Digital terrestrial television broadcasting – Extension information of service information

Televisão digital terrestre — Multiplexação e serviços de informação (SI) — Parte 3: Sintaxe e definição de informação estendida do SI

Televisión digital terrestre — Multiplexación y servicios de información (SI) – Parte 3: Sintaxis y definición de información extendida del SI

Digital terrestrial television — Multiplexing and service information (SI) — Part 3: Syntaxes and definitions of extension information of SI

デジタル放送に使用する番組配列情報　第 3 部：番組配列情報における拡張情報のデータ構造と定義

Service information for digital broadcasting system – Part 3: Data structure and definition of extension information of service information

Foreword

This document is the result of the joint efforts of the ABNT, ARIB and SBTVD Forum under the standardization and technical cooperation activities of the Brazil-Japan Digital Television Joint Working Group.

The Brazilian Association for Standardization (ABNT) is the organism responsible for technical standardization in Brazil, providing essential support for Brazilian technical development. It is private, non-profit organization, recognized as the only National Standardization Body. It provides Brazilian society with systematic knowledge, through normative documents, enabling the production, commercialization and use of goods and services, in a competitive and sustainable way, in the internal and external markets, contributing to scientific and technological development, environmental protection and consumer's protection.

The Association of Radio Industries and Businesses (ARIB) was designated as "the Center for Promotion of Efficient Use of the Radio Spectrum" and "the Designated Frequency Change Support Agency" by the Minister of Internal Affairs and Communications (MIC) of Japan under the provisions of the Radio Law. Under this designation, ARIB conducts studies and R&D, establishes standards, provides consultation services for radio spectrum coordination, cooperates with other overseas organizations and provides frequency change support services for the smooth introduction of digital terrestrial television broadcasting. These activities are carried out in cooperation with and/or participation by telecommunication operators, broadcasters, radio equipment manufacturers and related organizations as well as under the support by MIC.

The Brazilian Digital Terrestrial Television Forum (SBTVD Forum) is a non-profit entity, created with the objective of aiding and stimulating the development and implementation of best practices aiming at the success of systems reality for digital broadcasting of images and sounds in Brazil. Since the creation of the SBTVD Forum in February, 2007, its members have endeavored to establish standards of technical quality which permit deployment of digital television in Brazil. The Technical Module has contributed to the preparation of standards, with active participation by universities, research centers, related industry organizations and broadcasters.

This document does not describe the industrial property rights mandatory to these standards.

This document has no standardization value. Its purpose is to serve as a reference for characterizing the specificities of Brazilian and Japanese digital terrestrial television standards within the scope of the Brazil-Japan Digital Television Joint Working Group.

This document is drafted in accordance with the rules established in the ISO/IEC Directives, Part 2.

In the Brazilian and Japanese harmonized documents, commonalities are described in Clause 5 where Table 1 includes all references to ABNT and ARIB related documents. Differences are described in Clause 6. In each subclause, a reference to the corresponding Brazilian and Japanese related session is included in separate boxes in *italic text*.

No reference is made to the domestic policies of the countries.

1 Scope

This document addresses the structure of service information for digital terrestrial television broadcasting in Brazil and Japan.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ABNT NBR 15603-1:2007, *Digital terrestrial television – Multiplexing and service information (SI) – Part 1: SI for digital broadcasting systems*

ABNT NBR 15603-2:2007, *Digital terrestrial television – Multiplexing and service information – Part 2: Data structure and definitions of basic information of SI*

ABNT NBR 15603-3:2007, *Digital terrestrial television – Multiplexing and service information – Part 3: Syntaxes and definitions of extension information of SI*

ARIB STD-B10:v4.6:2007, *Service information for digital broadcasting system*

ARIB TR-B14:v2.8:2006, Fascicle 1, Part 2, *Operational guidelines for digital terrestrial television broadcasting*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ABNT NBR 15603-3:2007 and ARIB STD-B10:v4.6:2007, Part 3, apply.

4 Abbreviated terms

For the purposes of this document, the abbreviated terms given in ABNT NBR 15603-3:2007 and ARIB STD-B10:v4.6:2007, Part 3, apply.

5 Commonalities of the multiplexing and service information (SI)

The common parts of ABNT NBR 15603-3:2007 and ARIB STD-B10:v4.6:2007, Part 3 and how they correspond are described in Table 1.

Table 1 — Correspondence between ABNT NBR 15603-3:2007 and ARIB STD-B10:v4.6:2007 standards

Description	ABNT NBR 15603-3:2007 reference clause	ARIB STD-B10:v4.6:2007 reference clause
Organization of extension information of SI	5	4.1
Program group index	6	4.2
Program segment index	7	4.3
Program index encoding method	8	5
Table used for program index encoding	8.1	5.1
Local event information table (LIT)	8.1.2	5.1.1
Event relation table (ERT)	8.1.3	5.1.2
Index transmission information table (ITT)	8.1.4	5.1.3
Descriptors used for program index encoding	8.2	5.2
Basic local event descriptor	8.2.2	5.2.1
Reference descriptor	8.2.3	5.2.2
Node relation descriptor	8.2.4	5.2.3
Short node information descriptor	8.2.5	5.2.4
System time clock reference descriptor (STC)	8.2.6	5.2.5
Definition of identification values and possible locations of the descriptors	8.2.7	5.2.6
Program index transmission system	9	6
Descriptor used for program index transmission	9.4	6.4
Data component descriptor	9.4.2	6.4.1
Data content descriptor	9.4.3	6.4.2
Program index protection	A.1	A.1
Enable program index information	A.2	A.2
Bouquet association table (BAT)	B.1.2	Appendix - 1.2
EIT present/following event	B.1.4.2	Appendix - 1.4.1
Time and data offset table (TOT)	B.1.5	Appendix - 1.6
Running status table (RST)	B.1.6	Appendix – 1.7
Stuffing table (ST)	B.1.7	Appendix - 1.8
Partial contents announcement table (PCAT)	B.1.8	Appendix – 1.9
Broadcaster information table (BIT)	B.1.9	Appendix – 1.10
Network board information table (NBIT)	B.1.10	Appendix – 1.11
Linkage description table (LDT)	B.1.11	Appendix – 1.12
Table updating mechanism	B.1.12	Appendix – 1.13
Network information table (NIT) descriptors	B.2.2	Appendix – 2.1
First descriptor loop	B.2.2.1	Appendix – 2.1.1
Linkage descriptor	B.2.2.1.1	Appendix – 2.1.1.1
Delivery system descriptor	B.2.2.2.1	Appendix – 2.1.2.1
Emergency information descriptor	B.2.2.2.3	Appendix – 2.1.2.3
Partial reception descriptor	B.2.2.2.4	Appendix – 2.1.2.4
TS information descriptor	B.2.2.2.5	Appendix – 2.1.2.5
First descriptor loop	B.2.3.2	Appendix – 2.2.1
Bouquet name descriptor	B.2.3.2.1	Appendix – 2.2.1.1
Linkage descriptor	B.2.3.2.3	Appendix – 2.2.1.4
Bouquet name descriptor	B.2.4.1	Appendix – 2.3.1
CA identifier descriptor	B.2.4.2	Appendix – 2.3.2
Linkage descriptor	B.2.4.4	Appendix – 2.3.4
Mosaic descriptor	B.2.4.5	Appendix – 2.3.5
NVOD reference descriptor	B.2.4.6	Appendix – 2.3.6
Time shifted service descriptor	B.2.4.8	Appendix – 2.3.8
Digital copy control descriptor	B.2.4.9	Appendix – 2.3.9
Logo transmission descriptor	B.2.4.10	Appendix – 2.3.10
Content availability descriptor	B.2.4.11	Appendix – 2.3.11
Descriptors of the event information table (EIT)	B.2.5	Appendix – 2.4
Component descriptor	B.2.5.1	Appendix – 2.4.1
Content descriptor	B.2.5.2	Appendix – 2.4.2
Extended event descriptor	B.2.5.3	Appendix – 2.4.3
Linkage descriptor	B.2.5.4	Appendix – 2.4.4
Parental rating descriptor	B.2.5.5	Appendix – 2.4.5
Short event descriptor	B.2.5.6	Appendix – 2.4.6

Table 1 (continuation)

Description	ABNT NBR reference clause	ARIB STD-B10:v4.6:2007 reference clause
Time shifted event descriptor	B.2.5.7	Appendix – 2.4.7
Digital copy control descriptor	B.2.5.8	Appendix – 2.4.8
Audio component descriptor	B.2.5.9	Appendix – 2.4.9
Data component descriptor	B.2.5.10	Appendix – 2.4.10
Hyperlink descriptor	B.2.5.11	Appendix – 2.4.11
Series descriptor	B.2.5.12	Appendix – 2.4.12
Event group descriptor	B.2.5.13	Appendix – 2.4.13
Component group descriptor	B.2.5.14	Appendix – 2.4.14
LDT linkage descriptor	B.2.5.15	Appendix – 2.4.16
Content availability descriptor	B.2.5.16	Appendix – 2.4.17
Mosaic descriptor	B.2.6.1	Appendix – 2.5.1
Hierarchical transmission descriptor	B.2.6.3	Appendix – 2.5.3
Digital copy control descriptor	B.2.6.4	Appendix – 2.5.4
Country availability descriptor	B.2.6.5	Appendix – 2.5.8
Component descriptor	B.2.6.6	Appendix – 2.5.9
Linkage descriptor	B.2.6.8	Appendix – 2.5.11
Content availability descriptor	B.2.6.9	Appendix – 2.5.12
Stuffing descriptor	B.2.8	Appendix – 2.7
ISO/IEC 13818-1 descriptors	B.2.9	Appendix – 2.8
Unknown descriptors	B.2.10	Appendix – 2.9
Operational interaction status of program specific information (PSI) and SI	B.3	Appendix – 3
Application	B.4	Appendix – 4
NVOD service	B.4.1	Appendix – 4.1
Mosaic services	B.4.2	Appendix – 4.2
Mixed multiple programming (mandara-broadcasting)	B.4.3	Appendix – 4.4
Service image	B.4.3.1	Appendix – 4.4.1
When all service_id exists all the time	B.4.3.1.1	Appendix – 4.4.1.1
When a part of SDTV services stops	B.4.3.1.2	Appendix – 4.4.1.2
When the HDTV service and SDTV service are defined as different services	B.4.3.1.3	Appendix – 4.4.1.3
Seamless switching of HDTV/SDTV	B.4.3.2	Appendix – 4.4.2
Pre-supposition condition	B.4.3.2.1	Appendix – 4.4.2.1
PMT procedures	B.4.3.2.2	Appendix – 4.4.2.2
Time mapping chart	B.4.3.2.3	Appendix – 4.4.2.3

6 Differences in the multiplexing and service information (SI)

6.1 Organization of extension information of SI

References were modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007. Differences found in the 1st and 5th paragraphs of ABNT NBR 15603-3:2007 provide clarification of usage of Tables in extended SI.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 5:

5 Organization of extension information of SI

The EIT is the basic information of SI (see ABNT NBR 15603-2) and describes individually the information of the event (program). Extended SI information can describe the relation among events and information about the local event and the relation among local events, which are smaller parts of the events.

Extended SI information consists of three tables in addition to the EIT and ST defined in the basic information of SI.

The local event information table (LIT) shall include information related to the local event (program segment event) such as name, start time and duration of a local event

The event relation table (ERT) shall include information related to the node-indicating attribute or group of events (program) and/or the local event (program segment event), and information about the relation among these nodes.

If only EIT is used, the relation between the events is indicated. If LIT is used, the relation among local events is indicated. Where EIT and LIT are used, it is possible to indicate the relation between both: events and local events.

The program index transmission information table (ITT) shall include auxiliary information related to program transmission, such as the relation between the STC and the time information that identifies the local event (program segment event). This information is shared with LIT, because there may be information which is set at the moment of program transmission, or values differing at each program transmission time.

The flexible table structure and the compatibility for future extensions are possible by using descriptors (see Figure 1).

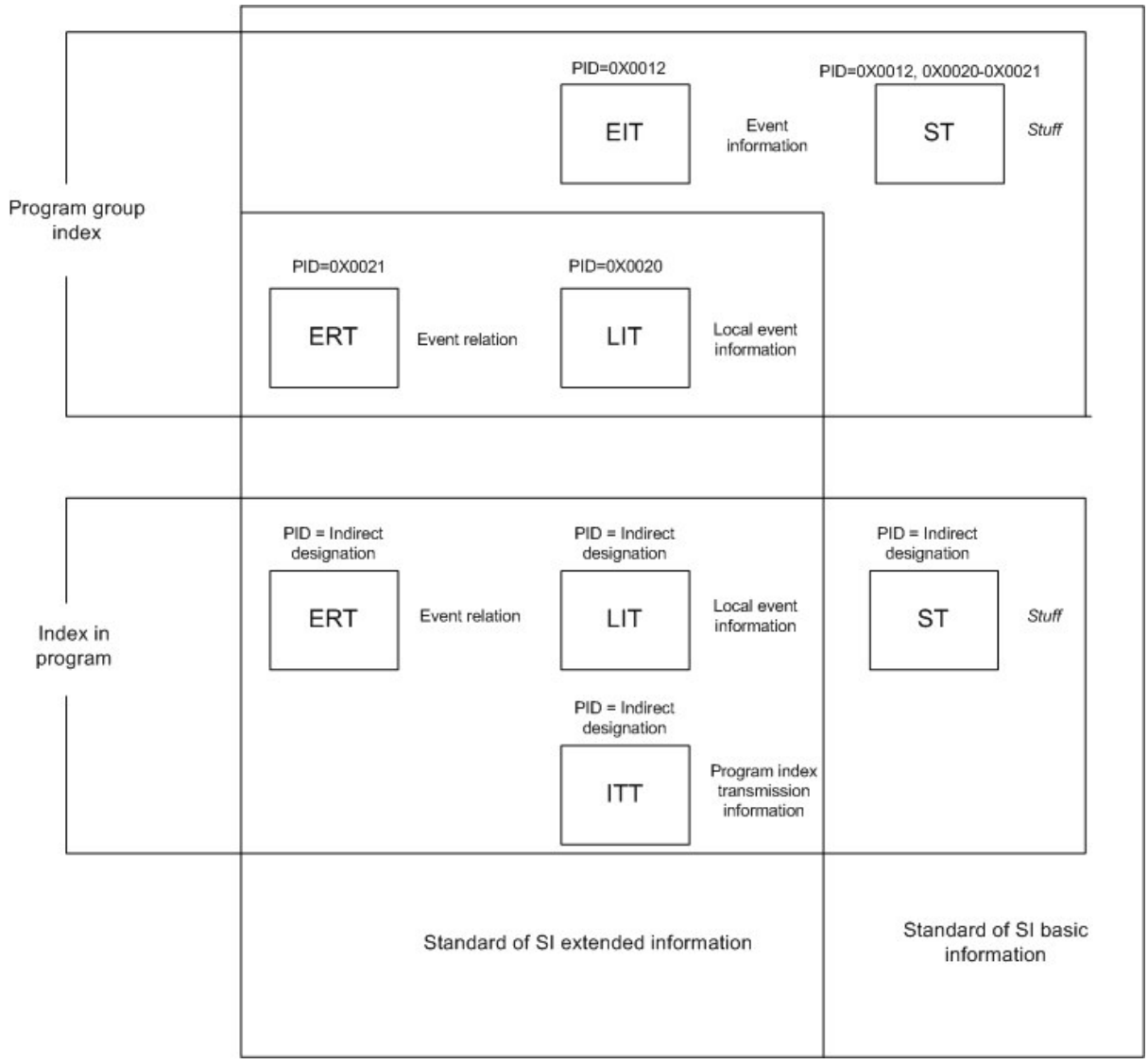


Figure 1 — Organization of extension information of SI Program group index

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 4.1:

4.1 Organization of extension information of SI

In addition to the basic information of SI defined in Part 2, data for describing the relations among programs, information about contents which are less than the program and the relation among them can be expected.

The EIT in the basic information of SI (Part 2) describes information individually in the event unit (program). Extended information of SI defined in Part 3 of this standard can describe the relation among events and information of the local event and relation among local events, which are smaller parts of the events.

Information for describing the relation among multiple events and/or local events is called a program group index, and information for describing information of a local event in one program or the relation among local events is called a program segment index. The program group index and program segment index are called a program index as a whole.

Extended information of SI consists of the following three tables in addition to the EIT and ST defined in basic information of SI.

Local event Information Table (LIT):

The LIT includes information related to the local event (program segment event) such as name, start time and duration of a local event

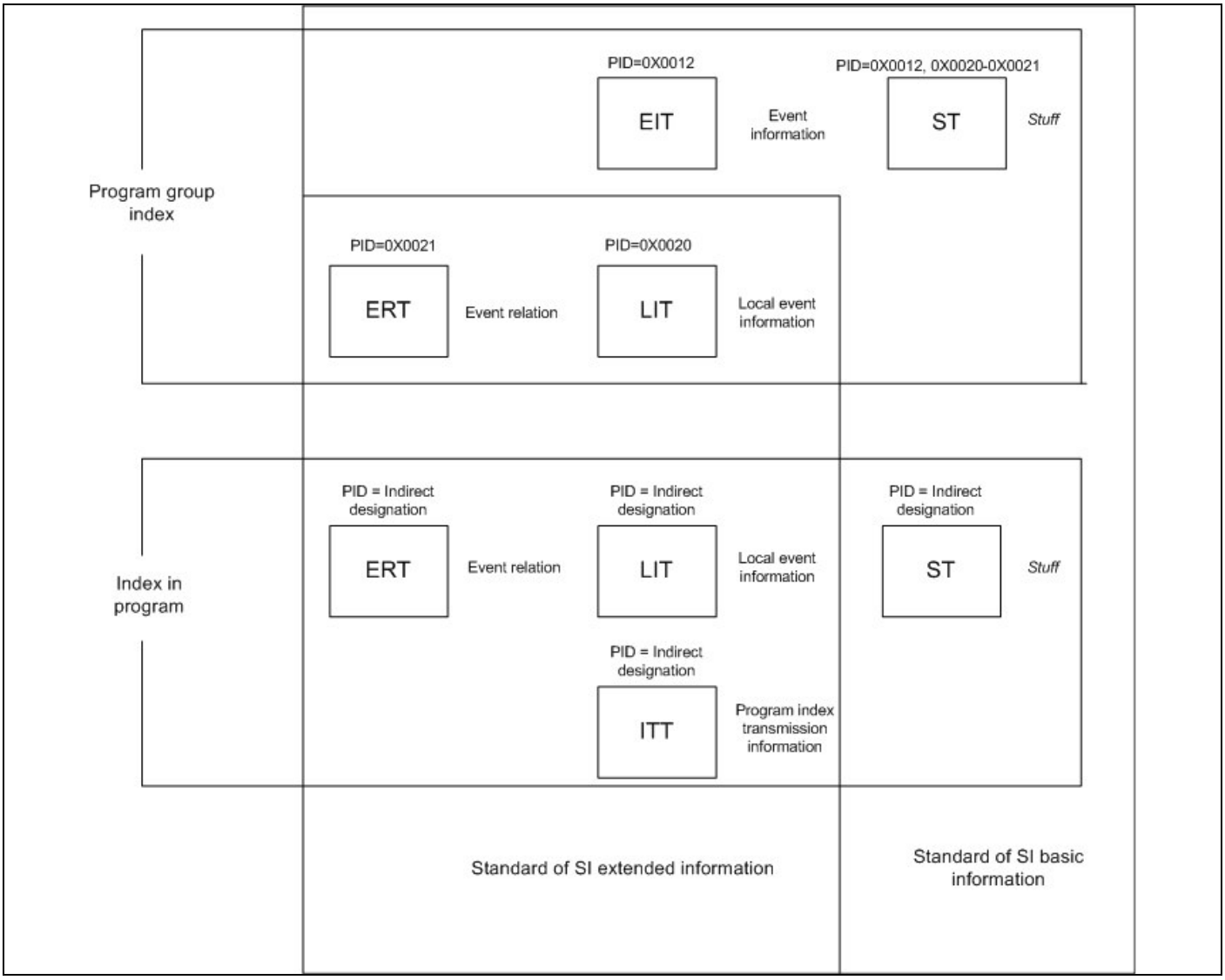
Event Relation Table (ERT):

The ERT includes information related to the node indicating attribute or group of events (program) and/or the local event (program segment event), and information about the relation among those nodes.

It indicates relations among the events by using the EIT and indicates the relation among the local events by using the LIT. By using it with both EIT and LIT, it can indicate the relation between both events and local events.

Program Index Transmission information Table (ITT):

The ITT includes auxiliary information related to the program transmission, such as the relation between the STC and the time information for identifying the local event (program segment event). This information is given an exclusive table which is shared with the LIT, because there may be information which is fixed at the moment of program transmission or values which differ at the time of each program transmission.



6.2 Program group index

References were modified in order to attend ABNT NBR 15603-1:2007 and ABNT NBR 15603-2. Differences found in 1st and 2nd paragraph.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Clause 6:

7 *Program group index*

The program group index shall provide grouping information of the event (program) and assist in selecting or searching a program by this grouping information. The program group index shall enable grouping of programs through genre, such as comedy.

The program group index shall be provided by the EIT defined in SI basic information (see ABNT NBR 15603-2) and in ERT defined in SI extended information. The EIT shall define events (programs) and describe groups of information of events in the code of the program group defined in the ERT. The ERT shall define the program group and describe its attributes in text. The ERT can also express the relation among program groups.

In the program group index, not only events (programs), but also local events (program segment events) can have objects of the group. In this case, the LIT is used to define the local events (see Figure 2).

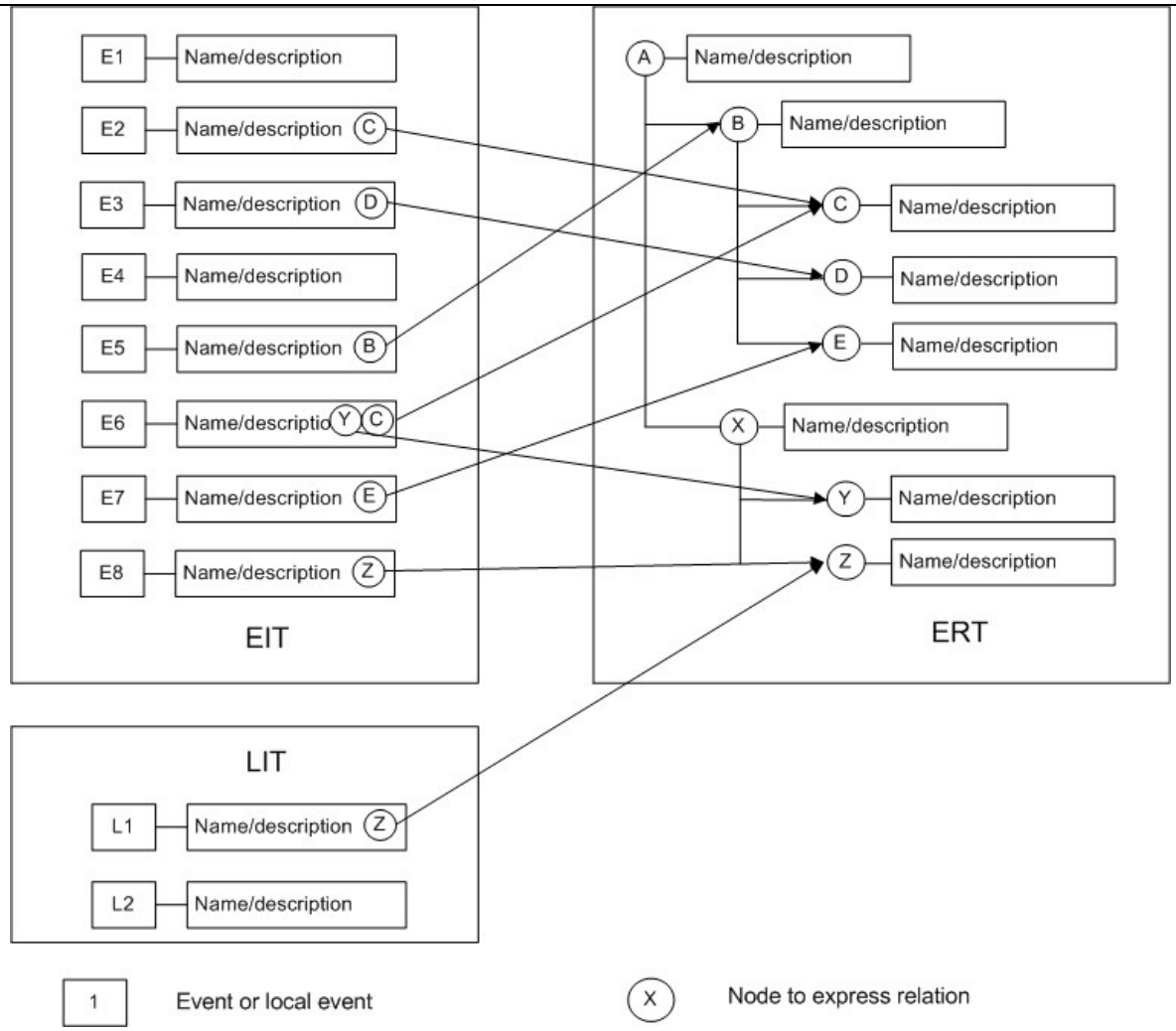


Figure 2 — Outline of program group index

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 4.2:

4.2 Program group index

Program group index provides grouping information of the program (event) and assists in selecting or searching a program using this grouping information. The program group index enables grouping of programs in various viewpoints such as a series program group like a TV serial drama, a program group with same contents such as broadcasting and rebroadcasting, and a group of recommended programs, etc.

Program group index is provided by the EIT defined in basic information of SI (Part 2) and the ERT defined in extended information of SI (Part 3). The EIT defines events (programs) and describes grouping information of events in character or code of the program group defined in the ERT. The ERT defines the program group and describes its attributes in text. The ERT can also express the relation among program groups.

In the program group index, not only events (programs) but also local events (program segment events) can be objects of the grouping. In this case, the LIT is used to define the local events.

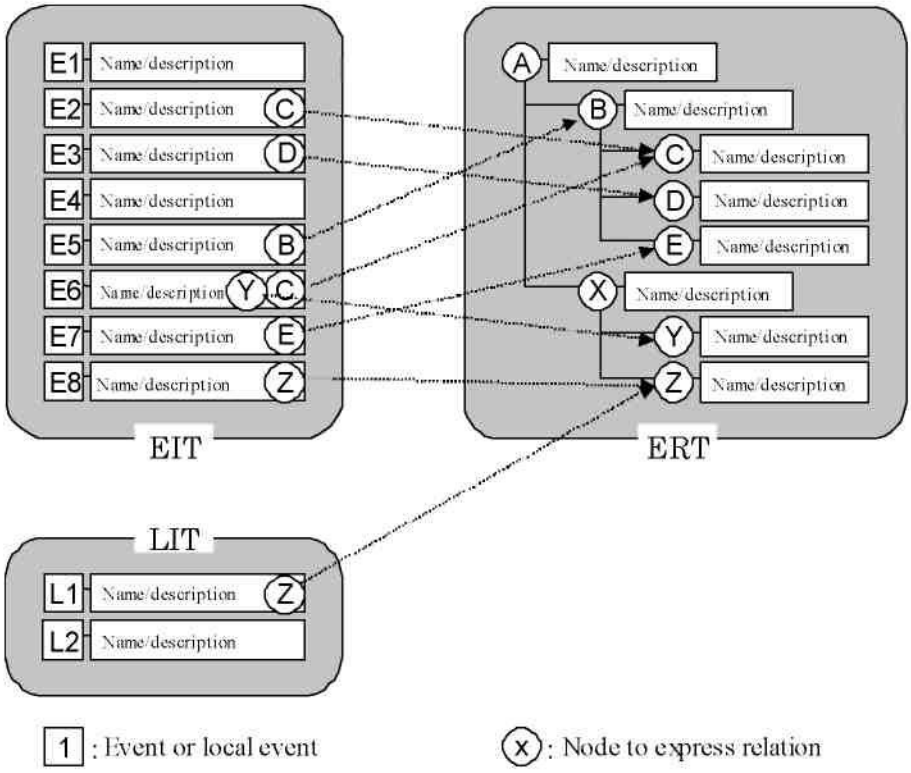


Figure 4-2 Outline of program group index

7.1 Descriptors used for program index encoding

Minor text changes have been made in ABNT NBR 15603-3:2007, Subclause 8.2.1.

In the Brazilian digital terrestrial television system, ABNT NBR 15603-3:2007, Subclause 8.2.1:

7.1.1 *General aspects*

The following identifiers are defined as standard SI extended information of program index encoding:

- *basic local event descriptor;*
- *reference descriptor;*
- *node relation descriptor;*
- *short node information descriptor;*
- *STC reference descriptor.*

The following descriptors are defined in the basic information of SI:

- *short event descriptor;*
- *extended event descriptor;*
- *hyperlink descriptor;*
- *stuffing descriptor.*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2:

5.2 Descriptor used for program index encoding

The following identifiers are defined as extended information of SI in Part 3 of this standard for encoding program index.

(1) Basic local event descriptor

(2) Reference descriptor

(3) Node relation descriptor

(4) Short node information descriptor

(5) STC reference descriptor

The following descriptors defined in basic information of SI (Part 2) are also used as a standard.

(6) Short event descriptor

(7) Extended event descriptor

(8) Hyperlink descriptor

(9) Stuffing descriptor

Syntax and semantics of each descriptor of (1) to (5) are described in the following clauses.

7.2 Basic local event descriptor

In ABNT NBR 15603-3:2007, Subclause 8.2.2, Table 7, different time zone for Segmentation_modes 0x4 and 0x5 have been included.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 8.2.2, Table 7:

7.2.1 *Basic local event descriptor*

The basic local event descriptor used in the LIT indicates segmentation information of the local event (program segment event), such as start time, duration and component identifier etc. (see Table 6).

Table 6 — Basic local event descriptor

Syntax	***Number of bits***	***Identifier***
basic_local_event_descriptor() {		
descriptor_tag	*8*	*uimbsf*
descriptor_length	*8*	*uimbsf*
reserved_future_use	*4*	*bslbf*
segmentation_mode	*4*	*uimsbf*
segmentation_info_length	*8*	*uimsbf*
if(segmentation_mode == 0){		
}		
else if(segmentation_mode == 1){		
reserved_future_use	*7*	*bslbf*
start_time_NPT	*33*	*uimsbf*
reserved_future_use	*7*	*bslbf*
end_time_NPT	*33*	*uimsbf*
}		
else if(segmentation_mode <6){		
start_time	*24*	*uimsbf*

duration	24	uimsbf
if(segmentation_info_length == 10){		
start_time_extension	12	uimsbf
reserved_future_use	4	bslbf
duration_extension	12	uimsbf
reserved_future_use	4	bslbf
}		
}		
else{		
for(i=0;i<M;i++){		
reserved	8	bslbf
}		
}		
for(i=0;i<N;i++){		
component_tag	8	uimsbf
}		
}		

The semantics for the basic local event descriptor shall be the following:

— ***segmentation_mode****: a 4-bis field specifying the coding type of the segmentation information such as time and hour etc. in the basic local event descriptor (see Table 7);*

— ***segmentation_info_length****: a 8-bit field specifying the byte length of the subsequent segmentation information;*

— ***start_time_NPT****: a 33-bit field specifying the start time of the local event in NPT form;*

— ***end_time_NPT****: a 33-bit field specifying the end time of the local event in NPT form;*

— ***start_time****: a 24-bit field expressing the unit in seconds or in the greater time unit of the local event start time . Using six BCD of 4 bits, the time shall be coded in the order of hours, minutes and seconds. When no start time is defined (for example, the start time remains undetermined, or it is not yet open), all bits in this field shall be set to "1";*

— ***duration****: a 24-bit field expressing the unit of seconds or the greater time unit of duration of the local event. Using six 4 bits BCD, the time duration is coded in the order of hours, minutes and seconds. When no time duration is defined (for example, the time duration remains undetermined, or it is not yet open), all bits in this field shall be set to "1". The value for this field shall be set to "0" to indicate a point on the time base;*

— ***start_time_extension****: this 12-bit field expresses smaller units than seconds of the local event start time . Using three 4 bits BCD, the time is coded in milliseconds. When no start time is defined, all bits in this field shall be set to "1". This field is omitted when no specification is made down to the millisecond level of accuracy;*

— ***duration_extension****: this 12-bit field expresses smaller units than seconds of the time duration of the local event. Using three 4 bits BCD, the time is coded in milliseconds. When no time duration is defined, all bits in this field shall be set to "1". The value for this field shall be set to "0" to indicate a point on the time base. This field is omitted when no specification is made down to the millisecond level of accuracy;*

— ***component_tag****: an 8bit field that serves as a label to identify the component stream within this local event. The component stream to which the corresponding value of this component tag is assigned in the PMT belongs to this local event. This field could be omitted if all the component streams belong to this local event. This field has the value of "0xFF" if none of the component streams belong to this local event. "0xFF" is used only in this case, and is not used for the stream identifier descriptor.*

Table 7 — Segmentation mode

Segmentation_mode	***Name***	***Semantics***
0x0	*Invalid*	*Segmentation information is not designated in the basic local event descriptor*
0x1	*NPT*	*Designated by NPT form*

0X2	*Relative time*	*Designate relative time from the start time of program in hours, minutes, seconds and milliseconds form*
0X3	*Relative time (STC reference descriptor is used together)*	*Designate relative time from the start time of program in hours, minutes, seconds and milliseconds form*
0x4	*UTC-3 time*	*Designate UTC-3 time of broadcasting in hours, minutes, seconds and milliseconds form*
0x5	*UTC-3 time (STC reference descriptor is used together)*	*Designate UTC-3 time of broadcasting in hours, minute, seconds and milliseconds form*
0x6-0F	*Reserved future use*	*Reserved for future use*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.1, Table 5-7:

5.2.1 Basic local event descriptor

The basic local event descriptor used in the LIT indicates segmentation information of the local event (program segment event), such as start time, duration and component identifier, etc. See table 5-6.

Table 5-6 - Basic local event descriptor

Syntax	***Number of bits***	***Identifier***
basic_local_event_descriptor() {		
descriptor_tag	*8*	*uimbsf*
descriptor_length	*8*	*uimbsf*
reserved_future_use	*4*	*bslbf*
segmentation_mode	*4*	*uimsbf*
segmentation_info_length	*8*	*uimsbf*
if(segmentation_mode == 0){		
}		
else if(segmentation_mode == 1){		
reserved_future_use	*7*	*bslbf*
start_time_NPT	*33*	*uimsbf*
reserved_future_use	*7*	*bslbf*
end_time_NPT	*33*	*uimsbf*
}		
else if(segmentation_mode <6){		
start_time	*24*	*uimsbf*
duration	*24*	*uimsbf*
if(segmentation_info_length == 10){		
start_time_extension	*12*	*uimsbf*
reserved_future_use	*4*	*bslbf*
duration_extension	*12*	*uimsbf*
reserved_future_use	*4*	*bslbf*
}		
}		
else{		
for(i=0;i<M;i++){		
reserved	*8*	*bslbf*
}		
}		
for(i=0;i<N;i++){		
component_tag	*8*	*uimsbf*
}		
}		

Semantics for the basic local event descriptor:

segmentation_mode: This 4-bit field specifies the coding type of the segmentation information such

as time and hour, etc. in the basic local event descriptor. See table 5-7.

Table 5-7 - Segmentation mode

Segmentation_mode	*Name*	*Semantics*
0x0	*Invalid*	*Segmentation information is not designated in the basic local event descriptor*
0x1	*NPT*	*Designated by NPT form*
0x2	*Relative time*	*Designate relative time from the start time of program in hours, minutes, and seconds (ms.) form*
0x3	*Relative time (STC reference descriptor is used together)*	*Designate relative time from the start time of program in hours, minutes, and seconds (ms.) form*
0x4	*JST time*	*Designate JST time of broadcasting in hours, minutes, and seconds (ms.) form*
0x5	*JST time (STC reference descriptor is used together)*	*Designate JST time of broadcasting in hours, minutes, and seconds (ms.) form*
0x6-0xF	*reserved_future_use*	*Reserved for future use.*

segmentation_info_length: This 8-bit field specifies the byte length of the subsequent segmentation information.

start_time_NPT: This 33-bit field specifies the start time of the local event in NPT form.

end_time_NPT: This 33-bit field specifies the end time of the local event in NPT form.

start_time: This 24-bit field expresses the unit of seconds or the greater time unit of the local event start time . Using six 4-bit binary-coded decimal numbers (BCD), the time is coded in the order of hours, minutes and seconds. When no start time is defined (for example, the start time remains undetermined, or it is not yet open), all bits in this field must be set to "1".

duration: This 24-bit field expresses the unit of seconds or the greater time unit of duration of the local event. Using six 4-bit binary-coded decimal numbers (BCD), the time duration is coded in the order of hours, minutes and seconds. When no time duration is defined (for example, the time duration remains undetermined, or it is not yet open), all bits in this field must be set to "1". The value for this field must be set to "0" to indicate a point on the time base.

start_time_extension: This 12-bit field expresses units smaller than seconds of the local event start time . Using three 4-bit binary-coded decimal numbers (BCD), the time is coded in milliseconds. When no start time is defined, all bits in this field must be set to "1". This field is omitted when no specification is made down to the millisecond level of accuracy.

duration_extension: This 12-bit field expresses units smaller than seconds of the time duration of the local event. Using

three 4-bit binary-coded decimal numbers (BCD), the time is coded in milliseconds. When no time duration is defined, all bits in this field must be set to "1". The value for this field must be set to "0" to indicate a point on the time base. This field is omitted when no specification is made down to the millisecond level of accuracy.

component_tag: This 8-bit field serves as a label to identify the component stream within this local event. The component stream to which the corresponding value of this component tag is assigned in the PMT belongs to this local event. This field could be omitted if all the component streams belong to this local event. This field has the value of "0xFF" if none of the component streams belong to this local event. "0xFF" is used only for this case, and is not used for the stream identifier descriptor.

7.3 Short node information descriptor

Example changed for Brazilian official language and used character encoding scheme difference.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 8.2.5:

8.2.5 Short node information descriptor

The short node information descriptor used in the event relation table (ERT) expresses the node name as well as the descriptions on the node definition in the textual format. The short node information descriptor used in the EIT shall express the node name and the description related to the node, of the node to be referred to by the event, in textual format (see Table 11).

Table 11 — Short node information descriptor

Syntax	***Number of bits***	***Identifier***
Short_node_information_descriptor() {		
descriptor_tag	*8*	*uimbsf*
descriptor_length	*8*	*uimbsf*
ISO_639_language_code	*24*	*bslbf*
node_name_length	*8*	*uimbsf*
for(i=0;i<node_name_length;i++){		
node_name_char	*8*	
}		
text_length	*8*	*uimbsf*
for(i=0; i<text_length; i++){		
text_char	*8*	*uimbsf*
}		
}		

The semantics for the short node information descriptor shall be the following:

— ***ISO_639_language_code****: this 24-bit field indicates the language of the subsequent character information field in the form of three alphabetical characters specified by ISO 639-2. Each character is encoded in eight bits, in accordance with ISO 8859-15 and inserted into the 24 bits field in the same order as that of the character code;*

EXAMPLE Portuguese, Brazilian official language, has 3 coded characters ''por'', which is coded as: ''0111 0000 0110 1111 0111 0010''.

— ***node_name_length****: this 8-bit field indicates the byte length of the following node name;*

— ***node_name_char****: this is an 8-bit field. The series of character information shall indicate the node name;*

— ***text_length****:this 8-bit field indicates the byte length of the following node description;*

— ***text_char****: this is an 8-bit field. The series of character information provides an explanation of the node.*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.4:

5.2.4 Short node information descriptor

The short node information descriptor used in the event relation table (ERT) expresses the node name as well as the descriptions on the node definition in text format. The short node information descriptor used in the EIT expresses the node name and the description related to the node, of the node to be referred to by the event, in text format. See table 5-11.

Table 5-11 - Short node information descriptor

Syntax	*No. of bits*	*Identifier*
short_node_information_descriptor(){		
descriptor_tag	*8*	*uimsbf*
descriptor_length	*8*	*uimsbf*
ISO_639_language_code	*24*	*bslbf*
node_name_length	*8*	*uimsbf*
for(i=0;i< node_name_length;i++){		
node_name_char	*8*	*uimsbf*
} text_length	*8*	*uimsbf*
for(i=0;i<text_length; i++){		
text_char	*8*	*uimsbf*
} }		

Semantics for the short node information descriptor:

ISO_639_language_code: This 24-bit field indicates the language of the subsequent character information field in the form of three alphabetical characters specified by ISO639-2[2]. Each character is encoded in eight bits in accordance with ISO8859-1[3] and inserted into the 24-bit field in the same order as that of the character code.

EXAMPLE: Japan has 3-character code "jpn", which is coded as:

"0110 1010 0111 0000 0110 1110"

node_name_length (Node name length): This 8-bit field indicates the byte length of the following node name.

node_name_char: This is an 8-bit field. The series of character information indicates the node name.

text_length: This 8-bit field indicates the byte length of the following node description.

text_char: This is an 8-bit field. The series of character information provide an explanation of the node.

7.4 System time clock reference descriptor (STC)

In ABNT NBR 15603-3:2007, Subclause 8.2.6, the semantics for STC descriptor, time_reference and time_reference_extension are different from ARIB STD-B10:v4.6:2007 due to different time zone definitions.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 8.2.6:

7.4.1 *System time clock reference descriptor (STC)*

The system time clock reference descriptor describes the corresponding relationship between the time information described in the LIT and the STC, to enable accurate synchronizing of the event component in the program segment index (see Table 12).

Table 12 — STC reference descriptor

Syntax	***Number of bits***	***Identifier***
STC_reference_descriptor() {		
descriptor_tag	*8*	*uimbsf*
descriptor_length	*8*	*uimbsf*
reserved_future_use	*3*	*bslbf*
external_event_flag	*1*	*bslbf*
STC_reference_mode	*4*	*uimsbf*
if(external_event_flag == 1){		
external_event_id	*16*	*uimbsf*
external_service_id	*16*	*uimbsf*
external_network_id	*16*	*uimbsf*
}		
if(STC_reference_mode == 0){		
}		
else if (STC_reference_mode == 1){		
reserved_future_use	*7*	*bslbf*
NPT_reference	*33*	*uimsbf*
reserved_future_use	*7*	*bslbf*
STC_reference	*33*	*uimsbf*
}		
else if (STC_reference_mode == 3 ‖		
STC_reference_mode == 5){		
time_reference	*24*	*uimsbf*
time_reference_extension	*12*	*uimsbf*
reserved_future_use	*11*	*bslbf*
STC_reference	*33*	*uimsbf*
else{		
for(i=0;i<M;i++){		
reserved	*8*	*bslbf*
}		
}		
}		

The semantics for the STC reference descriptor shall be the following:

- ***external_event_flag****: field set to "1" when the information of the STC reference descriptor is the reference information of the stream which is being broadcas as a different program from this program index;*
- ***external_event_id****: a 16-bit field which designates the event_id of the broadcasting program which the STC reference descriptor indicates;*
- ***external_service_id****: a 16-bit field which designates the service_id of the broadcasting program which the STC reference descriptor indicates;*
- ***external_network_id****: a 16-bit field which designates the original _network_id of the broadcasting program which the STC reference descriptor indicates;*
- ***STC_reference_mode****: a 4-bit field which designates the reference type of the time in the STC reference descriptor (see Table 13). Generally, the mode corresponding to the segmentation mode of the basic local event descriptor is used;*
- ***STC_reference****: a 33-bit field which indicates the STC value corresponding to the time designated with the NPT reference value or time reference value (extension) in 90 kHz unit;*
- ***NPT_referenc****e: a 33-bit field which indicates the NPT expression time referring to the STC;*
- ***time_reference****: a 24-bit field which indicates units of more than a 1 s, either the relative time as expressed in hours, minutes, seconds and milliseconds referring to the STC or the JST time. Using six 4-bit BCD, the time is coded*

in the order of hours, minutes and seconds;

— ***time_reference_extension****: a 12-bit field which indicates units of less than a second, either the relative time as expressed in hours, minutes, seconds and milliseconds referring to the STC or the UTC-3 time. Using three 4 bits BCD, the time is coded in milliseconds. The value "0" is specified when no specification is made down to the millisecond level of accuracy.*

Table 13 — STC reference mode

STC_reference_mode	***Name***	***Semantics***
0x0	*Invalid*	*No relation is specified*
0x1	*NPT*	*Designates relation between NPT and STC*
0x2	*Undefined*	*Reserved for future use*
0x3	*Relative time*	*The relation between the relative time of the beginning of the program (hour, minute, second, millisecond) and the STC is designated*
0x4	*Undefined*	*Reserved for future use*
0x5	*UTC-3 hour*	*The relation between UTC-3 (hour, minute, second, MS) and the STC is designated.*
0x6-0xF	*Undefined*	*Reserved for future use*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 5.2.5:

5.2.5 STC reference descriptor

The STC reference descriptor describes the corresponding relation between the time information described in the LIT and the STC to enable precise synchronization of the event component in the program segment index. See table 5-12.

Table 5-12 - STC reference descriptor

Syntax	*No. of bits*	*Identifier*
STC_reference_descriptor(){		
descriptor_tag	*8*	*uimsbf*
descriptor_length	*8*	*uimsbf*
reserved_future_use	*3*	*bslbf*
external_event_flag	*1*	*bslbf*
STC_reference_mode	*4*	*uimsbf*
if(external_event_flag == 1){		
external_event_id	*16*	*uimsbf*
external_service_id	*16*	*uimsbf*
external_network_id }	*16*	*uimsbf*
reserved_future_use	*7*	*bslbf*
NPT_reference	*33*	*uimsbf*
reserved_future_use	*7*	*bslbf*
STC_reference } else	*33*	*uimsbf*
if(STC_reference_mode == 3 ||		
STC_reference_mode == 5){		
time_reference	*24*	*uimsbf*
time_reference_extention	*12*	*uimsbf*
reserved_future_use	*11*	*bslbf*

	STC_reference	*33 uimsbf*
} else{		
	for(i=0; i<N; i++){	
	reserved	*8 bslbf*
} } }		

Semantics for the STC reference descriptor:

external_event_flag: Set this field to "1" when the information of the STC reference descriptor is the reference information of the stream which is being broadcast as a different program from this program index.

external_event_id: This 16-bit field designates the event_id of the broadcasting program which the STC reference descriptor indicates.

external_service_id: This 16-bit field designates the service_id of the broadcasting program which the STC reference descriptor indicates

external_network_id: This 16-bit field designates the original _network_id of the broadcasting program which the STC reference descriptor indicates.

STC_reference_mode: This 4-bit field designates the reference type of the time in the STC reference descriptor. See table 5-13. Generally, the mode corresponding to the segmentation mode of the basic local event descriptor shall be used.

Table 5-13 - STC reference mode

STC_reference_mode	*Name*	*Semantics*
0x0	*Invalid*	*No relation is specified*
0x1	*NPT*	*Designate relation with NTP and STC*
0x2	*Undefined*	*Reserved for future use*
0x3	*Relative time*	*Relation between relative time from the start of the program (hour, minute, second, ms) and STC is designated.*
0x4	*Undefined*	*Reserved for future use*
0x5	*JST time*	*Relation between JST time (hour, minute, second, ms) and STC is designated.*
0x6-0xF	*Undefined*	*Reserved for future use*

STC_reference: This 33-bit field indicates the STC value corresponding to the time designated with the NPT reference value or time reference value (extension) in a 90kHz unit.

NPT_reference: This 33-bit field indicates the NPT expression time referring to the STC.

time_reference: This 24-bit field indicates units of more than a second, either the relative time as expressed in hours,

minutes, seconds and milliseconds referring to the STC or the JST time. Using six 4-bit binary-coded decimal numbers (BCD), the time is coded in the order of hours, minutes and seconds.

time_reference_extension: This 12-bit field indicates units of less than a second, either the relative time as expressed in hours, minutes, seconds and milliseconds, referring to the STC or the JST time. Using three 4-bit binary-coded decimal numbers (BCD), the time is coded in milliseconds. The value "0" is specified when no specification is made down to the millisecond level of accuracy.

7.5 Transmission of program group index

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 9.1:

9.1 Transmission of program group index

Each table of program group index is transmitted by the same method as tables of EIT: basic information of SI (see ABNT NBR 15603-2) and transmitted PID are specified according to Table 15.

When grouping the local event (program segment event) as the program group index, the LIT is transmitted. The PID transmitting the LIT in this case shall also be specified according to Table 15.

Table 15 — Table ID and PID used for program and program group index

Table	***Table ID***	***PID used for transmission***
EIT	*0x4E - 0x6F*	*0x0012*
LIT	*0xD0*	*0x0020*
ERT	*0xD1*	*0x0021*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.1:

6.1 Transmission of program group index

Each table of program group index is transmitted by the same method as tables of EIT in basic information of SI (Part 2) and transmitted PID are specified directly.

When grouping the local event (program segment event) as the program group index, LIT is transmitted. The PID transmitting the LIT in this case is also specified directly.

Table 6-1 - Table ID and PID used for program and program group index

Table	*Table ID*	*PID used for transmission*
EIT	*0x4E-0x6F*	*0x0012*
LIT	*0xD0*	*0x0020*
ERT	*0xD1*	*0x0021*

7.6 Transmission in program segment index

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 9.2:

9.2 Transmission in program segment index

Each table of the program segment index is transmitted as one program component in ISO/IEC 13818-1 and transmitted PID is specified indirectly by the PMT. Identify that the program component is each table of the index in the PMT the data component descriptor specified as basic information of SI (see ABNT NBR 15603-2) shall be used.

The PID used to transmit each table section is shown in Table 16.

Table 16 — Table ID and PID used for index in program

Table	*Table ID*	*PID used for transmission*
LIT	*0xD0*	*Indirect designation by PMT*
ERT	*0xD1*	*Indirect designation by PMT*
ITT	*0xD2*	*Indirect designation by PMT*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.2:

6.2 Transmission in program segment index

Each table of the program segment index is transmitted as one program component in ISO/IEC 13818-1[2] and transmitted PID is specified indirectly by the PMT. To identify that the program component is each table of the index in the PMT, the data component descriptor specified as basic information of SI (Part 2) is used.

The PID used to transmit each table section is shown in table 6-2.

Table 6-2 - Table ID and PID used for index in program

Table	*Table ID*	*PID used for transmission*
LIT	*0xD0*	*Indirect designation by PMT*
ERT	*0xD1*	*Indirect designation by PMT*
ITT	*0xD2*	*Indirect designation by PMT*

7.7 Service type

Audio service value was replaced with a reserved value.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 9.3.3, Table 18:

9.3.3 Service type

The value of service type allovated to the service added to the program index uses the value indicating main service and is encoded in accordance with Table 18.

EXAMPLE When index information is added to the digital television service "0x01" is used, which indicates digital television service, the main service. When providing the program index as an independent service, "0xC0" is used as a value of service type; this value is also used for broadcasting of the mobile segment.

Table 18 — Service type

Value	*Description*

0x01	*Digital television service*
0x02	*Reserved*
0xA1	*Special video service*
0xA2	*Special audio service*
0xA3	*Special data service*
0xA4	*Updating download service*
0xA5	*Promotion video service*
0xA6	*Promotion audio service*
0xA7	*Promotion data service*
0xA8	*Data service for storing beforehand*
0xA9	*Data service exclusive for accumulation*
0xAA	*Book mark list data service*
0xC0	*Data service*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.3.3, Table 6-4:

6.3.3 Service type

The value of service type allocated to the service added to the program index uses the value indicating main service, and encoded in accordance with table 6-4. For example, when index information is added to the digital TV service, "0x01" is used which indicates digital TV service, the main service.

When providing the program index as an independent service, "0xC0" is used as a value of service type.

Table 6-4 Service type

Value	*Semantics*
0x01	*Digital TV service*
0x02	*Digital audio service*
0xA1	*Special video service*
0xA2	*Special audio service*
0xA3	*Special data service*
0xA4	*Engineering download service*
0xA5	*Promotion video service*
0xA6	*Promotion audio service*
0xA7	*Promotion data service*
0xA8	*Data service for accumulation beforehand*
0xA9	*Data service exclusive for accumulation*
0xAA	*Book mark list data service*
0xC0	*Data service*

7.8 Data content descriptor

Minor text changes and final paragraph have been included in ABNT NBR 15603-3:2007, Subclause 9.4.3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause 9.4.3:

7.8.1 ***Data content descriptor***

When transmitting the program index, index transmission information such as table transmission status and size are described using selector area of the data content descriptor. Index transmission information is shown in Table 21.

Table 21 — Index transmission information

Syntax	*Number of bits*	*Identifier*
index_transmission_info() {		
start_time_offset	*24*	*bslbf*
end_time_offset	*24*	*bslbf*
version_upgrading_indicator	*1*	*bslbf*
interim_version_indicator	*1*	*bslbf*
reserved	*6*	*bslbf*
index_version	*16*	*uimbsf*
cycle_time	*32*	*uimbsf*
reserved	*2*	*bslbf*
leak_rate	*22*	*uimbsf*
table_size	*32*	*uimbsf*
}		

The semantics definition of fields in index transmission information: shall be the following:

- ***start_time_offset****: this 24-bit field specifies the offset time of the index information transmission when starting index information transmission preceding the event starting time. Using six 4-bit BCD, the time is coded in the order of hours, minutes and seconds. When transmission is not made before the event, all bits in this field shall be set at "0". When transmission time before the event is not defined, all bits in this field must be set at "1";*
- ***end_time_offset****: this 24-bit field specifies the duration of index information transmission when continuing index information transmission after the event end time. Using six 4-bit BCD, the time is coded in the order of hours, minutes and seconds. When transmission is not made after the event, all bits in this field shall be set at "0". When transmission time after the event is not defined, all bits in this field shall be set at "1";*
- ***version_updating_indicator****: this 1-bit flag indicates that the index information is updated within transmission time. When updating of the index information is not done in the event, this field is set to "0" and when updating is made, this field is set to "1";*
- ***interim_version_indicator****: this 1-bit flag indicates that the index information is interim information. When the index of this event is interim information, that is, when broadcasting of updated information is scheduled in another event, this field is set to "1". When updated information other than the index of (final version) of the event is not broadcast, this field is set to "0";*
- ***index_version****: this 16-bit field indicates the index information version (differing with the version number of the section). When the index information is updated in the event, it indicates the final version. When the version is not specified, all bits shall be set at "1";*
- ***cycle_tim****ethis 32-bit field indicates the upper limit (the uppermost value) of the cycle which the subtable is transmitted, in milliseconds unit. When table transmission is made, this subtable is completed when the hours section indicated here is gathered. It can be used as time out hour in the IRD. When cycle time is not specified, all bits shall be set at "1";*
- ***leak_rate****: this 22-bit field indicates leak rate (size of data which should be taken out per unit time from transport buffer) of the subtable. Unit is 50 bytes;*
- ***table_size****: this 32-bit field indicates the upper limit (the uppermost value) of the subtable in byte units. When multiple subtables are transmitted, it indicates the upper limit of the total. When size is not specified, all bits shall be set at "1".*

For additional details of the functions of the EIT descriptors, see Annex B.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Subclause 6.4.2, no text describes or refers to another section, part or appendix for additional details.

7.9 Network information table (NIT)

Additional details regarding NIT operation have been included in ABNT NBR 15603-3:2007, Subclause B.1.1.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.1.1:

B.1.1 Network information table (NIT)

NIT shall be in accordance with ETSI TR 101 211, regarding the following:

a) the digital television terrestrial transmission network is composed of one or multiple bases transmitting the same TS. Therefore, NIT includes only one TS loop;

b) the sequential order of services described in NIT has no meaning and function in the operation of receiver units. They are often listed in ascending order from service identification number (service_id);

c) under an environment of multiple frequencies, MFN (Multi-Frequency Network), the terrestrial delivery system descriptor includes all frequencies used by transmission bases;

d) the use of the information described in the NIT allows an almost automatic adjustment of received services when the AT is installed;

e) the names of TS in TS information descriptor in the NIT are presented as options for inclusion in the service list, for the purpose of helping the users to make a selection when several options are available for channel button task;

f) define the area codes (area_code) in the terrestrial delivery system descriptor (terrestrial_delivery_system_descriptor) to be used in Brazil;

g) the displaying of broadcaster number is based on remote_control_key_id information present in the NIT descriptor known as "TS_Information_Descriptor". The order of programs shall be given from lowest to the highest service_id. When selecting in the remote control, the number corresponding to remote_control_key_id, the user shall access braodcaster's main program (the program with the lowest service_id);

h) NIT may have information for AT to collect in the start scan or re-scan, which can be periodic or on user demand. Terrestrial digital television broadcasters use different network identifiers (network_id) for each main television control equipment and it is assumed that information about services offered by other broadcasters are not included in the NIT. The AT of a terrestrial digital television, therefore, need to make a search within all receivable channels in the location in order to create a service list (receivable frequency table) using the service identifier (service_id). This way, the channel changes can be made in less time. Due to MFN (Multi-Frequency Network), there will be areas where the same network identifier (network_id) is defined for different physical channels (receivable). In this case, the channel with better C/N (Carrier/Noise) or BER (Bit Error Rate) shall be recorded in the receivable frequency table.

In the Japanese digital television system, ARIB STD-B10:v4.6:2007 provides no text regarding operational guideline for terrestrial services only, because STD-B10 is the comprehensive standard applied to both terrestrial and satellite broadcasting. This terrestrial specific operational guideline is provided in ARIB TR-B14:v2.8:2006, Fascicle 1, Part 2.

7.10 Service description table (SDT)

Additional details about SDT table were included in ABNT NBR 15603-3:2007, Subclause B.1.3. In the Japanese digital terrestrial television system, ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.3 provides basic operational guidelines which are not provided in ABNT NBR 15603-3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.1.3:

B.1.3 Service description table (SDT)

SDT is used in the following main applications:

a) to present the name and logo of related service;

b) to generate a reference list with standard limitation values for a viewing/recording for each program.

SDT is also used to recognize which type of EIT (H-EIT, M-EIT and L-EIT) is transmitted for each service, when EIT [p/f] and EIT [schedule] (H-EIT [schedule]) are transmitted. The EIT_user_defined_flag, is the general term used for H-EIT_flag, M-EIT_flag and L-EIT_flag, specified in SDT loop. This flag, when in 1, shows the transmission type of EIT for each service.

In the Japanese digital terrestrial television system, ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.3:

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 subtable 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 shall list in the SDT of a particular TS at least all the services of that TS. In addition:*
- *any SDT for a TS other than the current one (i.e. with table_id = 0x46) shall 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 favorite channel lists, etc.*

7.11 Syntax

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.1.4.1:

B.1.4.1 Syntax

EIT shall be in according with the ETSI TR 101 211:2004, Subclause 4.1.4.

In the Japanese digital terrestrial television system, EIT itself is defined in ARIB STD-B10:v4.6:2007. Therefore, reference to other standard on syntax of EIT has not been provided.

7.12 EIT present/following event – EIT schedule structure

In ABNT NBR 15603:2007 the JST time has been modified to UTC-3.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.1.4.3:

B.1.4.3 EIT present/following event – EIT schedule structure

The EIT schedule structure shall be in accordance with ETSI TR 101 211 and in accordance with:

a) *the location of events in the segments is made by reference to t_0 time. The t_0 is equal to midnight in Brazilian local time (UTC-3);*

b) *there are the following two methods of placing event information in segments:*

   — *the segment #0 of table_id 0x50 (0x60 for other TS) contains information about events that start between midnight and 02:59:59 of "today". The segment #1 contains events that start between 03:00:00 and 05:59:59, and so on. This means that the first subtable (table_id 0x50, or 0x60 for other TS) contains information about the first four days of the schedule, starting today at midnight;*

   — *the segment #0 of table_id 0x50 (0x60 for other TS) contains information about events that start between midnight and 02:59:59 of the first day in every month. The segment #1 contains events that start between 03:00:00 and 05:59:59, and so on. This means that the first subtable (table_id 0x50, or 0x60 for other TSs) contains information about the first four days of schedule, starting the first day of every month at midnight.*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.4.2.1:

1.4.2.1 EIT Schedule structure

The EIT Schedule information is structured in such a way that it is easy to access the EIT data in a flexible manner. The EIT Schedule Tables shall obey the following rules:

a) the EIT/Schedule is distributed over 16 table_ids, being 0x50 – 0x5F for the actual TS, and 0x60 – 0x6F for other TSs, which are in chronological order;

the 256 sections under each sub-table are divided into 32 segments of 8 sections each.

Segment #0, thus comprises sections 0 to 7, segment #1 section 8 to 15 etc.;

c) each segment contains information about events that start anywhere within a three-hour period;

d) the information about separate events is chronologically ordered within segments;

e) if only n < 8 sections of a segment are used, the information shall be placed in the first n sections of the segment. To signal that the last sections of the segment are not used, the value s0 + n -1, where s0 is the first section number of the segment, shall be encoded in the field segment_last_section_number of the EIT header. As an example, if segment 2 contains only 2 sections, the field segment_last_section_number shall contain the value 8 + 2 – 1 = 9 in those two sections;

f) segments that contain all their sections shall have the value s0 + 7 encoded in the field segment_last_section_number;

g) entirely empty segments shall be represented by an empty section, (i.e. a section which does not contain any loop over events) with the value s0 + 0 encoded in the field segment_last_section

h) the placing of events in segments is done referring to a time t0. t0 is "last midnight" in Japan Standard Time (JTC)

j) the following two methods exist for placing event information in segments:

1) segment #0 of table_id 0x50 (0x60 for other TSs) shall contain information about events that start between midnight and 02:59:59 of "today". Segment #1 shall contain events that start between 03:00:00 and 05:59:59, and so on. This means that the first sub_table (table_id 0x50, or 0x60 for other TSs) contains information about the first four days of the schedule, starting today at midnight.

2) segment #0 of table_id 0x50 (0x60 for other TSs) shall contain information about events that start between midnight and 02:59:59 of the first day in every month. Segment #1 shall contain events that start between 03:00:00 and 05:59:59, and so on. This means that the first sub_table (table_id 0x50, or 0x60 for other TSs) contains information about the first four days of schedule, starting the first day of every month at midnight.

k) the field last_section_number is used to indicate the end of the sub-table. Empty segments that fall outside the section range indicated by last_section_number shall not be represented by empty sections;

l) the field last_table_id is used to indicate the end of the entire EIT/Schedule structure. Empty segments that fall outside the table_id range indicated by last_table_id shall not be represented by empty sections;

m) segments that correspond to events in the past may be replaced by empty segments (see rule g));

n) the running_status field of event definitions contained in the EIT/Schedule shall be set to undefined (0x00).

7.13 EIT scrambling

EIT scrambling is not defined in ABNT NBR 15603-3:2007.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.4.2.2:

1.4.2.2 EIT scrambling

The EIT Schedule Tables may be scrambled. In order to provide an association with the Conditional Access (CA) streams, it is necessary to allocate a service_id (= MPEG-2 program_number) which is used in the Program Specific Information (PSI) to describe scrambled EIT Schedule Tables. The EIT is identified in the Program Map Table (PMT) section for this service_id as a program consisting of one private stream, and this PMT section includes one or more CA_descriptors to identify the associated CA streams. The service_id value 0xFFFF is reserved for this purpose.

7.14 Time and Date Table (TDT)

Detailed information on when transmitted TDT information is valid. In the Brazilian digital terrestrial television system, this section has not been included.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.5:

1.5 Time and Date Table (TDT)

The Time and Date Table (TDT) transmits the actual JTC-time coded as Modified Julian Date (MJD). It may be used to synchronize the internal clock of an IRD. The TDT shall be transmitted at least every 30 seconds. The encoded time is intended to be valid when the section becomes valid according to figure 1-2 of this standard.

Note: JTC is typo of JST.

7.15 Time and data offset table (TOT)

Detailed information on when transmitted TOT information is valid.

In the Brazilian digital terrestrial television system, according to ARIB ABNT NBR 15603-3:2007, Subclause B.1.5

B.1.5 Time and data offset table (TOT)

The TOT (time offset table) shall be in accordance with the ABNT NBR 15603-2.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 1.6:

1.6 Time and Data Offset Table (TOT)

The TOT transmits the time and data offset information coded as MJD and JTC (Note 1) in place of TDT. That is, either the TDT or the TOT shall be transmitted. It may be used to synchronize the internal clock of an IRD. By mapping the local time offset descriptor in TOT at local time, partial content time of the actual time (UTC+9) and indicated time to human can be transmitted. The TOT shall be transmitted at least every 30 seconds. Updating of

table and timing of validity is operated in accordance with the TDT.

Note: JTC is typo of JST.

7.16 General rule

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.1:

B.2.1 General rule

The allocation and usage of SI descriptors shall be according to ABNT NBR 15603-2.

In the Japanese digital terrestrial television system, this subclause has not been included.

7.17 Service list descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.2.2.2:

B.2.2.2.2 Service list descriptor

The service list descriptor shall be in accordance with ABNT NBR 15603-2:2007, Subclause 8.3.14.

This descriptor is used to list the services and service_type for each TS. The services are listed identified by service_id. The transport_stream_id and original_network_id, which are necessary for identifying a unique service are given at the start of the descriptor loop. The service list descriptor is allowed only once in each loop. Transmission of this descriptor is optional, but if it is present, then the service list shall be complete.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.1.2.2:

2.1.2.2 Service list descriptor

This descriptor is used to list the services and service_types for each TS. The services listed are identified by service_id (= MPEG-2 program_number). The transport_stream_id and original_network_id, which are necessary for identifying a unique service, are given at the start of the descriptor loop.

The service list descriptor is allowed only once in each loop. Transmission of this descriptor is optional, but if it is present, then the service list shall be complete.

7.18 Country availability descriptor

References have been modified in order to comply with ABNT NBR 15603-1 and ABNT NBR 15603-2

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.3.2.2:

B.2.3.2.2 Country availability descriptor

The country availability descriptor shall be in accordance with ABNT NBR 15603-2:2007, Subclause 8.3.6.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.2.1.3:

2.2.1.3 Country availability descriptor

This descriptor is used to indicate whether a bouquet is available in a specific country. It has no meaning in the sense of CA. However, it may be a good feature for IRDs to interpret this descriptor, not to display bouquets that are not available in order to avoid frustrating the user.

This descriptor is allowed a maximum of twice in each BAT sub-table, once to indicate a list of countries in which the bouquet is intended to be available, and once to indicate those countries in which it is not intended to be available. If the descriptor is not present, the availability status of the bouquet is undefined. Transmission of this descriptor is optional.

7.19 Second descriptor loop

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.3.3:

B.2.3.3 Second descriptor loop

The SI descriptors have their meaning defined in the second loop of the BAT.

B2.3.3.1 Service list descriptor

The service list descriptor shall be in accordance with ABNT NBR 15603-2.

This descriptor is used to list the services and service types of each TS that belong to the bouquet of this section. This enables all services belonging to a specific bouquet to be found.

The service_list_descriptor is allowed only once in each loop. It should be transmitted if a BAT exists.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.2.2:

2.2.2 Second descriptor loop

The SI descriptors in this sub-clause have a defined meaning in the second loop of the BAT.

2.2.2.1 Service list descriptor

This descriptor is used to list the services and service types of each TS that belong to the bouquet of this section. This enables all services belonging to a specific bouquet to be found.

The service_list_descriptor is allowed only once in each loop. It should be transmitted if a BAT exists.

7.20 Service description table descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.4:

B.2.4 Service description table descriptor

NOTE SDT construction is indicated in ABNT NBR 15603-2:2007, Subclause 7.2.6. In the SDT, there is a loop for the descriptors of each service described in SDT. The SI descriptor in this sub-clause has a defined meaning in the loop

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.3:

2.3 Service description table descriptor

The structure of the SDT is indicated in the table 5-5, part 2 of this standard. In the SDT, there is one loop for the descriptors for each service described in the SDT. The SI descriptor in this sub-clause has a defined meaning in the loop.

7.21 Country availability descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.4.3:

B.2.4.3 Country availability descriptor

The country availability descriptor shall be in accordance with ABNT NBR 15603-2:2007, Subsection 8.3.6.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.3.3:

2.3.3 Country availability descriptor

This descriptor is used to indicate whether a service is available in the specified country. It has no meaning in the sense of CA, however, it may be a good feature for IRDs to interpret this descriptor, so as not to display services that are not available and avoid frustrating the user.

This descriptor is allowed a maximum of twice in each SDT service loop, once to indicate a list of countries in which the service is intended to be available, and once to indicate those countries in which it is not intended to be available. If the descriptor is not present, the availability status of the service is undefined. It is not allowed if there is a time_shifted_service_descriptor. Transmission of this descriptor is optional.

7.22 Service descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.4.7:

B.2.4.7 Service descriptor

The service descriptor shall be in accordance with ABNT NBR 15603-2:2007, Subsection 8.3.13.

This descriptor contains the basic textual identifications of a service such as service name and provider name. The service_descriptor is allowed only once in each loop and if there is no time_shifted_service_descriptor. Transmission is mandatory.

The service type defined in this Standard is the service used for:

a) temporary service (video, audio, data): is not a regular service, but a service temporarily organizing the programs;
b) engineering download service: is a service for software download (version) and data for receivers;
c) promotion service (video, audio, data): for promoting or announcing contents of programs or services;

d) data service for storage in advance: is a service which is used independently of storage media location belonging to service which can be viewed after accumulating data in receiver;
e) exclusive data service for media storage belonging to a service which can be viewed after accumulating data in the receiver;
f) *data service list marker is a service indicating the recording marking on the receiver.*

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.3.7:

2.3.7 Service descriptor

This descriptor contains the basic textual identifications of a service such as service name and provider name. The service_descriptor is allowed only once in each loop and if there is no time_shifted_service_descriptor.

Transmission is mandatory. IRDs are recommended to make use of this in order to display the service names in the user interface.

The service type defined in this standard is the service used for the following:

- *Temporary (video, audio, data) service is not a regular service but is a service organizing the program temporarily.*
- *Engineering download service is a service to download software and data to the IRDs.*
- *Promotion (video, audio, data) service is to advertise contents of programs and services.*
- *Data service for accumulation beforehand is a service to be used without depending on the placement on the accumulation media among the service which can be viewed after the data is accumulated in the IRD.*

Data service exclusively for accumulation is an exclusive service used for maintaining the service in the designated directory of the accumulating media among the service which can be viewed after the data is accumulated in the IRD. - Book mark list data service is a service to indicate book mark information recorded in the IRD.

7.23 Descriptors of the event information table (EIT)

References have been modified in order to comply with ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according ABNT NBR 15603-3:2007, Subclause B.2.5:

B.2.5 Descriptors of the event information table (EIT)

NOTE An EIT-section is organized as shown in ABNT NBR 15603-2:2007, subclause 7.2.7. The EIT has a loop for descriptors for each event described in the EIT. The SI descriptors have a defined meaning in the loop.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.4:

An EIT-section is organized as shown in table 5-7, part 2 of this standard. The EIT has a loop for descriptors for each event described in the EIT. The SI descriptors in this sub-clause have a defined meaning in the loop.

7.24 Content availability descriptor

Minor text changes have been made in ABNT NBR 15603-3:2007, Subclause B.2.4.11, in order to indicate the priority given to this descriptor in different tables.

In the Brazilian digital terrestrial television system, according ABNT NBR 15603-3:2007, Subclause B.2.4.11:

2.4.11 Content availability descriptor

The content availability descriptor is used in conjunction with the digital copy control descriptor. It can be inserted into the SDT when information to control record and output is the same in most programs of the same service. When there is a program with different information or when this descriptor is not inserted into the SDT, it can be inserted into the PMT and/or EIT.

When the descriptor is transmitted in multiple tables, priority of information expressed by this descriptor is PMT>EIT>SDT.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.4.17:

2.4.17 Content availability descriptor

This descriptor, which is used in combination with the digital copy control descriptor, describes information to control the record and output of each program.

When this descriptor is transmitted by multiple tables, the priority of information expressed by this descriptor is in the order of PMT, EIT, and SDT.

7.25 Carousel compatible composite descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.5.17:

2.5.17 Carousel compatible composite descriptor

The carousel compatible composite descriptor presents the storage control information for each program through the use of area information module descriptors and the private area defined in the data carousel transmission scheme (see ABNT NBR 15606-3) as subdescriptors.

More than one subdescriptor may be used in a carousel compatibility composite descriptor.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.4.18:

2.4.18 Carousel compatible composite descriptor

This descriptor shows the accumulation control information of each program by using the descriptors in the module information area and the private area defined in the data carousel transmission scheme (Chapter 6 of ARIB STD-B24 Part 3) as subdescriptors.

More than one subdescriptor can be placed in one carousel compatible composite descriptor.

7.26 Stream identifier descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.6.2:

B.2.6.2 Stream identifier descriptor

The stream identifier descriptor shall be according to ABNT NBR 15603-2:2007, Subclause 8.3.16.

This descriptor enables specific streams to be associated with a description in the EIT, in cases where there is more than one stream of the same type within a service. The descriptor is mandatory only if the service contains more than one stream of the same type and there are component descriptors for that type of stream within the EIT.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.5.2:

2.5.2 Stream identifier descriptor

This descriptor enables specific streams to be associated with a description in the EIT, in cases where there is more than one stream of the same type within a service. The descriptor is mandatory only if the service contains more than one stream of the same type and there are component descriptors for that type of stream within the EIT.

7.27 Emergency information descriptor

Minor text changes have been made in ABNT NBR 15603-3:2007, Subclause B.2.4.11 in comparison with ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.5.5.

In the Brazilian digital terrestrial television system, according ABNT NBR 15603-3:2007, Subclause B.2.6.10:

B.2.6.10 Emergency information descriptor

The emergency information descriptor is transmitted during emergency situations, when the broadcaster sends an emergency signal with instructions and actions recommended for that situation.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.5.5:

2.5.5 Emergency information descriptor

This descriptor is transmitted when the emergency warning broadcasting is made and includes necessary information and functions as an emergency warning signal, which is formely transmitted as the audio signal.

7.28 Parental rating descriptor

Minor text changes have been made in ABNT NBR 15603-3:2007, in order to comply with Brazilian legislation.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.6.7:

B.2.6.7 Parental rating descriptor

The parental rating descriptor is used to allow the parental rating of a program based on Ministry of Justice Ordinance Nº 1220, of July 11, 2007, , where the rating criteria is based on age, thus protecting children from watching events which are undesirable for their age.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.5.10:

2.5.10 Parental rating descriptor

This descriptor is used to rate the program during broadcast based on age or other judgment standard to prevent young people from viewing inappropriate programs.

7.29 Descriptor of the time offset table (TOT)

References of the TOT table have been modified in order to comply with ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.7:

B.2.7 Descriptor of the time offset table (TOT)

The composition of the TOT is indicated in ABNT NBR 15603-2:2007, Subclause 7.2.9. The TOT includes all items defined in the TDT, adding only the descriptor area.

The local_time_offset_descriptor is placed in TOT descriptor and contains the region time zone in relation with Brazilian official time and with or without daylight saving.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.6:

B.2.6 Descriptor of the time offset table (TOT)

Composition of the TOT is indicated in table 5-9 of Part 2 of this standard. The TOT includes all items defined in the TDT and adds only the descriptor area. This descriptor area can map the descriptor only when the time offset time changing date and the time (set value of time_of_change) of next time are clear, and not mapped in other case.

7.30 Broadcaster information table descriptor

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.11:

B.2.11 Broadcaster information table descriptor

NOTE The construction of the BIT (broadcaster identification table) is specified in ABNT NBR 15603-2:2007, Subclause 7.2.13.

In the Japanese digital terrestrial television system according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.10:

2.10 Broadcaster information table descriptor

The structure of the BIT is specified in table 5-13, part 2 of this standard.

7.31 Hyperlink descriptor

Provisions of description of the hyperlink descriptor in server-based services are defined only in ARIB STD-B10:v4.6:2007. In the Brazilian digital terrestrial television system, the functionality of this descriptor is not defined in ABNT NBR 15603-3.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.10.2.5:

2.10.2.5 Hyperlink descriptor

This descriptor is used to specify for each broadcaster the URI of the portal link destination and the URI of the authority, which permit access by receiver units. Multiple hyperlink descriptors can be placed for one broadcaster group. The URI of the portal link destination corresponds to the URI of the BML document provided by the broadcaster for the contract between the broadcaster and the users. The authority is the character string used as the name space for each broadcaster when accumulating server-type contents in server-type broadcasting receivers.

7.32 Network board information table descriptor (NBIT)

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.12:

B.2.12 Network board information table descriptor (NBIT)

The construction of the NBIT is specified in ABNT NBR 15603-2:2007, Table 22.

When the descriptor is placed in the NBIT, the title and the content of the board information are provided in text format.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 2.11:

2.11 Network board information table descriptor

The structure of the NBIT is specified in table 5-14, part 2 of this standard.

7.33 Linkage description table descriptor (LDT)

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.2.13:

B.2.13 Linkage description table descriptor (LDT)

The construction of the LDT is shown in ABNT NBR 15603-2:2007, Table 25.

B.2.13.1 Short event descriptor

Operation of this descriptor, which is linked with the EIT using the LDT linkage descriptor, shall be in accordance with the operation of the same descriptor in the EIT.

B.2.13.2 Extended event descriptor

Operation of this descriptor, which is linked with the EIT using the LDT linkage descriptor, shall be in accordance with the operation of the same descriptor in the EIT.

When linking from LDT linkage descriptor to the LDT, the item name is not described in cases where the descriptor identification is in independent style.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause

2.12:

2.12 Linkage description table descriptor

The structure of the LDT is shown in table 5-15, part 2 of this standard.

2.12.1 Short event descriptor

Operation of this descriptor, which is linked with the EIT using the LDT linkage descriptor, shall be in accordance with the operation of the same descriptor in the EIT.

2.12.2 Extended event descriptor

Operation of this descriptor, which is linked with the EIT using the LDT linkage descriptor, shall be in accordance with the operation of the same descriptor in the EIT.

When linking from LDT linkage descriptor to the LDT, the item name is not described in cases where the descriptor identification is in independent style.

7.34 General considerations

References have been modified in order to comply with ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.4.2.1:

B.4.2.1 General information

The mosaic services shall be according to ETSI TR 101 211:2004; Subclause 5.2.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 4.2.1:

4.2.1 General information

Mosaic services can be spread out over several TSs. A complete mosaic system can be organized in a tree structure.

A mosaic component is a collection of different video images to form a coded MPEG-2 video stream. The merging of the video images is performed at the source level, in such a way that at the display each image will occupy a specific area of the screen.

Each specific area is called a logical cell. Logical cells are composed of elementary cell(s). The mosaic screen is subdivided by a maximum of 8 × 8 elementary cells. Each elementary cell is numbered. A logical cell is a collection of elementary cells. Each logical cell is identified by a unique logical_cell_id.

The mosaic descriptor identifies the elementary cells (see figure 4-3), groups different elementary cells to form logical cells (see figure 4-4), and establishes a link between the content of all or part if the logical cell and the corresponding information carried in the SDT or EIT or BAT. Thus there is a close association between the mosaic descriptor and other SI Tables. The mosaic descriptor may be placed in either or both of the SDT and PMT sections for the mosaic service. Use in the SDT reduces the amount of interaction between the SI and MPEG Tables. However, a single mosaic service containing multiple video components can only be described by having the mosaic descriptor appearing multiple times within the PMT section. Some logical cells may have no link to SI (see figure 4-4).

7.35 Relationship between mosaic service and SI/PSI table

References have been modified in order to attend ABNT NBR 15603-1:2007 and ABNT NBR 15603-2:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.4.2.2:

B.4.2.2 Relationship between mosaic service and SI/PSI table

The relationship between mosaic service and SI/PSI table shall be according to ETSI TR 101 211:2004, Subclause 5.2.2.

In the Japanese digital terrestrial television system according to ARIB STD-B10:v4.6:2007, Appendix B, Subclause 4.2.2:

4.2.2 Relationship between mosaic service and SI/PSI table

Algorithm to look for a mosaic service:

a) check the SDT Tables (actual TS / other TSs);

b) if a mosaic service exists:

- *go to the corresponding TS;*
- *process the PAT and PMT;*
- *display the mosaic service;*
- *look after the content of the mosaic service:*
  - *if you are interested by the content of one logical cell and if it is related to:*
    - *a bouquet: display the information of the corresponding BAT, go forward or cancel;*
    - *a service: display the information of the corresponding SDT, process the PAT and the PMT and display the selected service;*
    - *an event: display the information of the corresponding EIT, process the PAT and the PMT and display the selected event;*
    - *a mosaic service: display the information of the corresponding SDT, process the PAT, the PMT, display the selected mosaic service, and go to "-look after the content of the mosaic service".*

7.36 MJD after the year of 2038

Additional information has been added to ABNT NBR 15603-3:2007, Subclause B.6, according to ARIB STD-B10:v4.6:2007.

In the Brazilian digital terrestrial television system, according to ABNT NBR 15603-3:2007, Subclause B.6:

B.6 MJD after the year 2038

The least significant of the 16 bits in MJD is "1", any day in the year 2038 and will be "0" in the following day. If using the formula presented in ABNT NBR 15603-2:2007, Annex C, the system is reported to the year 1800. In order to avoid such event, all of the following measures shall be taken:

a) formula shown in ABNT NBR 15603-2:2007, Annex C, shall be maintained after the year of 2038 until February 28, 2100, transmitting the 16 converted bits of MJD;

b) TA shall memorize the dates transmitted and when they are transmitted to a date before the last one transmitted, the receiver shall assume the 17th bit as 1 and then process this new information;

c) for the years beyond 2100, a processing method is being studied.

In the Japanese digital terrestrial television system, according to ARIB STD-B10:v4.6:2007, Part 2, Annex C:

Annex C (Informative)

Conversion of hours and dates

Conversion of Modified Julian Date (Japan time) and Japan standard time is as shown in figure C-1.

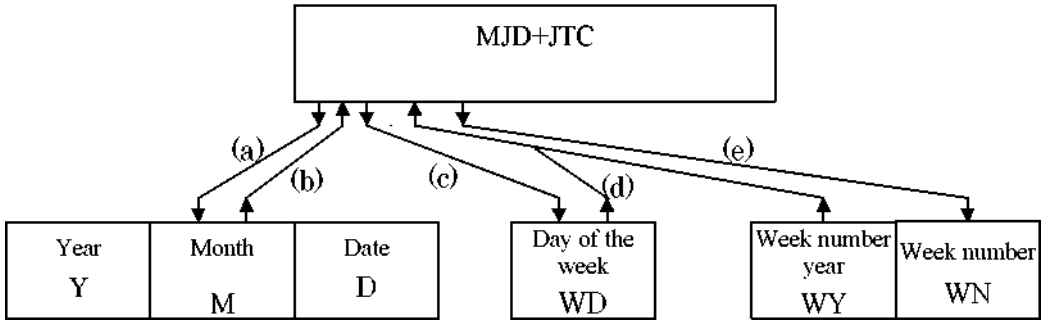


Figure C-1 - Conversion of MJD (Japan time) and Japan standard time (JTC)

Relation of year-month-date and MJD (Japan time) is as shown below.

Symbol used:

MJD: Modified Julian Date (Japan time)

JTC: Japan Time Code

Y: Year from 1900 (For example, 2003 is Y=103)

M: Month (January = 1 to December = 12)

D: Date (1 to 31)

WY: Week number year since 1900

WN: Week number in accordance with ISO 2015

WD: Week day (Monday = 1 to Sunday = 7)

K, L, M', W, Y': Intermediate variables

x: Multiplication symbol

int: Integer part, ignoring remainder

mod 7: Number remaining after dividing integer by 7

a) Method for finding year, month and date (Y, M, D) from MJD

$Y' = int[(MJD - 15078.2) / 365.25]$

$M' = int\{[MJD - 14956.1 - int(Y' \times 365.25)] / 30.6001\}$

$D = MJD - 14956 - int(Y' \times 365.25) - int(M' \times 30.6001)$

Where M' = 14 or M' = 15: K = 1

In other cases,: K = 0

$Y = Y' + K$

$M = M' - 1 - K \times 12$

b) Method for finding MJD from year, month and date (Y, M, D)

Where M = 1 or M = 2: L = 1

In other cases: L = 0

$$MJD = 14956 + D + int[(Y - L) \times 365.25] + int[(M + 1 + L \times 12) \times 30.6001]$$

c) Method for finding week day (WD) from MJD

$$WD = [(MJD + 2) \bmod 7] + 1$$

d) Method for finding MJD from WY, WN and WD

$$MJD = 15012 + WD + 7 \times \{WN + int[(WY \times 1461 / 28) + 0.41]\}$$

e) Method for finding WY and WN from MJD

$$W = int[(MJD / 7) - 2144.64]$$

$$WY = int[(W \times 28 / 1461) - 0.0079]$$

$$WN = W - int[(WY \times 1461 / 28) + 0.41]$$

Example:						
	MJD	=	*45218*	*W*	=	*4315*
	Y	=	*(19)82*	*WY*	=	*(19)82*
	M	=	*9 (Sept.)*	*WN*	=	*36*
	D	=	*6*	*WD*	=	*1 (Monday)*

[Note]: These formulas are effective from March 1, 1900 to February 28, 2100.