

# ETSI TS 101 498-3 V2.1.1 (2005-10)

---

*Technical Specification*

## Digital Audio Broadcasting (DAB); Broadcast website; Part 3: TopNews basic profile specification

---

European Broadcasting Union



Union Européenne de Radio-Télévision

EBU·UER

**DAB**  
*Digital Audio Broadcasting*



---

Reference

DTS/JTC-DAB-41

---

Keywords

audio, broadcasting, DAB, digital, receiver

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2005.

© European Broadcasting Union 2005.

All rights reserved.

**DECT™**, **PLUGTESTS™** and **UMTS™** are Trade Marks of ETSI registered for the benefit of its Members.  
**TIPHON™** and the **TIPHON logo** are Trade Marks currently being registered by ETSI for the benefit of its Members.  
**3GPP™** is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

# Contents

Intellectual Property Rights .....	4
Foreword.....	4
Introduction .....	4
1 Scope .....	6
2 References .....	6
3 Abbreviations .....	7
4 Syntax specification .....	7
5 TopNews basic profile specification .....	7
5.1 Introduction .....	7
5.2 The TopNews MOT carousel .....	8
5.3 MOT parameters for individual objects.....	8
5.3.1 MOT Header Core settings .....	9
5.3.2 The ProfileSubset parameter.....	9
5.3.3 The ContentName parameter .....	9
5.3.3.1 The ContentName parameter for interoperability .....	9
5.3.4 The UniqueBodyVersion parameter .....	10
5.3.5 The ContentSorting parameter.....	10
5.3.5.1 TopNews Object type.....	11
5.3.5.2 Presentation order of categories .....	11
5.3.5.3 Presentation order of message objects.....	11
5.3.5.4 Message objects in multiple categories.....	11
5.3.6 The ContentDescription parameter .....	12
5.3.7 The Headline parameter .....	12
5.3.8 The Duration parameter .....	12
5.3.9 The PresentationThreshold parameter, individual .....	13
5.4 MOT parameters for the entire carousel.....	13
5.4.1 The SortedHeaderInformation parameter .....	13
5.4.2 The SpecialEntry parameter.....	14
5.4.3 The PresentationThreshold parameter, entire .....	14
5.5 Other MOT parameters .....	15
5.6 Application Signalling.....	15
6 TopNews Application Structure.....	15
6.1 Supported content types .....	15
6.1.1 Content type audio .....	15
6.1.1.1 MP2 parameters .....	15
6.1.1.2 MP3 parameters .....	16
6.2 Meta data for enhanced interoperability.....	16
6.2.1 ID3 tags.....	16
6.2.2 Playlists / application meta data.....	16
6.3 Category structure and signalling .....	17
6.4 Object life cycle .....	18
6.5 Navigation controls .....	18
6.5.1 Change category .....	18
6.5.2 Change message.....	19
6.6 Quality of Service parameters .....	19
6.6.1 Transport channel limitations .....	19
6.6.2 Maximum object size.....	19
6.6.3 Minimum receiver cache size .....	19
6.6.4 Minimum receiver audio characteristics .....	19
6.6.5 Minimum receiver display characteristics .....	19
6.6.6 Maximum carousel period .....	20
History .....	21

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

---

## 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).

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.

European Broadcasting Union  
CH-1218 GRAND SACONNEX (Geneva)  
Switzerland  
Tel: +41 22 717 21 11  
Fax: +41 22 717 24 81

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 3 of a multi-part deliverable. Full details of the entire series can be found in part 1 [4].

---

## Introduction

The growth of the Internet and the popularity of compressed audio in MP3 format makes audio based information services an extremely attractive way of providing information to users. Additionally audio data services are of huge interest in particular for in-car applications.

MP2 and MP3 compression is the de facto standard on the Internet. This format is widely used and well supported for distribution of audio files and TopNews is a service that takes advantage of this development. The public has already accepted this technology that is now common both in the home and in the workplace. New types of devices have been created to accommodate for the popularity MP3 has reached:

- Portable devices based on CD, MMC or other types of storage media.
- Home receivers, that can handle MP3 from CD or hard disk.
- Car stereos, capable of playing MP3 from CD-ROM.

TopNews gives DAB multiplex operators and service providers the opportunity to use for instance MP2 or MP3 as compressed audio content format. This supports information services by using the concept of a file or object download to the receiver that provides storage capacity for those objects (push and store). The application range for DAB value added services is dramatically enhanced with TopNews and this type of service is only feasible with a digital broadcast system.

TopNews is designed to allow an entire bouquet of information to be delivered to a receiver using the broadcast channel of DAB. The information, like news or sport messages, is prepared as compressed audio objects by the service provider. These message objects are transmitted and then stored inside the receiver. The objects are sorted by freely definable categories. Index objects support the navigation within this collection of message objects. A category index is played back every time the user enters a specific category.

---

# 1 Scope

The present document specifies how to create a broadcast carousel of objects for an audio information service. TopNews allows a service provider to deliver compressed audio, for instance MP3, via digital radio. Receivers may then extract information directly from this carousel and store it in the receiver in order to present the service.

To simplify the delivery of additional text and image files TopNews is designed as a profile of the Broadcast Website user application (TS 101 498-1 [4]). BWS itself and TopNews are based on the MOT protocol (EN 301 234 [3]).

---

# 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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [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] ISO/IEC 11172-3 (1993): "Information technology - Coding of moving pictures and associated audio for digital storage media at up to 1,5 Mbit/s - Part 3: Audio".
- [6] ISO/IEC 13818-3: "Information technology - Generic coding of moving picture and associated audio information - Part 3: Audio".
- [7] ISO/IEC 10646: "Information technology - Universal Multiple-Octet Coded Character Set (UCS)".
- [8] id3v2.4.0-structure: "ID3 tag version 2.4.0 - Main Structure".

NOTE: See <http://www.id3.org/id3v2.4.0-structure.txt>.

---

## 3 Abbreviations

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

BWS	Broadcast Web Site
DAB	Digital Audio Broadcasting
HTML	Hyper Text Markup Language
kbps	Kbit / second
MOT	Multimedia Object Transfer
MP2	MPEG 1 or 2, Audio Layer 2
MP3	MPEG 1 or 2, Audio Layer 3
PDA	Personal Digital Assistant
TN	TopNews

---

## 4 Syntax specification

The specifications of syntax that appear in the present document are written using a form of pseudo-code that is similar to the procedural language C; this provides for easy specification of loops and conditional data structures. Within these specifications, the type of individual data fields is expressed using the mnemonics given in table 1.

**Table 1: Data type mnemonics for syntax specification**

Mnemonic	Description
Uimsbf	Unsigned integer, most significant bit first

---

## 5 TopNews basic profile specification

The profile specified in the following clauses defines the profile for the MOT Broadcast Web Site user application corresponding to the `ProfileId` value 0x02.

### 5.1 Introduction

TopNews uses the MOT protocol. It allows a service provider to deliver compressed audio files (e.g. MP3) via DAB. Since TopNews is based on the BWS application, all necessary provisions on the content creation and distribution side are already available. MOT TopNews is easy to implement on both the broadcast side as well as on the receiver side. TopNews itself is flexible and can be further enhanced in the future by defining extensions and additional profiles.

TopNews has to handle a large number of short audio objects in many different categories (for example traffic messages) but also a small number of long audio objects. It is possible that the TopNews content itself is not characterised as single unit but as a collection of independent objects. Therefore the receiver should always be able to decode the TopNews data and start presenting objects as soon as they are received. Over time, the number of objects and categories increases until all objects have been received. From time to time, the number of categories and the number of objects within the categories may change dynamically.

TopNews is embedded in the Broadcast Web Site user application as its own profile. This allows on the one hand easy integration of additional text and images to TopNews data in the future and on the other hand easy integration of TopNews objects in other BWS profiles. So TopNews can be combined with already existing visual HTML based profiles of BWS.

## 5.2 The TopNews MOT carousel

The data for TopNews shall be carried as TopNews profile in the MOT BWS user application (TS 101 498-1 [4]).

Being a profile of the BWS user application implies the use of the MOT directory mode. The MOT data carousel can be transported in PAD or in a packet mode channel. TopNews can be linked logically to an audio service or it can be a stand-alone TopNews data service.

The following extensions and restrictions apply for this TopNews basic profile:

- The directory entries of the MOT directory shall be sorted in ascending order of the ContentName parameter at the service provider side (this reduces the complexity for MOT directory comparison, see clause 5.4.1).
- No transport level compression of the MOT directory is allowed (this reduces the complexity for MOT directory decoding).
- The MOT directory shall remain unchanged for a minimum period of 2 minutes.

NOTE: Due to reception errors, a receiver might be unable to get an error free reception of an MOT body before transmission of the next MOT body starts. Appropriate measures need to be taken to ensure that in case of reception errors the MOT body can be completed during the next repetition(s) of the MOT body.

Within the MOT carousel, MOT parameters can be associated with individual objects by placing them in the MOT Header core and the MOT Header Extensions. MOT parameters referring to the complete set of objects are placed into the MOT directory extension.

Only extensions or restrictions of the MOT standard (EN 301 234 [3]) or the BWS user application (TS 101 498-1 [4]) are specified within the present document.

## 5.3 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 that apply to the BWS TopNews profile is given in table 2, and is specified in detail by the following clauses.

NOTE 1: Other parameters may be defined within the context of specific profile definition. Any parameters that are encountered that are not understood by a given receiver profile are ignored.

If the MOT parameters ProfileSubset, ContentName and/or UniqueBodyVersion are used, then these parameter should be sorted in this order and placed at the beginning of the MOT parameter list of the MOT header to further reduce the complexity for MOT directory comparison.

**Table 2: Use of MOT parameters for individual objects**

Parameter	Parameter Id	Specified in	Mandatory for service provider	Mandatory for Receiver	Occurrence
ProfileSubset	0x21	MOT	No	No	Single
ContentName	0x0C	MOT and BWS	Yes	Yes	Single
UniqueBodyVersion	0x0D	MOT	Yes	No	Single
ContentSorting	0x2a	TN	Yes	Yes	Multiple
ContentDescription	0x28	TN	Yes	No	Single
Headline	0x29	TN	No	No	Single
Duration	0x2b	TN	No	No	Single
PresentationThreshold	0x2c	TN	No	Yes	Single

NOTE 2: The parameter identifiers defined by the TopNews basic profile could also be used by other user applications for parameters with completely different meanings.



### 5.3.1 MOT Header Core settings

The ContentType and -SubType shall be set according to the MOT specification (EN 301 524 [3]).

EXAMPLE: For an MP2 audio object the 'ContentType' shall be set to '00 0011<sub>bin</sub>' (audio) and the 'ContentSubType' to either '0 0000 0001<sub>bin</sub>' (MPEG I audio Layer II) or '0 0000 0100<sub>bin</sub>' (MPEG II audio Layer II).

### 5.3.2 The ProfileSubset parameter

This optional parameter indicates the MOT object(s) used by the profile.

The ProfileSubset parameter is used as specified in the MOT specification (EN 301 524 [3]).

### 5.3.3 The ContentName parameter

This mandatory parameter uniquely identifies the MOT object within the MOT carousel and within TopNews.

The ContentName parameter is used as specified in the MOT specification (EN 301 524 [3]) and in the BWS specification (TS 101 498-1 [4]). Additionally the following extensions and restrictions apply for TopNews:

- The permitted file extensions are specified in clause 6.
- The parameter ContentName should not be presented to the user for selection of a TopNews object. The receiver shall display the ContentDescription of the object or the appropriate ID3 tag.

#### 5.3.3.1 The ContentName parameter for interoperability

If the service provider wants to permit TopNews receivers to store the received TopNews content on removable media such as a memory card and to use another non TopNews capable device, like a simple MP3 player to play back the TopNews content, then the service provider should use the scheme presented in this clause to define the ContentNames for the TopNews content. Nevertheless only an approximation to TopNews is possible.

A receiver which supports this kind of interoperability (i.e. play back of TopNews data on non-TopNews devices) must store the TopNews objects with their ContentName parameters as full file names (path and file name) in the file system.

All the additional extensions and restrictions described in this clause are optional. However, not fulfilling these extensions and restrictions will make it unlikely that TopNews content can be presented on non-TopNews devices.

The parameter ContentName should not be presented to the user for selection of a TopNews object. However to allow interoperability with devices which can only present the directory and file name, the ContentName parameter should describe the content as far as possible, so that a simple media player can make use of the content and category identifier of the ContentName while playing the objects (table 3).

It is highly recommended that the ContentName is a valid file- and directory name for all file systems used for TopNews receivers and to use short names for every part (e.g. 8 characters).

To permit interoperability, the character set for the ContentName of TopNews objects shall be ISO Latin Alphabet No 1 (see TS 101 756 [2]). The permitted characters are restricted to a subset of this character set as follows: the lowercase Latin letters, the digits, the hyphen, the forward slash and the underscore ("a".."z", "0".."9", "-", "/", "\_").

The ContentName should consist of three parts: The path consisting of multiple (1-x) path components (1 to 8 characters in length) separated by a slash, the category identifier / directory name (1 to 8 characters) and the content identifier / file name (1 to 8 characters) followed by a "." and the file name extension (1 to 3 characters). Every part is separated with a slash character. The permitted file extensions are specified in clause 6.

**Table 3: Syntax of the ContentName parameter data field for interoperability**

Syntax	Size (bits)	Type
ContentName_parameter_data_field() {		
For (i=0;i<M;i++) {		
Path Component	$n \times 8; n \leq 8$	uimsbf
/	8	uimsbf
}		
Category Identifier	$m \times 8; m \leq 8$	uimsbf
/	8	uimsbf
Content Identifier	$p \times 8; p \leq 8$	uimsbf
.	8	uimsbf
File Extension	$r \times 8; r \leq 3$	uimsbf
}		

NOTE 1: It is recommended to use a ContentName having a content identifier "index" and the appropriate file extension for all service and category index objects. This is similar to commonly used file names for index pages on Internet web servers.

NOTE 2: If a message object belongs to more than one category, the ContentName parameter should use the first category as the name source.

Further support for interoperability devices can be found in clauses 6.2.1 and 6.2.2.

### 5.3.4 The UniqueBodyVersion parameter

This mandatory parameter is used for version control and for the independent update of the header information of the MOT body.

The UniqueBodyVersion parameter is used as specified in the MOT specification (EN 301 524 [3]). Additionally the following extensions and restrictions apply for TopNews:

- It is optional but recommended for service provider and receiver to support the MOT parameters Expiration in the header information and DefaultExpiration in the directory extension of the MOT directory as specified in the MOT specification (EN 301 524 [3]).

NOTE: The TopNews application sometimes needs to change the header information but not the MOT body of an MOT object (for example, a change to the sorting of message objects, see clause 5.3.5). With the signalling of the same UniqueBodyVersion parameter value and a changed TransportId the header information can be changed without the need to delete and to reassemble an already decoded MOT body again.

### 5.3.5 The ContentSorting parameter

The use of this TopNews parameter for each MOT object is mandatory. The ContentSorting parameter identifies the different object types (service index, category index and message object), gives information about the sorting of the content within the TopNews profile and allows message objects to be placed in more than one category.

The ContentSorting parameter consists of two unsigned integer numbers from 0 to 65535. These are the message number within a category and the category number within the TopNews profile.

**Table 4: Syntax of the ContentSorting parameter data field**

Syntax	Size (bits)	Type
ContentSorting_parameter_data_field() {		
message number	16	uimsbf
category number	16	uimsbf
}		

### 5.3.5.1 TopNews Object type

To distinguish between the three different object types (i.e. service index, category index and message object), both numbers are set in a special way. With these settings it is easy to identify the object type on the receiver side. For the usage of the object types please see clause 6.3.

If an MOT object is the service index of the complete TopNews profile data, the message number and the category number shall be set to 0. The category number 0 within every TopNews profile data is reserved for its service index. Only one service index is allowed in each TopNews profile data. It is mandatory to send the service index.

If an MOT object is the category index, the message number shall be set to 0 and the category number shall be set to a number greater than 0. The message number 0 within every category is reserved for its category index. Only one category index is allowed for each category (see clause 5.3.5.2). It is mandatory to send a category index for each category in use.

If an MOT object is a message object, the message number and the category number shall be set to a number greater 0. All MOT objects with the same category number belong to the same category. It is allowed to signal multiple messages for every category even with the same message number (see clause 5.3.5.3).

**Table 5: Summary of message number and category number allocation**

	message number	category number
Service Index	0	0
Category Index	0	> 0
Message Object	> 0	> 0

### 5.3.5.2 Presentation order of categories

The order in which the categories are presented to the user shall be derived from the category number of the ContentSorting parameter. The category with the lowest category number shall be presented first followed by the category with the next higher category number and so on. So the categories are ordered in ascending order of the category number.

**NOTE:** If the presentation order of the categories is changed, then an update of the affected header information of the MOT objects in the MOT directory has to be performed. The use of the UniqueBodyVersion parameter supports this (see clause 5.3.4).

### 5.3.5.3 Presentation order of message objects

The order in which the messages within a category are presented to the user shall be derived from the message number of the ContentSorting parameter. The message with the lowest message number shall be presented first followed by the message with the next higher message number and so on. So the messages are ordered in ascending order of the message number. The sorting order of message objects having the same message number is undefined.

**NOTE:** If the presentation order of the objects is changed, then an update of the affected header information of the MOT objects in the MOT directory has to be performed. The use of the UniqueBodyVersion parameter supports this (see clause 5.3.4).

### 5.3.5.4 Message objects in multiple categories

A message object can appear in more than one category. To achieve this the header information of the MOT object can have more than one ContentSorting parameter. So the message object belongs to all the categories the different category numbers specify.

While it is quite easy to ensure that a message is put into multiple categories, it is not so easy to ensure that the message is removed from all categories if it is DELETED or UPDATED. The (implicit) delete command does not give the category names the message formerly belonged to, and an update using the same ContentName might be totally unrelated to the old message (it might have different categories from the original). Receivers shall be designed to handle this situation.

**NOTE 1:** There are no problems with message objects in multiple categories because all ContentNames are unique.

NOTE 2: If the membership of different categories for an object is changed, then an update of the affected header information of the MOT object in the MOT directory has to be performed. The use of the UniqueBodyVersion parameter supports this (see clause 5.3.4).

### 5.3.6 The ContentDescription parameter

The use of this TopNews parameter for each MOT object is mandatory. This MOT parameter contains the full description of the object with the maximum length of 256 characters or a maximum of 1 024 bytes. The character set used shall be ISO/IEC 10646 [7] (UTF-8 encoding). The ContentDescription may be presented to the user for selection and so it should describe the service, the category or the message itself.

**Table 6: Syntax of the ContentDescription parameter data field**

Syntax	Size (bits)	Type
ContentDescription_parameter_data_field() {		
Content description	$n \times 8; n \leq 1024$	uimsbf
}		

If an encoded audio file uses ID3 tags to describe the object, the ID3 tag shall use the same description (see clause 6.2.1).

### 5.3.7 The Headline parameter

The use of this TopNews parameter for each MOT object is optional. The Headline parameter is an unsigned integer number of two bytes giving a time interval as a multiple of tenths of seconds (100 ms). This number indicates the position in the audio object where the headline of the message ends and the content of the message starts. This allows a receiver to play only the headline of a message object. For playback purposes, the headline of the message is a complete set of audio frames whose playing time is equal to or greater than the time indicated by the Headline parameter.

**Table 7: Syntax of the Headline parameter data field**

Syntax	Size (bits)	Type
Headline_parameter_data_field() {		
Position	16	uimsbf
}		

### 5.3.8 The Duration parameter

The use of this TopNews parameter for each MOT object is optional. The Duration parameter is an unsigned integer number from 0 to 65535. This number gives the duration of the audio object in seconds. If necessary the duration of the audio object shall be rounded to the next higher integer value.

**Table 8: Syntax of the Duration parameter data field**

Syntax	Size (bits)	Type
Duration_parameter_data_field() {		
Time	16	uimsbf
}		

NOTE: The Duration parameter is only intended for display purposes to the user. For the exact duration the audio object itself must be checked.

### 5.3.9 The PresentationThreshold parameter, individual

This TopNews parameter for a category index is optional for the service provider and mandatory for the receiver. The PresentationThreshold parameter indicates the necessary minimum number of available objects in a category on the receiver to access this category. The PresentationThreshold is an unsigned integer number from 0 to 65 535. This number represents the necessary minimum number of objects in a category. The number of objects includes the category index and all message objects of this category. The value 0xffff, indicates that every object in a category must be available to present the category.

**Table 9: Syntax of the PresentationThreshold parameter data field**

Syntax	Size (bits)	Type
PresentationThreshold_parameter_data_field() {		
MinimumNumber	16	uimsbf
}		

The PresentationThreshold parameter shall be used only for the category index. If not set for a specific category index the PresentationThreshold parameter in the directory extension of the MOT directory shall be used. If a PresentationThreshold parameter in the directory extension of the MOT directory is signalled, then the individual PresentationThreshold for the category index supersedes the directory extension value. If the PresentationThreshold parameter is not used at all (or is invalid) the default value 0 has to be assumed and this value corresponds to 0 necessary objects.

NOTE 1: With a value of 0 the presentation of a TopNews category can start with the first decoded object that is available. With a value of 0xffff every object of the category must be decoded before the presentation of the category can start. This maximum requirement will considerably delay the presentation start.

NOTE 2: If the objects of the category change as indicated by the MOT directory, the presentation must be stopped if the necessary number of objects is not available on the receiver anymore. The user may have to wait a long time while using this TopNews data.

## 5.4 MOT parameters for the entire carousel

MOT parameters that are to be applied to the entire carousel are placed in the DirectoryExtension field of the MOT directory.

A summary of the use of MOT parameters for the entire carousel that apply for the BWS TopNews profile is given in table 10, and is specified in detail by the following clauses.

**Table 10: Use of MOT parameters for the entire carousel**

Parameter	Parameter Id	Specified in	Mandatory for service provider	Mandatory for Receiver	Occurrence
SortedHeaderInformation	0x00	MOT	Yes	No	Single
SpecialEntry	0x2d	TN	No	No	Single
PresentationThreshold	0x2c	TN	No	Yes	Single

NOTE 1: Other parameters may be defined within the context of specific profile definition. Any parameters that are encountered that are not understood by a given receiver profile will be ignored.

NOTE 2: The parameter identifiers defined by the TopNews basic profile could also be used by other user applications for parameters with completely different meanings.

### 5.4.1 The SortedHeaderInformation parameter

This mandatory parameter is used to signal that the directory entries within the MOT directory are sorted in ascending order of the ContentName parameter.

The SortedHeaderInformation parameter is used as specified in the MOT specification (EN 301 524 [3]).

## 5.4.2 The SpecialEntry parameter

The use of this TopNews parameter is optional. The SpecialEntry parameter gives a link to a special object of the TopNews profile that should be the first object played when the service is started in a special way.

The parameter coding is identical to the ContentName parameter (see clause 5.3.3).

**Table 11: Syntax of the SpecialEntry parameter data field**

Syntax	Size (bits)	Type
SpecialEntry_parameter_data_field() {		
ContentName	n x 8	uimsbf
}		

When starting TopNews normally the service index will be played first and then the listener can select categories and messages he is interested in. If the service provider wants to promote a TopNews message or category that should be played when a special button on the TopNews receiver is pressed then the SpecialEntry parameter should be set. If the parameter is not set by default the service index corresponding to a ContentSorting value of (0, 0) shall be the special object. So this parameter supersedes all other presentation priority strategies. The category and message order remains unchanged.

To enable this feature, a TopNews receiver needs two different ways to enter the TopNews application:

- the "normal" way starting at the service index;
- the "promoted message" way that starts at the special TopNews message or category and afterwards continues at this position with the normal presentation strategy.

## 5.4.3 The PresentationThreshold parameter, entire

This TopNews parameter is optional for the service provider and mandatory for the receiver. The PresentationThreshold parameter indicates the necessary minimum number of available objects in a category on the receiver to access this category. The PresentationThreshold is an unsigned integer number from 0 to 65 535. This number represents the necessary minimum number of objects in a category. The number of objects includes the category index and all message objects of this category. The value 0xffff, indicates that every object in a category must be available to present the category.

**Table 12: Syntax of the PresentationThreshold parameter data field**

Syntax	Size (bits)	Type
PresentationThreshold_parameter_data_field() {		
MinimumNumber	16	uimsbf
}		

The PresentationThreshold parameter in the directory extension of the MOT directory shall be used for all categories. If an individual PresentationThreshold parameter is set for a specific category in the MOT header of the category index of this category, then this individual parameter supersedes the directory extension value for this category. If the PresentationThreshold parameter is not used at all (or is invalid) the default value 0 has to be assumed and this value corresponds to 0 necessary objects.

NOTE 1: With a value of 0 the presentation of a TopNews category can start with the first decoded object that is available. With a value of 0xffff every object of the category must be decoded before the presentation of the category can start. This maximum requirement will considerably delay the presentation start.

NOTE 2: If the objects of the category change as indicated by the MOT directory, the presentation must be stopped if the necessary number of objects is not available on the receiver anymore. The user may have to wait a long time while using this TopNews data.

## 5.5 Other MOT parameters

No transport level compression of the TopNews objects of this profile is allowed. For this reason the BWS parameter CompressionType shall not be used for MOT objects within this profile.

The BWS user application is based on HTML. Because a DirectoryIndex parameter for this profile could only present an audio object, this parameter is not used for this profile.

All other MOT parameters necessary for BWS (MimeType, AdditionalHeader, CAInfo, etc.) are used as specified in the BWS (TS 101 498-1 [4]) and MOT (EN 301 524 [3]) specifications.

It is recommended for service provider and receiver to support MOT persistent caching (MOT parameters Expiration, DefaultExpiration, PermitOutdatedVersions, DefaultPermitOutdatedVersions, etc.) as specified in the MOT specification (EN 301 524 [3]).

NOTE 1: If Expiration is used, the receiver will lose the ability to present the complete TopNews structure if the category index and/or the service index expires.

NOTE 2: If Expiration is used the user will have access to a decreasing number of MOT objects with time because MOT objects will expire during use. An indication to the user for the reason would be beneficial.

NOTE 3: If PermitOutdatedVersions is used the service provider has to keep in mind that the MOT specification (EN 301 524 [3]) requires that all changes of the header information, e.g. a new sorting, cannot be applied by the receiver until the new MOT body is decoded. Changes of the directory extension of the MOT directory can be applied immediately. If this is not acceptable the service provider has first to change the header information, hope that the receiver receives this intermediate MOT directory and send with the next MOT directory the new MOT body.

## 5.6 Application Signalling

The use of TopNews within a DAB data channel shall be indicated by use of FIG 0/13 with the UserApplicationType value of the MOT BWS application (see TS 101 756 [2]) and the UserApplicationDataField with the TopNews ProfileId.

The ProfileId for this TopNews Basic Profile Specification has the value 0x02.

---

# 6 TopNews Application Structure

## 6.1 Supported content types

Integrated TopNews receivers are only required to support the content types specified below.

All other content types may be decoded and stored by a TopNews receiver to enable use of the TopNews data on a non-specific device (e.g. PDA), see clause 6.2.2.

### 6.1.1 Content type audio

The supported audio compression formats are described in detail in clauses 6.1.1.1 and 6.1.1.2.

Receivers shall insert a pause between two consecutive played audio objects by default. Therefore audio objects do not require a lead in and out.

#### 6.1.1.1 MP2 parameters

The audio objects shall be encoded in MPEG 1 (ISO/IEC 11172-3 [5]) or MPEG2 (ISO/IEC 13818-3 [6]) Layer 2 format commonly known as MP2 format.

There are no restrictions to the data rate, sampling frequencies or submodes.

The file extension in the MOT parameter ContentName shall be "mp2".

### 6.1.1.2 MP3 parameters

The audio objects shall be encoded in MPEG 1 (ISO/IEC 11172-3 [5]) or MPEG2 (ISO/IEC 13818-3 [6]) Layer 3 format commonly known as MP3 format.

There are no restrictions to the data rate, sampling frequencies or submodes.

The file extension in the MOT parameter ContentName shall be "mp3".

## 6.2 Meta data for enhanced interoperability

To support the interoperability of TopNews with players which are not TopNews equipped, e.g. a simple media player, additional parameters to describe the objects and the service can be broadcast. This clause describes optional additions.

### 6.2.1 ID3 tags

The information of the ID3 tag version 1 and 2 (id3v2.4.0-structure [8]) can give a more detailed description of MP2 and MP3 audio objects. The ID3v1 tag ARTIST shall correspond to the ContentDescription of the service index, the ALBUM tag to the ContentDescription of the category index and the TITLE tag to the ContentDescription of the message object. The TRACK shall correspond to the message number of the ContentSorting parameter. For ID3v2 only, the TPOS shall correspond to the category number of the ContentSorting parameter.

For a service index object, all three ID3v1 tags shall be identical.

For a category index object, the ID3v1 ALBUM and ARTIST tags shall be identical. For ID3v2 the respective tags shall be used. The ID3 specification provides further information (id3v2.4.0-structure [8]).

NOTE: If a message object belongs to more than one category the ID3 tags should be set for the first category.

**Table 13: ID3 tag usage**

Object type	ID3v1 tag	ID3v2 tag	MOT parameter	Example
message object	ARTIST	TPE1	ContentDescription from service index	Rockland SA
	ALBUM	TALB	ContentDescription from category index	World News
	TITLE	TIT2	ContentDescription from message object	Discovery of a new Species
	TRACK	TRCK	ContentSorting, message number	1
	-	TPOS	ContentSorting, category number	1
category index	ARTIST	TPE1	ContentDescription from service index	Rockland SA
	ALBUM	TALB	ContentDescription from category index	World News
	TITLE	TIT2	ContentDescription from category index	World News
	TRACK	TRCK	ContentSorting, message number	0
	-	TPOS	ContentSorting, category number	1
service index	ARTIST	TPE1	ContentDescription from service index	Rockland SA
	ALBUM	TALB	ContentDescription from service index	Rockland SA
	TITLE	TIT2	ContentDescription from service index	Rockland SA
	TRACK	TRCK	ContentSorting, message number	0
	-	TPOS	ContentSorting, category number	0

### 6.2.2 Playlists / application meta data

Application meta data for the TopNews service may be generated as additional MOT objects. This enables TopNews to be presented from the object cache of non-TopNews capable receiver devices like PDAs or portable audio players.

The application meta data is not specified - it is assumed that suitable application decoders will develop within IT communities and be made available to device users.

EXAMPLE 1: An HTML page could be generated which has links to the individual TopNews audio objects. By clicking on the links the files are played with the default media player of the system.



EXAMPLE 2: An object "tna\_pc.htm" could be broadcast for a PC based application decoder using a website.

EXAMPLE 3: An object "tna\_mp.asx" could be broadcast for Windows media player as an ASX playlist.

EXAMPLE 4: An object "tna\_wamp.m3u" could be broadcast for Winamp media player as an M3U playlist.

EXAMPLE 5: An object "tna\_pc.js" could be broadcast for PCs as java script.

EXAMPLE 6: An object "tna\_xml.xml" could be broadcast as generic XML.

The description of this application meta data is provided as additional MOT objects within the MOT data carousel. These additional MOT objects shall be stored in the file system of the moveable storage media. It is mandatory for any receiver to store these files if they are used for interoperability purposes.

These MOT objects belong to the TopNews profile as identified by the MOT ProfileSubset parameter with the TopNews ProfileId. However, they have a content type different to those specified in clause 6.1 and therefore they have no TopNews specific MOT parameters (ContentSorting, ContentDescription, Headline, Duration, PresentationThreshold). These TopNews specific parameters shall not be used with these objects.

The objects are transported as specified in the BWS application (TS 101 498-1 [4]) using the appropriate ContentType, ContentSubType according to the MOT specification (EN 301 524 [3]).

## 6.3 Category structure and signalling

All TopNews objects are categorised. The signalling of the categories and the full description of the category as well as the description of the transmitted objects itself is done using the MOT parameters ContentSorting and ContentDescription.

There are no predefined categories. All categories are created and named with the parameter ContentSorting and ContentDescription. This is up to the service provider.

The receiver has to handle new categories and new message objects. The number of categories and message objects may change dynamically. The change rate shall be longer than 2 minutes because of the limitations of the MOT directory transport mode.

NOTE 1: The transmission of the objects may be interleaved over the categories to enable receivers to quickly establish the structure of the TopNews categories.

NOTE 2: Newly received unsorted message objects in the selected category may be played first.

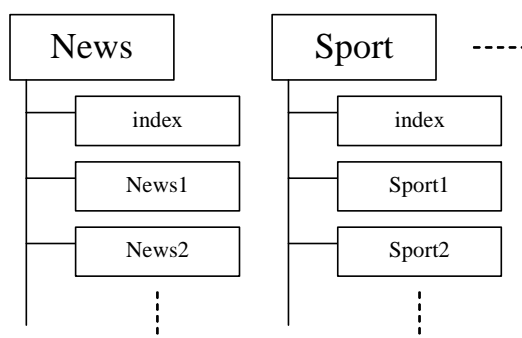


Figure 1: Logical structure of TopNews

```
/news/index.mp3
/news/news1.mp3
/news/news2.mp3
:
/sport/index.mp3
/sport/sport1.mp3
/sport/sport2.mp3
:
```

**Figure 2: Possible directory structure containing the above service**

One audio object of each service, the service index, is treated as an audio description of this service and should be played when entering the service. One audio object of each category, the category index, is treated as an audio description of this category and should be played when entering this category and skipped if the user browses inside this category. These index objects are identified with the MOT parameter ContentSorting. The category order and the order of the message objects in the categories are defined with the ContentSorting parameter.

The textual description of an audio object should be presented to the user while playing this audio object. This description is signalled with the MOT parameter ContentDescription.

If a TopNews object has not yet been decoded when the user requests it, an audio place holder (e.g. a "beep") shall be provided to the user to indicate that the object is currently unavailable. The receiver may combine multiple audio place holders which appear in a row to a single place holder. The ContentDescription for each object should always be presented.

The TopNews service of the currently tuned audio service has the highest priority in a possible list of different TopNews services. TopNews services linked to other audio services should not be presented. The user has first to switch to these audio services. TopNews data services (those not linked to an audio service) may be accessed from a list.

## 6.4 Object life cycle

The life cycle of an object and especially the possibilities to modify them are described in detail in the BWS (TS 101 498-1 [4]) and MOT (EN 301 524 [3]) specifications. This includes the creation, update and deletion possibilities. Only completely decoded objects shall be presented to the user.

## 6.5 Navigation controls

A TopNews user application decoder shall provide the "change category" control and the "change message" control to allow manual playback.

Additionally, one automatic playback function should be implemented to first play the service index and then all the categories in the correct order, one after the other. Within a category, first the category index and then the message objects in the correct order are played.

For the special entry functionality described in clause 5.4.2, an additional "special entry" control is necessary.

### 6.5.1 Change category

The "change category" control allows the user to select the next category from the available list of categories. At its simplest, this may be implemented as a single control that cycles through all the available categories in the order in which they are sorted. The played category index and its ContentDescription shall be used to give user feedback about the current category.

## 6.5.2 Change message

The "change message" control allows the user to select the next object from the available list of messages in a category. At its simplest, this may be implemented as a single control that cycles through all the available messages in one category in the order in which they are sorted. It is assumed that an appropriate mechanism will be used to give user feedback about the current message.

## 6.6 Quality of Service parameters

Quality of service parameters are relevant when the content for a service can be successfully interpreted by the receiver software without error, but where the resulting presentation is unacceptably degraded if the receiver cannot meet the requirements.

Clauses 6.6.1 to 6.6.6 describe some of the quality of service parameters that should be considered.

### 6.6.1 Transport channel limitations

The main target device for the TopNews profile is an embedded receiver with limited capabilities. Therefore limitations are placed on the transportation of objects to reduce the necessary memory and processor requirements of the decoder.

No MOT object of this profile shall be interleaved with another MOT object of this profile. MOT objects shall be broadcast one after the other. The only exception is the MOT Directory itself, which can be interleaved with the MOT objects of this profile.

For MOT carousels containing objects for the TopNews profile, the data rate, whether transported in packet mode or PAD, is limited to a maximum of 64 kbps. For packet mode transport, the overall size of a subchannel including the TopNews profile is limited to a maximum of 128 kbps.

### 6.6.2 Maximum object size

The maximum size of any object in the carousel is 512 kByte.

NOTE: 1 minute of audio encoded at 32 kbps equals 240 kByte.

### 6.6.3 Minimum receiver cache size

The MOT carousel can be used to deliver a set of files in a broadcast Digital Radio channel and can operate entirely without cache memory, if desired. However, the effect of cache memory is to improve the performance of the carousel with respect to carousel access time, and so directly affects the perceived quality of the service (cache memory cannot improve service acquisition time, however).

In order to guarantee a certain level of service performance, the minimum amount of receiver cache memory shall be 8 MByte. The service provider must be aware that if this data rate is exceeded, the memory management behaviour of the receiver is unforeseen.

NOTE: 30 minutes of audio encoded at 32 kbps equals 7,6 MByte.

### 6.6.4 Minimum receiver audio characteristics

An integrated receiver can have limited audio playback capabilities. In order to guarantee a certain level of service performance, the minimum playback capability shall be MP2 and MP3.

### 6.6.5 Minimum receiver display characteristics

There are no minimum receiver display characteristics. The service can be operated without any visual feedback using the service and category index objects. However even a limited display can improve the service considerably.

### 6.6.6 Maximum carousel period

No limitation of the carousel period is necessary. Nevertheless if the carousel period is too long the receiver may have problems decoding all TopNews objects.

---

## History

<b>Document history</b>		
V2.1.1	October 2005	Publication