does not differ and is identical to the navigation described in 6.1.1.1.

In the case of vertical navigation, the frame boundary is only crossed at the borders of the content, not the frame! This means that when the cursor is moving down, the content in the frame is moved up until the bottom of the content is fully visible, then, and only then, is it allowed to cross the border to the adjacent frame below. The same rule applies if the cursor is moving up. If, during the scroll operation, all links within the frame become invisible, the

decoder manufacturer shall implement one of the following cursor behaviours to enable further navigation, until a link within the scrolled content becomes visible again or the end of the content is reached.

- The cursor embraces the whole frame until a link becomes visible, after which the cursor moves again in focus of the visible link. While the cursor embraces the whole frame, the user can scroll up or down using the vertical navigation keys. If needed, the cursor can be rendered in another colour to indicate this special behaviour. Due to the fact that the cursor is not really indicating a link, it cannot be selected.
- The cursor moves to a parking spot allowing the user to further scroll through the content until a link becomes visible again. The parking spot can be any graphics defined by the decoder manufacturer. The position of the parking spot can be outside the content area or overlaying the content area. If the parking spot is overlaying the content area, the user should be able to read the covered content by scrolling up or down. If needed, the cursor can be rendered in another colour to indicate this special behaviour. Due to the fact that the cursor is not really indicating a link, it cannot be selected.

If the cursor is moved horizontally to an adjacent frame, when no links are visible within the current frame, the link best in line with the navigation direction shall be selected.

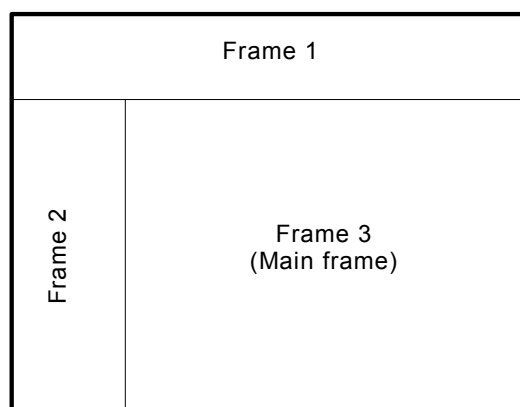
Moving the cursor from a frame to the main frame with scrollable content can have different results, depending on the current visible content of the main frame.

- If links are available, the link best in line to the navigation direction shall be selected.
- If no links are available, the cursor will embrace the frame or move to the parking spot depending on the decoder implementation. From here on, the user can navigate through the scrollable content of the frame.
- The content is, however, not re-rendered to the top of the content when moving into the main frame from an adjacent frame. IEC 62298-4:2005

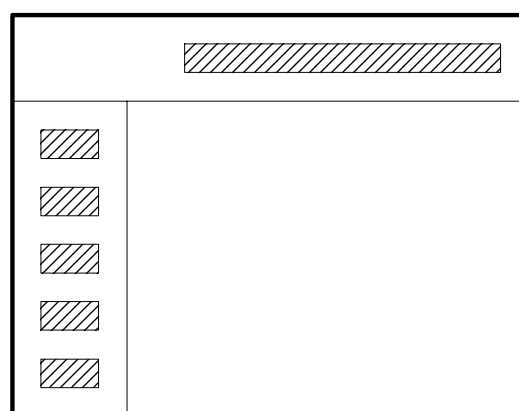
Moving the cursor from a frame to the main frame, which contains neither links nor scrollable content, is not possible.

6.1.1.2.1 Clarifying example of navigation in a frame with scrollable content

Start from the following frameset. Frame 1 and 2 have the links indicated by the shaded areas in Figure 1. In Figures 1 and 2 below, the thick line around the link (shaded) shows the current location of the cursor.



Frameset layout example



Frame 1 and 2 with links