

ETSI TS 101 211 V1.13.1 (2021-05)



**Digital Video Broadcasting (DVB);  
Implementation and usage  
of Service Information (SI)**

[ETSI TS 101 211 V1.13.1 \(2021-05\)](https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8e24702e7cff/etsi-ts-101-211-v1-13-1-2021-05)

<https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8e24702e7cff/etsi-ts-101-211-v1-13-1-2021-05>

**EBU DVB<sup>®</sup>**

---

**Reference**

RTS/JTC-DVB-394

---

**Keywords**

broadcasting, digital, DVB, MPEG, TV, video

**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 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

---

**Notice of disclaimer & limitation of liability**

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2021.

© European Broadcasting Union 2021.

All rights reserved.

# Contents

Intellectual Property Rights .....	7
Foreword.....	7
Modal verbs terminology.....	8
1 Scope .....	9
2 References .....	9
2.1 Normative references .....	9
2.2 Informative references.....	10
3 Definition of terms, symbols and abbreviations.....	11
3.1 Terms.....	11
3.2 Symbols.....	11
3.3 Abbreviations .....	11
4 Rules of operation .....	11
4.0 Introduction .....	11
4.1 Service Information (SI) table information .....	12
4.1.0 Overview .....	12
4.1.1 Network Information Table (NIT) information .....	12
4.1.2 Bouquet Association Table (BAT) information.....	13
4.1.3 Service Description Table (SDT) information.....	14
4.1.4 Event Information Table (EIT) information .....	14
4.1.4.0 General principles of EIT information.....	14
4.1.4.1 EIT Present/Following information .....	14
4.1.4.2 EIT Schedule information.....	16
4.1.4.2.1 EIT Schedule structure .....	16
4.1.4.2.2 EIT scrambling.....	17
4.1.5 Time and Date Table (TDT).....	17
4.1.6 Time Offset Table (TOT).....	17
4.1.7 Running Status Table (RST).....	17
4.1.8 Stuffing Table (ST).....	17
4.1.9 Transport Stream Description Table (TSDT) .....	17
4.1.9.0 Use of the TSDT in distribution applications.....	17
4.1.9.1 Digital Satellite News Gathering (DSNG).....	18
4.1.10 Table update mechanism .....	18
4.1.11 Table segmentation .....	19
4.1.11.0 General rules .....	19
4.1.11.1 Generic segmentation rules .....	19
4.1.11.1.1 General rules.....	19
4.1.11.1.2 NIT and BAT.....	19
4.1.11.1.3 SDT and EIT .....	20
4.1.11.2 Segmentation rules for DVB-H and DVB-SH systems.....	20
4.1.11.2.1 General rules.....	20
4.1.11.2.2 NIT and BAT for DVB-SH and DVB-H.....	20
4.1.11.2.3 SDT for DVB-SH and DVB-H.....	21
4.2 SI descriptor allocation and usage.....	22
4.2.0 Overview .....	22
4.2.1 Descriptors of the Network Information Table (NIT).....	22
4.2.1.0 NIT structure .....	22
4.2.1.1 First descriptor loop .....	22
4.2.1.1.1 Linkage descriptor .....	22
4.2.1.1.2 Multilingual network name descriptor.....	23
4.2.1.1.3 Network name descriptor.....	23
4.2.1.1.4 Cell list descriptor.....	23
4.2.1.1.5 Network change notify descriptor .....	23
4.2.1.1.6 URI linkage descriptor .....	24
4.2.1.2 Second descriptor loop.....	24

4.2.1.2.1	Delivery system descriptors.....	24
4.2.1.2.2	Service list descriptor .....	24
4.2.1.2.3	Frequency list descriptor .....	25
4.2.1.2.4	Cell frequency link descriptor .....	25
4.2.2	Descriptors of the Bouquet Association Table (BAT).....	25
4.2.2.0	BAT structure.....	25
4.2.2.1	First descriptor loop .....	25
4.2.2.1.1	Bouquet name descriptor .....	25
4.2.2.1.2	CA identifier descriptor.....	25
4.2.2.1.3	Country availability descriptor.....	25
4.2.2.1.4	Linkage descriptor.....	26
4.2.2.1.5	Multilingual bouquet name descriptor.....	26
4.2.2.2	Second descriptor loop.....	26
4.2.2.2.1	Service list descriptor .....	26
4.2.3	Descriptors of the Service Description Table (SDT).....	27
4.2.3.0	SDT structure .....	27
4.2.3.1	Announcement support descriptor .....	27
4.2.3.2	CA identifier descriptor.....	27
4.2.3.3	Component descriptor.....	27
4.2.3.4	Country availability descriptor.....	28
4.2.3.5	Data_broadcast_descriptor.....	28
4.2.3.6	Linkage descriptor.....	28
4.2.3.7	Mosaic descriptor.....	28
4.2.3.8	Multilingual service name descriptor.....	28
4.2.3.9	NVOD reference descriptor .....	29
4.2.3.10	Service descriptor.....	29
4.2.3.11	Service availability descriptor.....	29
4.2.3.11.0	General rules.....	29
4.2.3.11.1	Network Implementation Considerations.....	30
4.2.3.11.2	IRD implementation considerations .....	30
4.2.3.12	Service relocated descriptor .....	31
4.2.3.13	Telephone descriptor.....	31
4.2.3.14	Time shifted service descriptor.....	31
4.2.4	Descriptors of the Event Information Table (EIT).....	32
4.2.4.0	EIT structure .....	32
4.2.4.1	CA identifier descriptor.....	32
4.2.4.2	Component descriptor.....	32
4.2.4.3	Content descriptor.....	33
4.2.4.4	Data_broadcast_descriptor.....	33
4.2.4.5	Extended event descriptor .....	33
4.2.4.6	Linkage descriptor.....	33
4.2.4.7	Multilingual component descriptor .....	34
4.2.4.8	Parental rating descriptor .....	34
4.2.4.9	PDC descriptor.....	34
4.2.4.10	Short event descriptor .....	34
4.2.4.11	Telephone descriptor.....	34
4.2.4.12	Time shifted event descriptor.....	35
4.2.5	Descriptors of the Time Offset Table (TOT).....	35
4.2.5.0	TOT structure.....	35
4.2.5.1	Local time offset descriptor.....	35
4.2.6	Descriptors of the Program Map Table (PMT).....	36
4.2.6.0	PMT structure .....	36
4.2.6.1	AC-3 descriptor.....	36
4.2.6.2	Adaptation field data descriptor .....	36
4.2.6.3	Ancillary data descriptor .....	36
4.2.6.4	Audio preselection descriptor.....	36
4.2.6.5	Data broadcast id descriptor.....	37
4.2.6.6	Enhanced AC-3 descriptor .....	37
4.2.6.7	Mosaic descriptor.....	37
4.2.6.8	Related content descriptor.....	37
4.2.6.9	Scrambling descriptor .....	37
4.2.6.10	Service move descriptor.....	37

4.2.6.11	Stream identifier descriptor.....	38
4.2.6.12	Subtitling descriptor.....	38
4.2.6.13	Supplementary audio descriptor.....	38
4.2.6.14	T2-MI descriptor.....	38
4.2.6.15	Teletext descriptor.....	38
4.2.6.16	VBI data descriptor.....	38
4.2.6.17	VBI teletext descriptor.....	39
4.2.6.18	DTS Descriptor.....	39
4.2.6.19	DTS-HD Descriptor.....	39
4.2.6.20	DTS Neural Descriptor.....	39
4.2.6.21	AC-4 descriptor.....	39
4.2.6.22	TTML subtitling descriptor.....	39
4.2.6.23	DTS-UHD descriptor.....	39
4.2.7	Other descriptors.....	40
4.2.7.1	Private data specifier descriptor.....	40
4.2.7.2	Stuffing descriptor.....	40
4.2.7.3	Data broadcast descriptor.....	40
4.2.7.4	Transport stream descriptor.....	40
4.2.7.5	Target region and target region name descriptors.....	41
4.2.7.5.1	General Description.....	41
4.2.7.5.2	Region selection by the IRD.....	41
4.2.7.6	URI linkage descriptor.....	42
4.2.7.7	FTA content management descriptor.....	42
4.2.8	ISO/IEC 13818-1 descriptors.....	42
4.2.9	Unknown descriptors.....	42
4.3	Program Specific Information (PSI) and DVB SI operational interaction states.....	43
4.4	Minimum repetition rates.....	43
4.4.1	Satellite and cable delivery systems.....	43
4.4.2	Terrestrial delivery systems.....	44
4.4.3	PSI repetition rates.....	44
4.5	Terrestrial systems.....	45
4.5.0	General rules.....	45
4.5.1	The use of alternative frequencies for multiplexes.....	45
4.5.2	Regional or local services.....	46
4.5.3	Hand-over.....	48
4.5.3.1	General description of the requirements.....	48
4.5.3.2	Hand-over by means of the frequency_list_descriptor.....	49
4.5.3.3	The occurrence of tuning failures.....	50
4.5.3.4	Hand-over methods with a reduced risk of tuning failures.....	51
4.5.3.4.0	General principles.....	51
4.5.3.4.1	Local SI insertion.....	52
4.5.3.4.2	Cell identification.....	52
4.5.3.4.3	Performance enhancement with GPS data.....	52
4.5.3.4.4	Two front-end solution.....	52
4.5.3.5	Performance considerations.....	53
4.5.3.6	Receiver guidelines for hand-over.....	53
4.5.3.6.1	Hand-over by means of the frequency_list_descriptor.....	53
4.5.3.6.2	Hand-over by means of cell identification.....	54
4.5.3.6.3	Hand-over by means of cell description and GPS position.....	54
4.5.3.6.4	Hand-over with two-front-end solutions.....	55
4.5.3.7	Additional linkage modes.....	55
4.5.3.8	Additional remarks.....	56
4.6	Text string formatting.....	56
4.6.0	General rules.....	56
4.6.1	Use of control codes in names.....	56
4.6.2	Use of control codes in text.....	57
4.6.3	Use of UTF-8.....	57
5	Applications.....	57
5.0	Introduction.....	57
5.1	NVOD services.....	57
5.2	Mosaic services.....	59

5.2.1	General considerations.....	59
5.2.2	Relationship between mosaic service and SI/PSI Tables.....	60
5.3	Transitions at broadcast delivery system boundaries .....	61
5.3.0	Introduction.....	61
5.3.1	Seamless transitions .....	61
5.3.2	Non-seamless transitions without re-multiplexing.....	62
5.3.3	Transitions with re-multiplexing.....	62
5.4	Announcements.....	63
6	Storage media.....	63
6.0	General principles.....	63
6.1	Program Association Table (PAT).....	63
6.2	Program Map Table (PMT).....	63
6.3	SI tables (NIT, SDT, EIT, BAT, RST, TDT, TOT) .....	63
6.4	Selection Information Table (SIT) .....	64
6.5	Discontinuity Information Table (DIT).....	64
<b>Annex A (informative):</b>	<b>Bibliography.....</b>	<b>65</b>
<b>Annex B (informative):</b>	<b>Change History .....</b>	<b>66</b>
History .....		67

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ETSI TS 101 211 V1.13.1 \(2021-05\)](https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8e24702e7cff/etsi-ts-101-211-v1-13-1-2021-05)

<https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8e24702e7cff/etsi-ts-101-211-v1-13-1-2021-05>

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are 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 (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, 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.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

ITh STANDARD PREVIEW  
(standards.iteh.ai)

---

## Foreword

ETSI TS 101 211 V1.13.1 (2021-05)

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:** 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 DVB Project is an industry-led consortium of broadcasters, manufacturers, network operators, software developers, regulators and others from around the world committed to designing open, interoperable technical specifications for the global delivery of digital media and broadcast services. DVB specifications cover all aspects of digital television from transmission through interfacing, conditional access and interactivity for digital video, audio and data. The consortium came together in 1993.

---

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ETSI TS 101 211 V1.13.1 \(2021-05\)](#)

<https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8e24702e7cff/etsi-ts-101-211-v1-13-1-2021-05>



---

# 1 Scope

The present document provides implementation guidelines for the use and implementation of the DVB Service Information (SI) coding in a DVB digital TV environment including satellite- cable- and terrestrial networks.

The guidelines are intended to be highly recommended rules for the usage of the DVB SI syntax specified in ETSI EN 300 468 [1]. As such, they facilitate the efficient and reliable implementation of basic user-interaction functions in Integrated Receiver-Decoders (IRD).

The rules apply to broadcasters, network operators as well as manufacturers.

The rules are specified in the form of constraints on the DVB SI streams or in terms of intended interpretation by IRDs.

The specification of these functions in no way prohibits IRD manufacturers from including additional features, and should not be interpreted as stipulating any form of upper limit to the performance.

The guidelines do not cover features related to user-interface details or advanced Electronic Program Guides (EPG). Such issues are left to the marketplace.

**NOTE:** It is highly recommended that the IRD should be designed to allow for future compatible extensions to the DVB SI syntax. All the fields "reserved" (for ISO), "reserved\_future\_use" (for ETSI), and "user defined" in the ETSI EN 300 468 [1] should be ignored by IRDs designed not to make use of them. The "reserved" and "reserved\_future\_use" fields may be specified in the future by the respective bodies, whereas the "user defined" fields will not be standardized.

The present document uses the terminology defined in ETSI EN 300 468 [1] and should be read in conjunction with that EN.

**iTeh STANDARD PREVIEW**

---

## 2 References

(standards.iteh.ai)

[ETSI TS 101 211 V1.13.1 \(2021-05\)](https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8c24702e7c1f/etsi-ts-101-211-v1-13-1-2021-05)

### 2.1 Normative references

<https://standards.iteh.ai/catalog/standards/sist/7f5be47d-5d3f-4f92-a83e-8c24702e7c1f/etsi-ts-101-211-v1-13-1-2021-05>

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

**NOTE:** While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 300 468: "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems".
- [2] ISO/IEC 13818-1: "Information technology -- Generic coding of moving pictures and associated audio information: Systems".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EN 300 472: "Digital Video Broadcasting (DVB); Specification for conveying ITU-R System B Teletext in DVB bitstreams".
- [i.2] ETSI TS 101 162: "Digital Video Broadcasting (DVB); Allocation of identifiers and codes for Digital Video Broadcasting (DVB) systems".
- [i.3] ETSI EN 301 192: "Digital Video Broadcasting (DVB); DVB specification for data broadcasting".
- [i.4] ETSI TR 101 202: "Digital Video Broadcasting (DVB); Implementation guidelines for Data Broadcasting".
- [i.5] Void.
- [i.6] ETSI EN 300 744: "Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television".
- [i.7] ETSI TS 101 154: "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcast and Broadband Applications".
- [i.8] ETSI EN 301 775: "Digital Video Broadcasting (DVB); Specification for the carriage of Vertical Blanking Information (VBI) data in DVB bitstreams".
- [i.9] ETSI EN 301 210: "Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for Digital Satellite News Gathering (DSNG) and other contribution applications by satellite".
- [i.10] ETSI EN 300 231: "Television systems; Specification of the domestic video Programme Delivery Control system (PDC)".
- [i.11] ISO/IEC 13818-3: "Information technology -- Generic coding of moving pictures and associated audio information -- Part 3: Audio".
- [i.12] ISO/IEC 11172-3: "Information technology -- Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s -- Part 3: Audio".
- [i.13] ETSI EN 300 743: "Digital Video Broadcasting (DVB); Subtitling systems".
- [i.14] ETSI EN 300 401: "Radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers".
- [i.15] ETSI TS 102 006: "Digital Video Broadcasting (DVB); Specification for System Software Update in DVB Systems".
- [i.16] Void.
- [i.17] ETSI TS 102 201: "Digital Video Broadcasting (DVB); Interfaces for DVB Integrated Receiver Decoder (DVB-IRD)".
- [i.18] ETSI ETS 300 801: "Digital Video Broadcasting (DVB); Interaction channel through Public Switched Telecommunications Network (PSTN) / Integrated Services Digital Networks (ISDN)".
- [i.19] ETSI EN 301 193: "Digital Video Broadcasting (DVB); Interaction channel through the Digital Enhanced Cordless Telecommunications (DECT)".

- [i.20] ISO 639-2: "Codes for the representation of names of languages -- Part 2: Alpha-3 code".
- [i.21] ETSI TS 103 205: "Digital Video Broadcasting (DVB); Extensions to the CI Plus™ Specification".
- [i.22] ETSI TS 102 034: "Digital Video Broadcasting (DVB); Transport of MPEG-2 TS Based DVB Services over IP Based Networks".
- [i.23] ETSI TS 103 286-2: "Digital Video Broadcasting (DVB); Companion Screens and Streams; Part 2: Content Identification and Media Synchronization".
- [i.24] ETSI TS 102 323: "Digital Video Broadcasting (DVB); Carriage and signalling of TV-Anytime information in DVB transport streams".
- [i.25] DVB BlueBook A174: "Digital Video Broadcasting (DVB); TTML subtitling systems".
- [i.26] ETSI TS 102 773: "Digital Video Broadcasting (DVB); Modulator Interface (T2-MI) for a second generation digital terrestrial television broadcasting system (DVB-T2)".

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 300 468 [1] and the following apply:

**emitting site:** collection of transmitters and/or repeaters gathered in one location

**Multi Frequency Network (MFN) mode:** geographical area is operated in MFN mode if the modulation parameters and frequencies used to broadcast a DVB transport stream differ from one emitting site to another

**Single Frequency Network (SFN) mode:** geographical area is operated in SFN mode if all emitting sites are synchronized and use the same frequency and modulation parameters to broadcast the same DVB transport stream

### 3.2 Symbols

Void.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 300 468 [1] and the following apply:

ATSC	Advanced Television Systems Committee of the USA
DVB-H	DVB-Handheld
EIT <sub>p/f</sub>	Event Information Table, present and following
GPS	Global Positioning System
MFN	Multi-Frequency Network

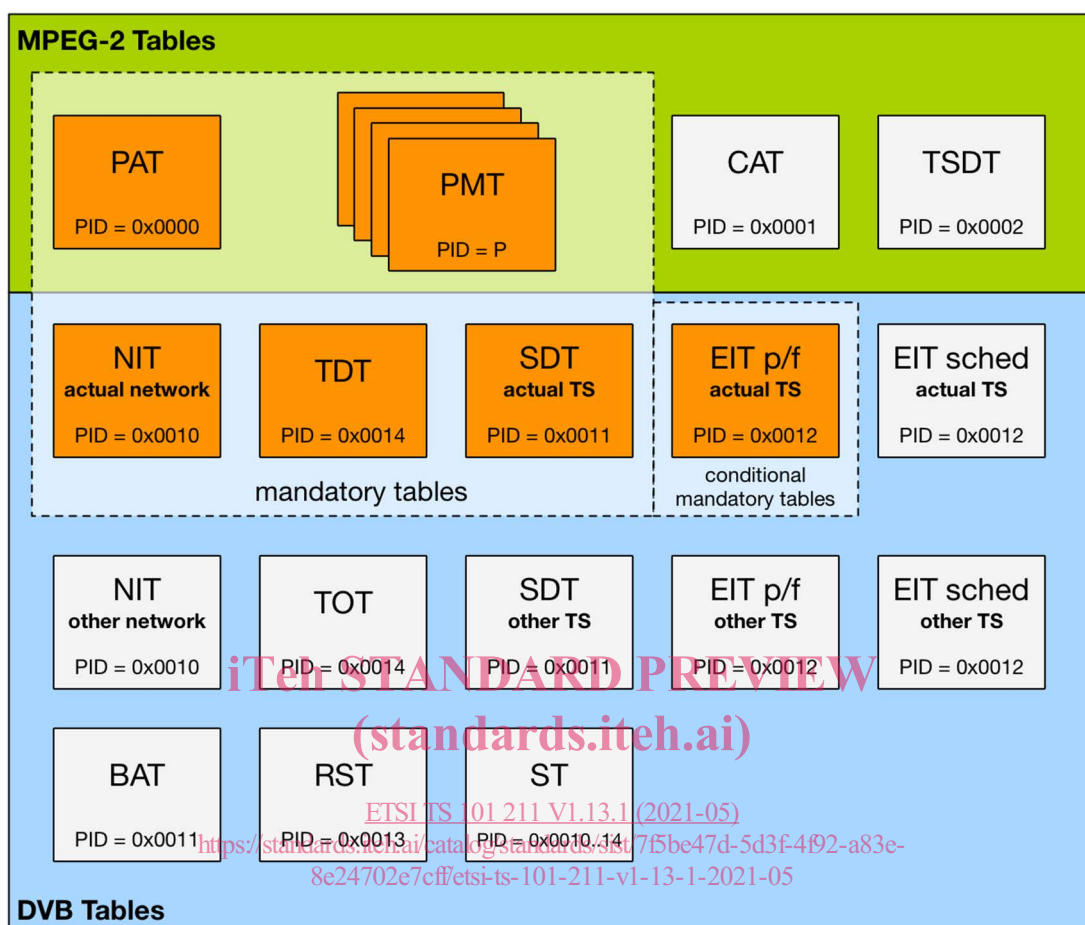
## 4 Rules of operation

### 4.0 Introduction

Clause 4 contains some recommendations on the usage of the Digital Video Broadcasting (DVB) Service Information (SI) syntax.

## 4.1 Service Information (SI) table information

### 4.1.0 Overview



NOTE: EITp/f Actual is mandatory for all service types except those listed in clause 4.1.4.1.

**Figure 1: SI table information**

### 4.1.1 Network Information Table (NIT) information

The Network Information Table (NIT) provides a grouping of Transport Streams (TSs) and the relevant tuning information. The NIT could be used during set-up procedures of the IRD and the relevant tuning information may be stored in non-volatile memory. The NIT also could be used to signal changes of tuning information. The following rules apply to the NIT:

- transmission of the NIT is mandatory for the actual delivery system;
- the NIT describing the actual delivery system is valid if and only if it contains applicable delivery system descriptors for the actual delivery system. At some transitions of broadcast delivery system boundaries, the NIT carried in a TS is allowed to be invalid, and to describe an earlier network in the broadcast chain. In this case, a different mechanism has to be selected by the IRD to obtain the relevant tuning information for the actual delivery system. More information is provided in clause 5.3;
- if a valid NIT for the actual delivery system is present in the SI bit stream then it shall list all TSs of the actual delivery system;
- the SI stream shall have at least 8 TS packets per 10 s carrying NIT data or NULL packets. This rule simplifies the replacement of the NIT at broadcast delivery system boundaries. With the simple replacement mechanism, local frequency control is possible with relatively low cost equipment.

The SI uses two labels related to the concept of a delivery system, namely the `network_id` and the `original_network_id`. The latter is intended to support the unique identification of a service, contained in a TS, even if that TS has been transferred to another delivery system than the delivery system where it originated. A TS can be uniquely referenced through the path `original_network_id/transport_stream_id`.

Each `service_id` shall be unique within each `original_network_id`. Therefore the combination of `service_id` and `original_network_id` uniquely identifies a service. A service may be transmitted in multiple TS. Each unique instance of a service can be uniquely referenced through the path `original_network_id/transport_stream_id/service_id` (see ETSI EN 300 468 [1]). The `network_id`, thus, is not part of this path.

When a TS containing a service is transferred to another delivery system, only the `network_id` changes, whereas the `original_network_id` remains unaffected.

By way of example, consider the following, where two services (A and B), which originate in two different delivery systems and happen to have the same `service_ids` and `transport_stream_ids`, are transferred to a new delivery system. In this example, the two services are located on different TSs in the new network. If the two services were being combined onto the same TS, then it would be necessary to modify the identification of the services, since the same `service_id` value cannot be assigned to more than one service within a TS, and only one `original_network_id` can be associated with a TS (see clause 5.3 for further discussion on transitions at broadcast delivery system boundaries).

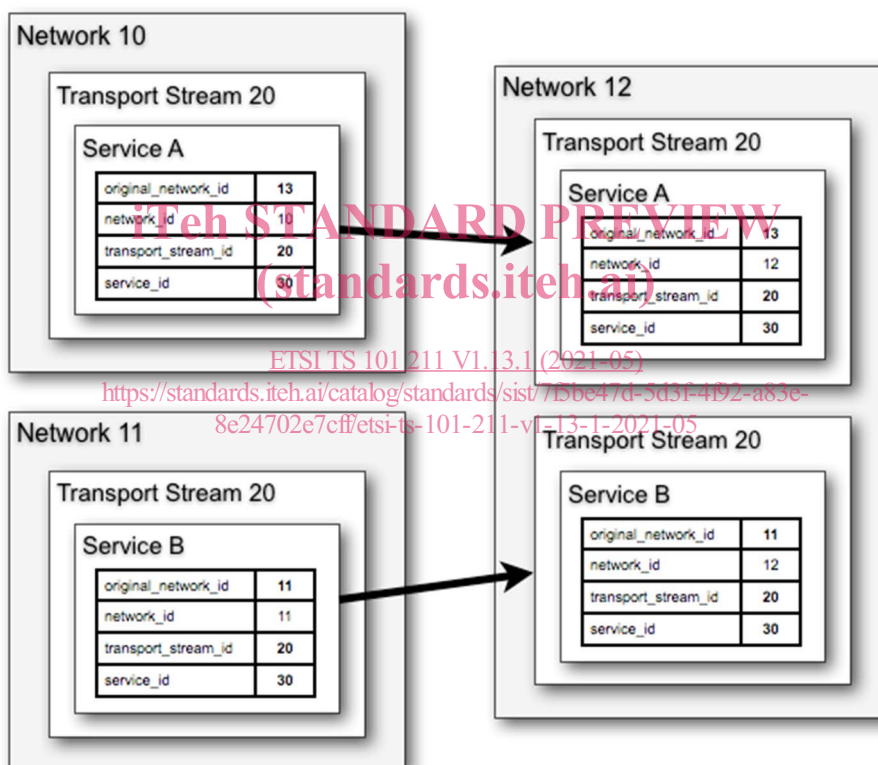


Figure 2: Transfer to a new delivery system

#### 4.1.2 Bouquet Association Table (BAT) information

The BAT provides a grouping of services which serves as one basis on which an IRD presents the available services to a user. Transmission of the BAT is optional. The following rule improves the consistency in the SI bit streams and simplifies the processing in the IRDs.

The SI bit stream shall list in each BAT sub-table all the services belonging to that bouquet.

NOTE: One service may belong to more than one bouquet. This rule creates consistency across the different TSs which are accessible to the IRD.

If it is intended for the IRD to present service information to the user grouped in bouquets, then it would be beneficial to ensure that every service is listed in one or more bouquets, or some services will be omitted from this method of presentation. A bouquet may group together services from more than one TS, which could even be carried in different networks. The IRD's access to information on all the services of a bouquet would be facilitated if all the services referred to in the BAT were listed in the Service Description Table (SDT). Similarly, the IRD's access to these services is facilitated if NIT information is given for all TSs in which services of the bouquet occupy capacity.

### 4.1.3 Service Description Table (SDT) information

The SDT is used to list the names and other parameters of the services within TSs. For each TS a separate SDT sub-table exists. The following rules apply in order to improve the acquisition of services:

- the transmission of the SDT for the actual TS is mandatory;
- the SI bit stream should list in the SDT of a particular TS all the services of that TS.

In addition:

- any SDT for another TS than the actual one (i.e. with table\_id = 0x46) should list all the services of that TS;
- it is strongly recommended that service\_ids, once assigned to a specific service within a network, remain unchanged in order to enable IRDs to implement features like favourite channel lists, etc.
- the values of the EIT\_present\_following\_flag and the EIT\_schedule\_flag fields should match the transmission of the corresponding EIT sub\_tables; for rules on the transmission of EIT sub\_tables, see clause 4.1.4.

### 4.1.4 Event Information Table (EIT) information

#### 4.1.4.0 General principles of EIT information

The Event Information Table (EIT) is used to transmit information about present, following and further future events. For each service a separate EIT sub-table exists.

#### 4.1.4.1 EIT Present/Following information

The following rule simplifies the acquisition of the EIT Present/Following information. The SI specification [1] states that an EIT section has a maximum size of 4 096 bytes.

EIT Present/Following shall be transmitted for all services, except when the service\_type field takes any of the following values:

- teletext service (service type 0x03)
- mosaic service (service type 0x06)
- DVB SRM service (service type 0x08)
- data broadcast service (service type 0x0C)
- RCS Map (service type 0x0E)
- RCS FLS (service type 0x0F)
- DVB MHP service (service type 0x10)

NOTE: Although transmission of EIT Present/Following is not required for these services, it may still be transmitted when appropriate.

If the SI bit stream contains an EIT Present/Following under the above rules, it shall be encoded according to the following rules:

- a) The SI bit stream shall have two sections of EIT Present/Following and should indicate this in the SDT in the corresponding EIT\_present\_following\_flag.

- b) It shall have an EIT Present/Following with the section\_number 0x00 reserved for the description of the present event, and section\_number 0x01 for the following event. Except for an NVOD reference service, where the EIT Present/Following may have more than one event description per section, and may have more than two sections in the EIT Present/Following.
- c) The SI bit stream shall have maximum of 4 096 bytes to describe a single event in a section.

The organization of the EIT Present/Following is based on the concept of present and following events. Which event is the present one can be determined using the following scheme:

- a) at each instant in time, there is at most one present event;
- b) when there is a present event, this event shall be described in section 0 of the EIT Present/Following;
- c) when there is no present event (e.g. in the case of a gap in the schedule) an empty section 0 of the EIT Present/Following shall be transmitted;
- d) the running\_status field in the description of the present event shall be given the interpretation in table 1;

**Table 1: running\_status of the present event**

<b>undefined</b>	No information except the nominal status is provided. IRDs and recording devices shall treat the present event as running.
<b>running</b>	IRDs and recording devices shall treat the present event as running.
<b>not running</b>	IRDs and recording devices shall treat the present event as not running. In other words, this event is nominally the present one, but at this time has either not started or already ended.
<b>pausing</b>	IRDs and recording devices shall treat the present event as pausing. In other words, this event is nominally the present one and has already started, but at this time the material being broadcast is not a part of the event itself. The transmission of event material shall resume at a later time.
<b>starts in a few seconds</b>	IRDs and recording devices shall prepare for the change of event status to "running" in a few seconds.
<b>service off-air</b>	IRDs and recording devices shall treat the present event as being off-air. However the service may provide an interactive application to cover the off-air period.

- e) at each point in time, there shall be at most one following event;
- f) if a following event exists, it shall be described in section 1 of the EIT Present/Following;
- g) if no following event exists, an empty section 1 of the EIT Present/Following shall be transmitted;
- h) the running\_status field in the definition of the following event shall be given the following interpretation.

**Table 2: running\_status of the following event**

<b>undefined</b>	No information except the nominal status is provided. IRDs and recording devices shall treat the following event as not running.
<b>running</b>	Not allowed.
<b>not running</b>	IRDs and recording devices shall treat the following event as not running.
<b>pausing</b>	This status is intended to indicate that the "following" event has been running at some time, but is now overlapped by another event. In such a case, during the whole time that the "following" event has status "pausing", one and the same overlapping event shall be encoded in section 0 of the EIT Present/Following. Furthermore, an event which has the status "pausing" shall acquire the status "running" at a later time, then replacing the overlapping event in section 0 of the EIT Present/Following.
<b>starts in a few seconds</b>	IRDs and recording devices shall prepare for the status of the following event to change to running within a few seconds.
<b>service off-air</b>	IRDs and recording devices shall treat the following event as being off-air. However the service may provide an interactive application to cover the off-air period.

The duration of an event as encoded in the field duration of the EIT shall also include the duration of all times when the event has the status "not running" or "paused". The start time of an event as encoded in the field start\_time of the EIT shall be the start time of the entire event, i.e. not the start time after the pause has finished.