ETSI TS 101 498-2 V1.1.1 (2000-09)

Technical Specification

Digital Audio Broadcasting (DAB);
Broadcast website;
Part 2: Basic profile specification
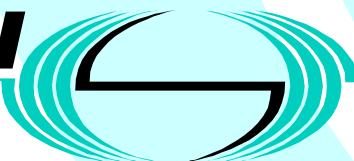
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Contents

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI)(Broadcast).

NOTE 1: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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The Eureka Project 147 was established in 1987, with funding from the European Commission, to develop a system for the broadcasting of audio and data to fixed, portable or mobile receivers. Their work resulted in the publication of European Standard, EN 300 401 [1], for DAB (see Note 2) which now has worldwide acceptance. The members of the Eureka Project 147 are drawn from broadcasting organizations and telecommunication providers together with companies from the professional and consumer electronics industry.

NOTE 2: DAB is a registered trademark owned by one of the Eureka Project 147 partners.

The present document is Part 2 of a multi-part TS covering the DAB Broadcast website, as identified below:

Part 1:   "User application specification";

Part 2:   "Basic profile specification".

Introduction

The growth of the Internet and the popularity of the "World Wide Web", based on the Hyper Text Transfer Protocol (HTTP) and the Hyper Text Markup Language (HTML), makes web related services an extremely attractive way of providing information to users. The public have already accepted a technology that is now common both in the home and in the workplace, and HTML is a content format that is widely used and supported well by many content creation tools.

The MOT Broadcast Web Site (BWS) user application gives DAB multiplex operators the opportunity to use HTML as a content format to support information services by using the concept of a "broadcast website". The MOT BWS user application is designed to allow an entire web site to be delivered to a receiver using only the broadcast channel of DAB and without the need for any form of return channel.

The present document specifies a content profile for the BWS user application that allows service providers to know exactly what they can include in their content when the service is being presented by basic BWS decoders.

If service providers create content that lies within this content profile, receivers that conform to the profile are guaranteed to correctly present the service.

1 Scope

The present document describes the protocol required to create a broadcast carousel of files for a "website". Receivers may then extract information directly from this carousel in order to present the service.

The DAB Broadcast website application applies the DAB-MOT protocol and allows a service provider to deliver HTML content via DAB without the need for a return channel.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1]   ETSI EN 300 401: "Radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers".

[2]   ETSI TS 101 756: "Digital Audio Broadcasting (DAB); Registered Tables".

[3]   ETSI EN 301 234: "Digital Audio Broadcasting (DAB); Multimedia Object Transfer (MOT) protocol".

[4]   ETSI TS 101 498-1: "Digital Audio Broadcasting (DAB); Broadcast website; Part 1: User application specification".

[5]   IETF RFC 1952 (1996): "GZIP file format specification version 4.3".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BWS	Broadcast Web Site
CA	Conditional Access
CGI	Common Gateway Interface
DAB	Digital Audio Broadcasting
DGI	DAB Gateway Interface
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IETF	Internet Engineering Task Force - the IETF is an international body responsible for the development of Internet standards
IP	Internet Protocol
MIME	Multi-purpose Internet Mail Extensions
MOT	Multimedia Object Transfer
RFC	Request For Comments - RFCs are used by the IETF for standards and recommendations
SGML	Standard Generalized Markup Language
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
URL	Uniform Resource Locator

| WIRC | WorldDAB Information and Registration Centre - a WorldDAB office for co-ordinating the technical developments of DAB |
| WWW | World Wide Web |

4   Registration procedures

The present document contains identifier fields that require values to be registered. Registered value lists associated with data broadcasting specifications for DAB are maintained by the WorldDAB Information and Registration Centre (WIRC). Since the lists and tables contained within the present document might be outdated, please refer to the most recent version of TS 101 756 [2]. The present document describes also the procedures for registering values in an existing table as well as registering new tables.

5   BWS basic profile specification

The profile specified in the following subclauses defines the profile for the MOT Broadcast Web Site user application corresponding to the `ProfileId` value 0x01.

5.1   Display characteristics

The physical display characteristics for a BWS user application decoder conforming to the basic profile shall at least equal the following specification:

- Display size 320 pixels x 240 pixels at a colour/grey scale depth of 8 bits per pixel (1/4 VGA).

For the purposes of rendering HTML content, the physical display is assumed to represent a scrollable window on a total rendering area of 320 pixels x 2 400 pixels. The position of the displayed window with respect to the total rendering area should be controlled through the use of appropriate vertical scrolling controls but there is no requirement to implement a similar horizontal scrolling mechanism. Any HTML content that causes the page dimensions to exceed those of the rendering area should be rendered by clipping to the dimensions of the rendering area.

It is assumed that appropriate indication will be made when vertical scrolling is appropriate to a rendered page of HTML content, but decoders should avoid the use of any form of "scroll bar" that reduces the available display width for rendering the HTML.

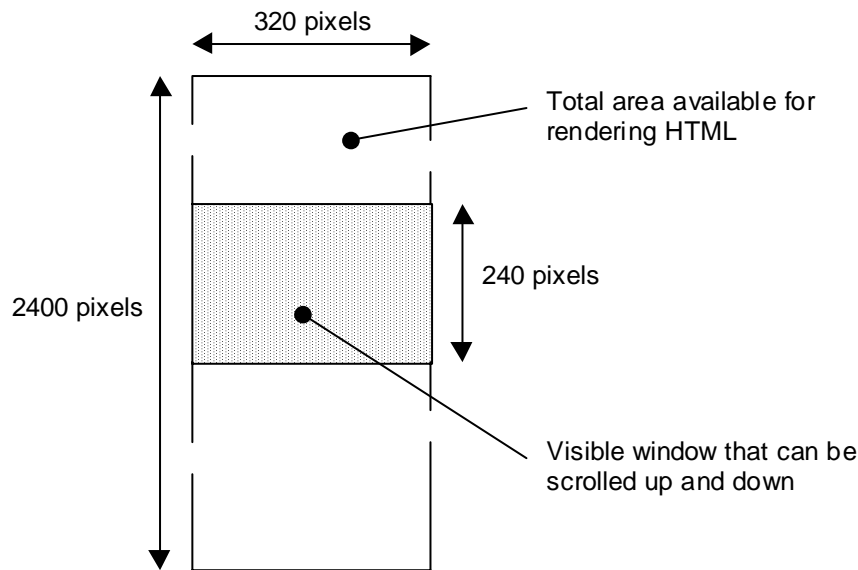The general arrangement is illustrated in the following diagram:

Figure 1

5.2   Navigation controls

A BWS user application decoder conforming to the basic profile shall provide at least the navigational controls described in the following paragraphs.

5.2.1   Choose link

The "choose link" control should allow the user to select a hyperlink from the available hyperlinks within the current page of HTML. At its *simplest*, this may be implemented as a single control that cycles through all the available hyperlinks in the order in which they occur within the page. It is assumed that an appropriate mechanism will be used to highlight the current hyperlink.

Note that some care should be exercised when combining the facility with vertical scrolling.

5.2.2   Follow link

The purpose of the "follow link" control is merely to activate the currently selected link identified using the "choose link" control. This is achieved by loading the page identified by the URL associated with the hyperlink.

5.2.3   Back

It is required that a history list be maintained containing the URLs of HTML pages that have been followed to get to the current page. The "back" control should cause the previous page to be loaded from the history list. The history list shall always allow the user to return to the service "home" page (identified by an empty path, i.e. "/") but is not required to be arbitrarily long. In the event that the user follows more links than can be stored in the history list, the oldest entries in the list are discarded, except the entry for the home page.

For example, consider a history list can accommodate up to five URLs where the current page is `page4.html` and the current history list contains the following URLs:

    /, /page1.html, /page2.html, /page2.html#anchor2, /page3.html.

If a link is followed to `page5.html`, the new history list should be:

    /, /page2.html, /page2.html#anchor2, /page3.html, /page4.html.

5.2.4   Home

The "home" control should always re-load the home page for the service, which is identified by the URL with an empty path (i.e. "/").

5.3   Memory constraints

The maximum size of any object in the carousel that may be decoded by a basic profile application decoder shall not exceed 50 kbytes.

The maximum total size of all objects in the carousel that are required to be decoded in order to render any given page of HTML shall not exceed 256 kbytes.

A BWS user application decoder conforming to the basic profile shall provide at least 256 kbytes of cache memory for use by the MOT carousel decoder.

5.4   MOT parameters for individual objects

MOT parameters that are to be applied to individual MOT objects are carried in the MOT header of each directory entry in the MOT Directory.

A summary of the use of MOT parameters for individual objects is given in Table 1, and is specified in detail by the following paragraphs. Note that other parameters may be defined within the context of specific profile definitions. Any parameters that are encountered that are not understood by a given receiver profile should be ignored.

Table 1: Use of MOT parameters for individual objects

Parameter	Parameter id	Specified in	Mandatory for Data Decoder	Occurrences
RetransmissionDistance	0x07	MOT	no	Single
Priority	0x0A	MOT	no	Single
ContentName	0x0C	MOT	yes	Single
MimeType	0x10	BWS	yes	Single
CompressionType	0x11	BWS	yes	Single
AdditionalHeader	0x20	BWS	no	Multiple
ProfileSubset	0x21	BWS	no	Single
CAInfo	0x23	BWS	yes	Single
SubscriberInfo	0x24	BWS	no	Multiple

5.5   Supported compression types

The MOT carousel used to transport the data for a BWS user application may contain objects that have been compressed. The only compression type that is required to be supported by decoders conforming to the basic profile is the "gzip" compression type [5].

5.6   CAInfo

The MOT carousel used to transport the data for a BWS user application may contain objects that have been encrypted. If the receiver is unable to support CA it should display an appropriate error message.

5.7   Additional Header

The only additional header parameter which is supported by the basic profile is the HTTP refresh parameter.

5.8   Supported content types

The following media content types, expressed as a MIME type string, shall be supported by basic profile decoders:

- text/html;

- image/jpeg;

- image/png.

The `image/jpeg` content type shall be deemed to indicate content conforming to the following restrictions:

- only baseline coding is supported;

- progressive and/or multiscan coding is not supported;

- arithmetic entropy coding is not supported;

- the JPEG file shall not contain more than 4 components (color channels); each component is restricted to a resolution of 8 bit/component.

The `image/png` content type shall be deemed to indicate content conforming to version 1.1 of the PNG specification (ISO/IEC 15948 (see bibliography)). No extension "chunks" outside the present document need be supported.

5.9   Font support

Decoders conforming to the basic profile shall provide support for at least one proportionally spaced font and one fixed width font. Each font is required to be available in at least 2 different sizes and shall be able to support any combination of the styles bold, underline and italic.

The preferred proportionally spaced font is "Helvetica" and the preferred fixed width font is "Courier New".

The default (smaller) font size should render to a character height of 10 pixels and the larger font size should render to a character height of 14 pixels.

Note that the preferred fonts may be used by content providers to assess the appearance of content when laying out content for the service.

5.10   HTML Entities

All html 3.2 character entities are supported both as numeric entities (e.g. "£" for the pound sign) or named entities (e.g. "£" for the pound sign).

In addition, the non-standardized named entity "€" should also be supported for the € sign.

5.11   Supported HTML tags

The profile of HTML supported by the basic content profile is based in HTML 3.2 with restrictions, as detailed in the following paragraphs.

Note that HTML content should be parsed according to the general principle of ignoring tags that are not understood. If content is encountered by a basic profile decoder that contains HTML tags that are outside the list of supported tags defined here, the unrecognized tags should be ignored and should not cause a parse error.

5.11.1   Basic structure

`<!-- ... -->`

> Specifies a comment

`<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 ..EN">`

> Specifies the data type definition for HTML 3.2

`<HTML> ... </HTML>`

> Encloses the entire document

`<HEAD> ... </HEAD>`

> Encloses the HEAD section of the document

`<TITLE> ... </TITLE>`

> Defines the title of the document. This may be used by a browser as a window title if desired. Is required to appear within the HEAD section of the document.

> `CONTENT=`"http header field value"

`<BODY attribute [attribute ...]> ... </BODY>`

> Encloses the BODY section of the document

> `ALINK=`"activated link colour"

> `BACKGROUND=`"background image"

> `BGCOLOR=`"background colour"

> `LINK=`"link colour"

> `TEXT=`"text colour"

> `VLINK=`"followed link colour"

5.11.2   General formatting

`<Hn> ... </Hn>`

> Specifies the enclosed text as a heading at level n where n can take any value between 1 and 6. Is required to appear within the BODY section of the document.

`<ADDRESS> ... </ADDRESS>`

> Specifies the enclosed text as a signature of the page author - text should be rendered in italics.

`<B> ... </B>`

> Specifies that the enclosed text should be rendered as bold.

`<BIG> ... </BIG>`

> Specifies that the enclosed text should be rendered one text size larger than the current size.

`<BLINK> ... </BLINK>`

> Specifies that the enclosed text should be rendered as blinking.

`<BLOCKQUOTE> ... </BLOCKQUOTE>`

Specifies the enclosed text as a long quote - both the left and right margins of the text should be indented.

`<BR`

Inserts a line break.

`<CENTER> ... </CENTER>`

Specifies that the enclosed elements should be centred.

`<CITE> ... </CITE>`

Specifies the enclosed text as a citation - text should formatted to look like a citation.

`<CODE> ... </CODE>`

Specifies the enclosed text as a sample of code - text should be rendered in small fixed width font.

`<COMMENT> ... </COMMENT>`

Specifies that the enclosed text should be treated as a comment except for HTML tags.

`<DFN> ... </DFN>`

Specifies the enclosed text as a definition - text should formatted to look like a definition.

`<DIV attribute> ... </DIV>`

Specifies the alignment of the enclosed elements.

`ALIGN="``alignment option`**`"`**

`<EM> ... </EM>`

Specifies that the enclosed text should be emphasized - text should rendered as italic.

`<FONT attribute [attribute ...]> ... </FONT>`

Specifies the font properties for the enclosed text.

`SIZE=``"text size"`

`COLOR=``"text colour"`

`FACE=``"font name list"`

`<HR attribute [attribute ...]>`

Inserts a horizontal rule.

`SIZE=``"line thickness"`

`COLOR=``"line colour"`

`WIDTH=``"line length %"`

`ALIGN=``"alignment option"`

`NOSHADE`

`<I> ... </I>`

Specifies that the enclosed text should be rendered as italic.

<KBD> ... </KBD>

Specifies the enclosed text as text to be entered at the keyboard - text should be rendered as bold in a fixed width font.

<LISTING> ... </LISTING>

Specifies that the enclosed text should be rendered in a fixed width font.

<P attribute [attribute ...]> ... </P>

Specifies the enclosed text as a plain paragraph.

ALIGN="alignment option"

<PLAINTEXT> ... </PLAINTEXT>

Specifies that the enclosed text should be rendered in a fixed width font.

<PRE> ... </PRE>

Specifies the enclosed text as preformatted text - the text should be rendered in a fixed width font with all spaces.

<SAMP> ... </SAMP>

Specifies the enclosed text as sample program output - text should be rendered in small font.

<SMALL> ... </SMALL>

Specifies that the enclosed text should be rendered one text size smaller than the current size.

<STRONG> ... </STRONG>

Specifies that the enclosed text should be strongly emphasized - text should be rendered as bold.

_{...}

Specifies that the enclosed text should be rendered as subscript.

^{...}

Specifies that the enclosed text should be rendered as superscript.

<TT> ... </TT>

Specifies that the enclosed text should be rendered in teletype font.

<U> ... </U>

Specifies that the enclosed text should be rendered as underlined.

<VAR> ... </VAR>

Specifies that the enclosed text as a variable name - text should be rendered in a small fixed width font.

<XMP> ... </XMP>

Specifies the enclosed text as an example - HTML tags should not be processed.

5.11.3 Images

`<IMG attribute [attribute ...]>`

Places an image within the document. Is required to appear within the BODY section of the document.

`SRC=``"image URL"`

The URL shall be relative to the site - only the path component may be specified and clients should ignore any site component.

`ALT=``"text"`

`BORDER=``"border thickness"`

`ALIGN=``"alignment option"`

`VSPACE=``"vertical spacing"`

`HSPACE=``"horizontal spacing"`

`WIDTH=``"width"`

`HEIGHT=``"height"`

5.11.4 Links

`<A attribute [attribute ...]> ... </A>`

Specifies a link or defines an anchor within the document. Is required to appear within the BODY section of the document.

`HREF=``"URL"`

The URL shall be relative to the site - only the path component may be specified and clients should ignore any site component.

`NAME=``"anchor name"`

`TITLE=``"link title"`

5.11.5 Lists

`<LI attribute [attribute ...]>`

Specifies a list item within a list.

`TYPE="bullet type"`

`VALUE="item number"`

`<DIR> ... </DIR>`

Specifies the enclosed list items as entries in a directory listing.

`<MENU> ... </MENU>`

Specifies the enclosed list items as entries in a menu list.

`<OL attribute [attribute ...]> ... </OL>`

Specifies the enclosed list items as entries in an ordered (numbered) list.

TYPE="number type"

START="starting value"

<UL attribute [attribute ...]> ... </UL>

Specifies the enclosed list items as entries in an unordered (bulleted) list.

TYPE="bullet type"

<DL> ... </DL>

Specifies the enclosed list items as entries in a definition list.

<DT>

Specifies a term within a definition list.

<DD>

Specifies a definition within a definition list.

5.11.6   Tables

<TABLE attribute [attribute ...]> ... </TABLE>

Specifies the enclosed elements as a table.

BORDER="border width"

BGCOLOR="background colour"

BORDERCOLOR="border colour"

WIDTH="table width"

CELLSPACING="cell spacing"

CELLPADDING="cell padding"

HEIGHT="table height"

NOTE: Nested tables or lists as table elements are not supported.

<CAPTION attribute [attribute ...]> ... </CAPTION>

Specifies the enclosed text as a caption for the table.

ALIGN="alignment option"

<TR attribute [attribute ...]> ... </TR>

Specifies a table row. It can enclose table data definitions and table heading definitions.

ALIGN="alignment option"

BGCOLOR="background colour"

BORDERCOLOR="border colour"

VALIGN="vertical alignment option"

HEIGHT="cell height"

`<TH attribute [attribute ...]> ... </TH>`

Specifies the enclosed text as a table heading.

`ALIGN=``"alignment option"`

`NOWRAP`

`BGCOLOR=``"background colour"`

`BORDERCOLOR=``"border colour"`

`VALIGN=``"vertical alignment option"`

`ROWSPAN=``"row span"`

`COLSPAN=``"column span"`

`WIDTH=``"cell width"`

`HEIGHT=``"cell height"`

`<TD attribute [attribute ...]> ... </TD>`

Specifies the enclosed text as table data.

`ALIGN=``"alignment option"`

`NOWRAP`

`BGCOLOR=``"background colour"`

`BORDERCOLOR=``"border colour"`

`VALIGN=``"vertical alignment option"`

`ROWSPAN=``"row span"`

`COLSPAN=``"column span"`

`WIDTH=``"cell width"`

`HEIGHT=``"cell height"`

5.11.7   Frames

HTML frames are not supported.

5.11.8   Scripts and applets

Scripts and Java applets are not supported.

`<SCRIPT> ... </SCRIPT>`

- Specifies an embedded script to be interpreted by the client. Is required to appear within the BODY section of the document.

- Clients are not required to interpret any embedded scripts. Clients may ignore everything within a SCRIPT definition other than NOSCRIPT definitions.

`<NOSCRIPT> ... </NOSCRIPT>`

- Specifies text to be displayed in place of interpreting embedded scripts. Is required to appear within a SCRIPT definition.

5.11.9   Forms

HTML forms are not supported.

5.11.10   Cascading style sheets

Cascading style sheets are not supported.

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

ISO/IEC 15948: "Information processing systems - Computer Graphics and Image Processing - Portable Network Graphics (PNG): functional specification (Edition 1)".

History

Document history		
V1.1.1	September 2000	Publication