DVB-I Implementation Profile for DVB-I Receivers in Germany

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1. Introduction

The purpose of this document is to specify the implementation measures defined by the Task Force DVB-I of DTVP in cooperation with the DVB-I Round Table in the course of preparing for the market launch of DVB-I in Germany, thereby providing support for implementation to both manufacturers of DVB-I receivers and Service Providers.

The DVB-I Implementation Profile of the DTVP is a separate document and is considered as appendix to the “DVB-I Book Germany”* published by the DVB-I Round Table. The DVB-I Book Germany contains further guidelines for manufacturers and Service Providers and is intended, among other things, to serve as a basis for the certification of DVB-I receivers that wish to use the DVB-I Germany service list (“The Service List”*).

**Working titles*

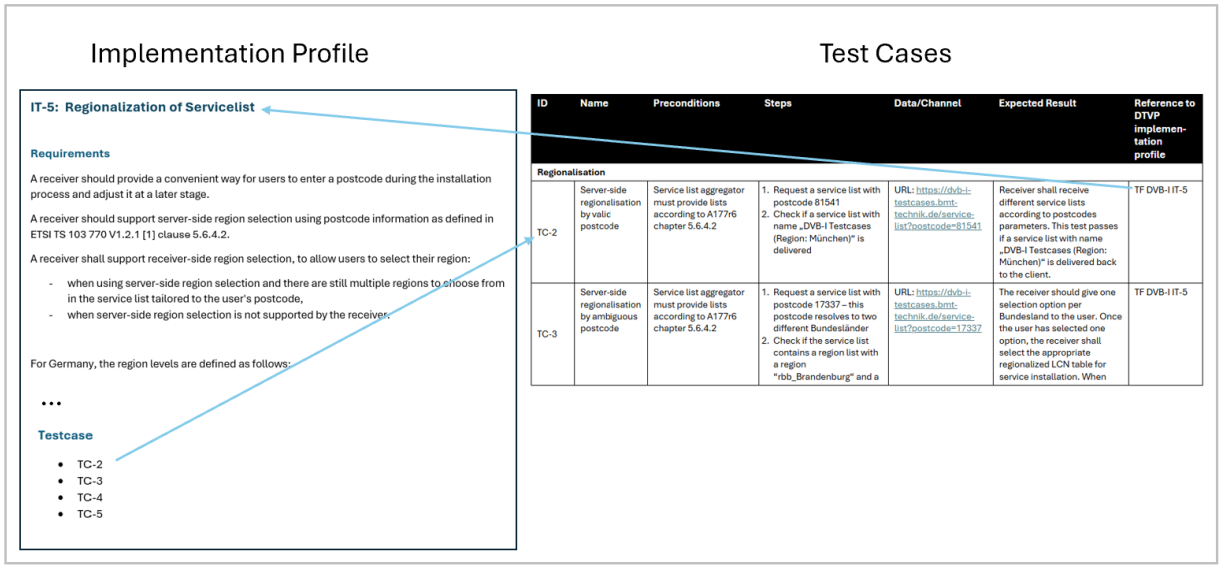
2. Background

The open DVB-I standard enables simple, integrated use of linear television, including via IP streaming, without the need to launch a separate application; DVB-I also enables a smart integration of non-linear / VOD services, making it a promising technical solution for the digital transformation of the television market.
Since 2024, the Task Force DVB-I has been focusing on creating the technical DVB-I Implementation Profile for the German market.
The topics covered by the Implementation Profile are diverse and include, for example, the specifications of DVB-I and HbbTV, reception technologies, DVB-I metadata, Pop-up Channels, regionalization of The Service List, and accessibility features.

Another focus of the Task Force's work was the provision of test cases that are tailored to the Implementation Profile.
The DVB-I test case list enables device manufacturers to test their DVB-I receivers specifically for interoperability on the German market.

3. Structure of the Document

The document is divided into Implementation Topics (IT-#), each of which describes a specific thematic focus. If applicable, there are cross-references to test cases, which are described in a separate document (DVB-I Test Cases) [16] and facilitate the testing of an implementation.



The document contains "**Future Enhancements**" requirements.

"Future Enhancements" definition: Functions expected to be available on receivers certified for use in the German market based on future versions of the Implementation Profile.

4. Version History

Version	Date	Changes	by
V 1.00	20.02.2026	Document approved	Task Force DVB-I
V 1.00	04.03.2026	Document approved	AG Media over IP
V 1.1.0	18.05.2026	Future enh. update for 2027 devices	Task Force DVB-I
V 1.1.0	21.05.2026	Document approved	AG Media over IP

5. References

[1] ETSI TS 103 770 (V1.2.1): Digital Video Broadcasting (DVB); Service Discovery and Programme Metadata for DVB-I

[2] ETSI TS 102 796 (V1.7.1): "Hybrid Broadcast Broadband TV"

[3] ETSI TS 101 154 (V2.9.1): "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcast and Broadband Applications".

[4] ETSI TS 103 285 (V1.4.1): "Digital Video Broadcasting (DVB); MPEG-DASH Profile for Transport of ISO BMFF Based DVB Services over IP Based Networks".

[5] NorDig Unified Requirements v3.2.1: “NorDig Unified Requirements for Integrated Receiver Decoders for use in cable, satellite, terrestrial and managed IPTV based networks. version 3.2.1”

[6] ISO/IEC 23000-19: "Information technology -- Multimedia application format (MPEG-A) --Part 19: Common media application format (CMAF) for segmented media"

[7] EBU Tech 3380 v1.0.1: "EBU-TT-D Subtitling Distribution Format"

[8] ETSI EN 300 706 (V1.2.1): "Enhanced Teletext specification".

[9] ETSI EN 300 472 (V1.4.1): "Digital Video Broadcasting (DVB); Specification for conveying ITU-R System B Teletext in DVB bitstreams"

[10] ETSI 300 743 (V1.6.1): "Digital Video Broadcasting (DVB); Subtitling systems"

[11] ETSI TS 104 227 V1.1.1 (2026-01): “Hybrid Broadcast Broadband Television; Integration of Digital Rights Management (DRM)”

[12] Bluebook DVB A177r7 2nd edition: “Digital Video Broadcasting (DVB); Service Discovery and Programme Metadata for DVB-I”

[13] BlueBook DVB A177r8 : “Digital Video Broadcasting (DVB); Service Discovery and Programme Metadata for DVB-I”

[14] BlueBook DVB A184r2: “Implementation Guidelines for DVB-I”

[15] BlueBook DVB A185: “Accessibility Implementation Guidelines”

[16] DTVP TF DVB-I: Test Cases (bmt); “TF_DVB-I_Testcases_V1.0”

[17] HbbTV: Errata #1 to HbbTV 2.0.4 (2026-03-26)

6. Definitions

The following terminology definition is used in this specification:

Terminology	Definition	Explanation
shall	Requirement	Implementation mandatory
shall not	Requirement	Implementation prohibited
should	Recommendation	Implementation recommended, but not mandatory
should not	Recommendation	Implementation not recommended, but not prohibited
may	Permission	Implementation allowed

7. Implementation Topics (IT)

IT-1: DVB-I Specification Release

Requirement

The basis for DVB-I services on receivers, including Smart TVs and other reception devices is at least the IP2 Profile of the Service Discovery and Programme Metadata for DVB-I specification, DVB BlueBook A177 Rev.6 (ETSI TS 103 770 V1.2.1) [1].

IT-2: HbbTV Specification

Requirement

The HbbTV 2.0.4 standard (ETSI TS 102 796 V1.7.1) [2] with Errata #1[17] including Annex O is required for the integration of DVB-I and shall be enabled.

Note:

HbbTV is an elementary component for the realization of the German DVB-I offer and must always be activated after “DVB-I” services are installed. Receiver Manufacturers are encouraged to have a combined on/off setting for both HbbTV and DVB-I functionality.

Note, that completely disabling HbbTV applications would prevent access to services presented by a Type 1.2 linked application and potentially to some accessibility features.

Testcase

- TC-15
- TC-15-2
- TC-16
- TC-53

IT-3: Reception Technologies

Requirements

Broadcast

The Service List may contain service instances delivered using the following broadcast technology:

- DVB-T/T2
- DVB-C
- DVB-S/S2

Receivers with broadcast support shall support the following video IRD conformance points defined in ETSI TS 101 154 [3] for broadcast delivery:

- 25 Hz MPEG-2 SDTV IRD (ETSI TS 101 154 [3] clause 5.1).
- 25 Hz H.264/AVC SDTV IRD (ETSI TS 101 154 [3] clause 5.6.2).
- 25 Hz H.264/AVC HDTV IRD (ETSI TS 101 154 [3] clause 5.7.2).
- 50 Hz H.264/AVC HDTV IRD (ETSI TS 101 154 [3] clause 5.7.4).
- 50 Hz HEVC HDTV 10-bit IRD (ETSI TS 101 154 [3] clause 5.14.2).

In addition, receivers with broadcast support capable of decoding UHD video (above 1920x1080 and up to 3840x2160 pixels) shall support the following IRD conformance points defined in ETSI TS 101 154 [3] for broadcast delivery:

- HEVC HDR UHDTV IRD using HLG10 (ETSI TS 101 154 [3] clause 5.14.4, in particular clause 5.14.4.4.2).
- HEVC HDR UHDTV IRD using PQ10 (ETSI TS 101 154 [3] clause 5.14.4, in particular clause 5.14.4.4.3).

A receiver with broadcast support shall support the following audio codecs for broadcast delivery, as defined in ETSI TS 101 154 [3] and as profiled in NorDig Unified v3.2.1 [5]:

- MPEG-1 Layer II.
- MPEG-4 AAC, HE-AAC, HE-AAC v2.
- AC-3.
- E-AC-3.

A receiver may support additional IRD conformance points defined in ETSI TS 101 154 [3].

Receivers with broadcast support shall support the following audio/video combinations (indicated by M):

	MPEG-1 Layer II	AC-3	E-AC-3	MPEG-4 AAC, HE-AAC, HE-AAC v2
25 Hz MPEG-2 SDTV	M	M		
25 Hz H.264/AVC SDTV	M	M	M	M
25 Hz H.264/AVC HDTV	M	M	M	M
50 Hz H.264/AVC HDTV	M	M	M	M
50 Hz HEVC HDTV 10-bit		M	M	M

Receivers with broadcast support capable of decoding UHD video (above 1920x1080 and up to 3840x2160 pixels) shall support the following audio/video combinations (indicated by M):

	MPEG-1 Layer II	AC-3	E-AC-3	MPEG-4 AAC, HE-AAC, HE-AAC v2
HEVC HDR UHDTV using HLG10		M	M	M
HEVC HDR UHDTV using PQ10		M	M	M

Receivers with broadcast support shall support the following subtitle formats for broadcast delivery:

- EBU Teletext subtitles as defined in ETSI EN 300 706 V1.2.1 [8] and ETSI EN 300 472 V1.4.1 [9], with support for:
    - Basic Teletext up to presentation Level 1.5,
    - Caching at least 200 decoded EBU Teletext pages,
    - Teletext subtitles (teletext_type = 0x02),
    - Teletext subtitles for hearing impaired people (teletext_type = 0x05).
- DVB bitmap subtitles as required by the “IRD with "HDTV" subtitling support” interoperability point (ETSI 300 743 V1.3.1 conformance) as defined in ETSI 300 743 V1.6.1 [10], and as profiled in NorDig Unified v3.2.1 [5] clause 7.3.

Broadband

The Service List may contain service instances delivered using the following IP streaming technologies:

- DVB-DASH.
- Icecast for radio services only.
- HbbTV applications retrieving and presenting media segments

Receivers shall support the following DVB DASH requirements and video IRD conformance points for broadband delivery:

- DVB-DASH 2014 profile (ETSI TS 103 285 [4] clause 10) and additional HbbTV DASH requirements on receivers (ETSI TS 102 796 [2] clause E.4).
- For AVC:
    - avc_hd_50 DASH player conformance point (ETSI TS 101 154 [3] clause L.2, in particular L.2.6) and DVB DASH H.264/AVC specifics (ETSI TS 103 285 [4] clause 5.1).
    - CMAF media profiles cfsd, cfhd and chdf (ISO/IEC 23000-19 [6] clause A.2).
- For HEVC:
    - hevc_hd_50_10 DASH player conformance point (TS 101 154 [3] clause L.2, in particular L.2.11) and DVB DASH H.265/HEVC specifics (ETSI TS 103 285 [4] clause 5.2).

In addition, receivers capable of decoding UHD video (above 1920x1080 and up to 3840x2160 pixels) shall support the following DVB DASH requirements and video IRD conformance points for broadband delivery:

- DVB-DASH 2017 profile (ETSI TS 103 285 [4] clause 10) and additional HbbTV DASH requirements on receivers (ETSI TS 102 796 [2] clause E.4).
- For HEVC:
    - hevc_uhd_hlg10 DASH player conformance point (ETSI TS 101 154 [3] clause L.2, in particular L.2.14) and DVB DASH H.265/HEVC specifics (ETSI TS 103 285 [4] clause 5.2).
    - hevc_uhd_pq10 DASH player conformance point (ETSI TS 101 154 [3] clause L.2, in particular L.2.15) and DVB DASH H.265/HEVC specifics (ETSI TS 103 285 [4] clause 5.2).
    - CMAF media profiles cud1, clg1, chd1 (ISO/IEC 23000-19 [6] clause B).

Receivers shall support the following audio codecs for broadband delivery as defined in ETSI TS 103 285 [4] clause 6 and profiled in ETSI TS 102 796 [2] clause 7.3.1.4:

- MPEG-4 AAC, HE-AAC, HE-AAC v2.
- E-AC-3.

Receivers may support additional codecs or codec profiles defined in ETSI TS 101 154 [3], ETSI TS 103 285 [4], and referenced in ETSI TS 102 796 [2].

Receivers shall support DVB-I applications controlling media presentation (i.e. Linked Application type 1.2) whereby the application type is application/vnd.hbbtv.xhtml+xml (i.e. an HbbTV application) as defined in ETSI TS 103 770 V1.2.1 [1] and ETSI TS 102 796 v1.7.1 [2].

Receivers shall support Media Source Extensions (MSE) as defined in ETSI TS 102 796 v1.7.1 [2]. In particular, receivers that support any video or audio codec for native playback of DVB-DASH content shall support that codec with MSE, with the same codec profiles and capabilities.

Receivers shall support Encrypted Media Extensions (EME) as defined in ETSI TS 102 796 v1.7.1 [2]. See also IT-14 DRM Support.

Audio codecs supported by receivers shall be supported for audio-only content, and for the following combinations of audio/video content.

Receivers shall support the following audio/video combinations for DASH (indicated by M):

	MPEG-1 Layer II	**AC-3**	**E-AC-3**	**MPEG-4 AAC, HE-AAC, HE-AAC v2**
avc_hd_50			M	M
hevc_hd_50_10			M	M

A receiver that is capable of decoding UHD video (above 1920x1080 and up to 3840x2160 pixels) shall support the following audio/video combinations for DASH (indicated by M):

	MPEG-1 Layer II	**AC-3**	**E-AC-3**	**MPEG-4 AAC, HE-AAC, HE-AAC v2**
hevc_uhd_hlg10			M	M
hevc_uhd_pq10			M	M

Receivers shall support the following subtitle formats for broadband delivery:

- EBU-TT-D subtitles as defined in EBU Tech 3380 v1.0.1 [7] and profiled in ETSI TS 103 285 [4].

Receivers shall support DVB-DASH content with multiple Periods as defined in ETSI TS 103 285 [4] clause 10.5.
Seamless playback across Period boundaries is only required under the constraints defined in ETSI TS 103 285 [4] clauses 10.5.2.2, 10.5.2.4 and 10.4. While clause 10.5.2.4 does not define the size of the gap/overlay a player should support, all players should be able to handle at a minimum gap or overlay between Periods of up to 50ms.
Receivers shall support DASH content with multiple Periods when the constraints defined in ETSI TS 103 285 [4] clauses 10.5.2.2 and 10.4 do not apply, or if the gap/overlay between Periods is over 50ms, however playback is not expected to be seamless.

Receivers shall support DVB-DASH content with multiple Adaptation Sets encoded with different audio or video codecs.
Receivers shall ignore Adaptation Sets encoded with unsupported codecs, regardless of the Adaptation Set order.
The presence of Adaptation Sets only encoded with unsupported codecs shall not affect the Receivers ability to play other Adaptation Sets encoded with supported codecs.

Icecast

Receivers shall support Icecast audio-only services.

A service instance that conveys an Icecast audio service shall use IdentifierBasedDeliveryParameters according to upcoming DVB BlueBook A177r8 [13] Annex K, with:

- the `@contentType` attribute set to “audio/mpeg” or “audio/aac”,
- For example:

```
<ServiceInstance>
[...]
  <IdentifierBasedDeliveryParameters contentType="audio/mpeg">
    urn:dvb:icecast:v1:https%3A%2F%2Fexample-radio-server.net%2Flive
  </IdentifierBasedDeliveryParameters>
[...]
</ServiceInstance>
```

The identifier indicates that the DVB Icecast profile version 1 is to be used, with the MP3 coded Icecast content available at `https://example-radio-server.net/live`.

While Icecast supports various formats, this profile only requires support for MP3 and AAC coded audio.

Icecast streams shall use MP3 or AAC encoded mono or stereo audio at a constant bitrate up to 320kbit/s.

Icecast transports metadata and raw audio data over HTTP. Receivers may ignore the metadata provided in the Icecast stream. Additional features of DVB-I may be provided alongside the Icecast service instance, for example content guide metadata and application in parallel with media.

Note: Additional information may be found at:

- https://icecast.org/docs/icecast-trunk/basic_setup/
- https://gitlab.xiph.org/xiph/icecast-server

Use Case

The receiver should support all existing broadcast technologies aligned with IP streaming.

Testcase

- TC-13
- TC-31
- TC-37
- TC-38
- TC-80
- TC-81

IT-4: Pop-up Channels

Requirements

A receiver should support Part Time TV services (defined as Pop-up Channels):

- Part Time Services and the associated Availability element, as defined in ETSI TS 103 770 V1.2.1 [1] clauses 5.2.5 and 5.5.15.
- LCN selectable and visible flags, as defined in ETSI TS 103 770 V1.2.1 [1] clause 5.5.10.
- Out of service banners shall be supported, as defined in ETSI TS 103 770 V1.2.1 [1] clauses 5.5.2 and 5.2.5.3, with the image restrictions defined in clause 5.2.8.3.
- Out of service applications shall be supported, as defined in ETSI TS 103 770 V1.2.1 [1] clauses 5.5.2, 5.2.5.3 and 5.2.3, of the type application/vnd.hbbtv.xhtml+xml (i.e. HbbTV).

- Manufacturers should carefully consider the frequency and verbosity of any notifications based on the change of the state of the attributes @selectable and @visible of LCNTableEntryType compared to adding and removing LCN entries.

Use Case

Pop-up Channels are part of The Service List and are listed as fixed channels in the EPG corresponding to the AvailabilityWindow. Out of service banners or out of service applications will be provided by the content provider, responsible for the Pop-up Channels.

Testcase

- TC-7
- TC-50
- TC-51
- TC-52

IT-5: Regionalization of Service List

Requirements

A receiver shall provide a convenient way for users to enter a postcode during the installation process and adjust it at a later stage.

A receiver shall support server-side region selection using postcode information as defined in ETSI TS 103 770 V1.2.1 [1] clause 5.6.4.2.

A receiver shall support receiver-side region selection, to allow users to select their region when using server-side region selection and there are still multiple regions to choose from in the service list tailored to the user's postcode.

For Germany, the region levels are defined as follows:

- Region: country (Germany)
- Primary sub-region: federal state (e.g. Bavaria, North Rhine-Westphalia)
- Secondary sub-region: part of federal state, government district, region, etc. (e.g. North Bavaria, Upper Bavaria; Münsterland)
- Tertiary sub-region: region, city (e.g. Duisburg)

The number of sub-regions (primary to tertiary) in the federal states of Germany can be different.

The selectable flag indicates whether the subregion can be selected in the user interface or not. If the selectable flag is set, the receiver shall evaluate it.

When the `ERROR_INVALID_POSTCODE` status value is returned, a receiver should inform the user and offer the option to re-enter the postcode or load the Germany-wide version of The Service List.

When any other `ERROR_` status value is returned, as defined in ETSI TS 103 770 V1.2.1 [1], table 38a, a receiver should inform the user and offer the option to retry, or load the Germany-wide version of The Service List.

Use Case

The possibility of regionalization is a very high priority for the German service list. Due to the available assignment of postcodes (5 digits) to certain regional and local programme offerings, the option described in section 5.6.4.2 using the ‘postcode’ parameter is an obvious choice.

The service list server will support requests in the form <ServiceList_URL>?postcode=<postcode>

and delivers a service list without region definitions if the postcode is valid. In the case of a request without a postcode, a Germany-wide version of The Service List is returned. If a request is made with an unknown postcode, a Germany-wide version of The Service List including a responseStatus with the value “ERROR_INVALID_POSTCODE” is returned.

German media regulation has recommended a Public Value list that defines LCN numbers for the region-specific public service provider (e.g. BR, WDR, RBB, ...) and for the region-specific private programme (e.g. RTL WEST, SAT1 Regional, ...). All viewers who are willing to enter their postcode should receive a customised service list for their region. If no postcode is entered, a selection should be offered via the Germany-wide version of the service list with region definitions.

Example

Use the URL provided in TF DVB-I TC-2 to receive a service list for the region “Augsburg”. “Sat1 Bayern” is at LCN #4, “Bayerisches Fernsehen Süd” is at LCN #7 and “a.tv” at LCN #8.

Testcase

- TC-2
- TC-3
- TC-4
- TC-5

IT-6: Metadata, Content Guide & Now/Next

Service List Metadata

The metadata in the service list contains relevant descriptions, references and configurations for the presentation of services on the receiver.

The table below shows the elements of service list metadata for Service Providers and receivers and its classification in the Interoperability Point 2 of the ETSI TS 103 770 V1.2.1 [1]. The value "M" indicates the support of that requirement is mandatory to realize the expected functionality in the German market. The value ”O“ indicates optional. For an improved overview both requirements are summarised in one table:

Requirements for Service (list) Providers and for Receiver Manufacturers

Element/Attribute	IP2	Service provider	Receiver	Remark
Service Type Fields (Standard Table 15 - page 72)				
UniqueIdentifier	M	M	M	Provider's own domain and namespace.
ServiceInstance	M	M	M	
ServiceName	M	M	M	
ProviderName	O	M	O	
Out of Service Banner	O	M	M	The information will be provided by a device’s native UI, if a service (e.g. Pop-up channel) is not available, and the out-of service banner is not supported.
Service related applications	O	O	M	For HbbTV type 1.1 and 1.2 linked applications.
Service related applications	O	O	M	For HbbTV type 2 and type 3 applications.
Service Logos	M	M	M	Related material.
ServiceGenre	O	O	O	Using the ContentSubject classification defined in ETSI TS 103 770 V1.2.1 [1] clause D.5
ServiceType	M	M	M	Useful for identifying TV and radio services.
ContentGuideSourceRef	M	M	M	
ContentGuideServiceRef	M	M	M	
@version	M	M	M	
ParentalRating	M	O	M	Service-level rating can be useful for providers whose channels always carry content of a certain age rating and enables Parental Control without ContentGuide metadata (Note: ContentGuide event metadata overrides this, see A177r7 clause 5.5.28).
@xml:lang	M	M	M	

Service Instance Type Fields (Delivery Parameters, Table 16, page 75)				
DisplayName	M	M	M	
RelatedMaterial	M	O	M	For HbbTV type 1.1 and 1.2 linked applications, and service instance-specific logos.
ContentProtection	M	O	M	See IT-15 for usage.
ContentAttributes	M	O	M	Accessibility
Availability	M	O	M	
AltServiceName	M	O	M	Needed if different service names are used for broadcast signals and matching is required. Note: if broadcasters use different service names, AltServiceName shall be provided for each service name
DVB-T2 Delivery Parameters	M	O	M	if DVB-T2 is supported Note: the combination of serviceID and origNetId is sufficient for a match of the instance.
DVB-S Delivery Parameters	M	O	M	if DVB-S is supported
DVB-C Delivery Parameters	M	O	M	if DVB-C is supported
DASH Delivery Parameters	M	O	M	A stream is expected, either a native DASH stream or a service instance with a linked application (DVB-I type 1.2) to playback the stream
OtherDeliveryParameters	O	O	O	Native HLS support is optional and under consideration for a future version of this profile. For this version, MSE playback via a DVB-I type 1.2 linked application is required. (see IT-3)
IdentifierBased DeliveryParameters	O	O	M	e.g. Icecast radio streams
@priority	M	M	M	
@xml:lang	M	M	M	
LCN Table Type Fields (Table 25, page 82)				
TargetRegion	M	M	M	
LCN	M	M	M	
LCNRange	M	M	M	Needed for Overscan
Parental Rating Type Fields (Table 37f, page 94)				
MinimumAge	M	M	M	Used to define the age rating for an event in N/N and schedule content guide data.
List Type Fields (Table 38, page 98)				
Region	M	M	M	
@regionID	M	M	M	
Postcode	M	M	M	server-side is required ; receiver-side region is fallback
WildcardPostcode	M	M	M	
PostcodeRangeType	M	M	M	
@from	M	M	M	
@to	M	M	M	

Image Variants and Size (Service List)

Images are used as logos and Out-of-Service banners.

The receiver may request an image with a specific size by using the following query parameter according to clause 5.2.8.2.2 of ETSI TS 103770 [1]: <image_URL>?w=<width>
If the request has no width parameter, or the width parameter is not supported by the server, service providers shall provide default channel logos with a width of 320 pixels; the file size of these logos (when compressed) should not exceed 64 kB.
The receiver may also request an image_variant according to clause 5.2.8.2.1 of ETSI TS 103770 [1].
If no image_variant is specified, the default image_variant 16:9 colour is returned.

Image Variant	Query Parameter	Service Provider Requirement
16:9 colour (default)	16x9_colour	mandatory
1:1 colour	square_colour	optional
4:3 colour	4x3_colour	optional
16:9 white on transparent	16x9_white	optional
1:1 white on transparent	square_white	optional
16:9 colour light on transparent	16x9_colour_light	mandatory
1:1 colour light on transparent	square_colour_light	optional
16:9 colour dark on transparent	16x9_colour_dark	mandatory
1:1 colour dark on transparent	square_colour_dark	optional

Note: The colour_dark and colour_light variants refer to the colours of the image, so colour_light is a light-coloured image for use on a dark background and colour_dark is a dark coloured image for use on a light background.

Future Enhancements

For consideration:

- Content Finished Banner
- Service Description
- ServiceGenre
- Service Banner image

Content Guide Metadata

Requirements for Service Providers and for Receiver Manufacturers

Element/Attribute	Standard (A177r6)	Service provider	Receiver	Remark
ProgramInformation Element (Schedules)				
Table 41				
@programId	M	M	M	
BasicDescription	M	M	M	
OtherIdentifier	O	O	O	
EpisodeOf	O	O	O	
BasicDescription Element				
Table 42				
Title	M	M	M	
Synopsis	M	M	M	
Genre	O	O	O	Using the ContentSubject classification scheme defined in ETSI TS 103 770 V1.2.1 [1] clause D.5
ParentalGuidance	O	O	M	
RelatedMaterial	O	M	O	(Image)
ProgramInformation Element (Detailed Programme Information)				
Table 43				
Title	M	M	M	
Synopsis	M	M	M	
Keyword	O	O	O	
Genre	O	O	O	
ParentalGuidance	O	O	M	
CreditsList	O	O	O	Maximum of 40 CreditsItem elements are permitted
RelatedMaterial	O	M	M	(Image)
ProgramInformation Element (More Episodes)				Optional feature
Table 45				

Title	M	M	M	
RelatedMaterial	O	M	O	(Image)
BasicDescription Element (More Episodes)				Optional feature
Table 47				
RelatedMaterial	O	O	M	(Pagination)
Schedule Element				
Table 50				
@serviceIdRef	M	M	M	
@start	M	M	M	
@end	M	M	M	
ScheduleEvent (Table 51)	O	O	O	
Schedule Event Element				
Table 51				
Program	M	M	M	
ProgramUrl	O	O	O	
InstanceDescription	O	M	O	
PublishedStartTime	M	M	M	
PublishedDuration	M	M	M	
ActualStartTime	O	O	O	
ActualDuration	O	O	O	
FirstShowing	O	O	O	
Free	O	O	O	
OnDemand Program Element (Schedules, Detailed Programme Information)				Optional feature
Table 52				
@serviceIdRef	M	M	M	
Program	M	M	M	
ProgramURL	M	M	M	
AuxiliaryURL	O	O	O	
InstanceDescription	M	M	M	
PublishedDuration	M	M	M	
StartOfAvailability	M	M	M	
EndOfAvailability	M	M	M	
DeliveryMode	M	M	M	
Free	M	M	M	

OnDemand Program Element (More Episodes)				Optional feature
Table 53				
@serviceIdRef	M	M	M	
Program	M	M	M	
ProgramURL	M	M	M	
AuxiliaryURL	O	O	O	
PublishedDuration	M	M	M	
StartOfAvailability	M	M	M	
EndOfAvailability	M	M	M	
Free	M	M	M	
AVAttributes Element				
Table 55				
AudioAttributes	O	O	O	
VideoAttributes	O	O	O	
AccessibilityAttributes	O	O	M	
AudioAttributes				
Tabelle 56				
MixType	O	O	O	
AudioLanguage	O	O	O	
VideoAttributes				
Table 57				
HorizontalSize	O	O	O	
VerticalSize	O	O	O	
AspectRatio	O	O	O	
RelatedMaterial Element				
Table 59				
HowRelated	M	M	M	
MediaLocator	M	M	M	
CreditsItem Element				
Table 60				
@role	M	M	M	
PersonName	O	O	O	
PersonName.GivenName	O	O	O	
PersonName.FamilyName	O	O	O	
Character	O	O	O	

Character.GivenName	O	O	O	
Character.FamilyName	O	O	O	
OrganizationName	O	O	O	
ParentalGuidance Element				Optional element for service providers
Table 61				
minimumAge	M	M	M	Mandatory for the first ParentalGuidance element defined
ParentalRating	O	O	O	
ExplanatoryText	O	O	O	
CountryCodes	O	O	O	
InstanceDescription Element				
Table 62				
Genre (Schedule Event)	O	O	M	Restart Information
Genre (OnDemand)	M	M	M	
AVAttributes	O	O	O	
OtherIdentifier (Schedule Event)	O	O	O	
OtherIdentifier (OnDemand Program)	O	O	O	
RelatedMaterial (Schedule Event)	O	O	M	Restart Information
GroupInformation (NowNext)				
Table 64				
@groupId	M	M	M	
@ordered	M	M	M	
@numOfItems	M	M	M	
GroupType	M	M	M	
BasicDescription	M	M	M	
GroupInformation (More Episodes)				Optional feature
Table 65				
@groupId	M	M	M	
@ordered	M	M	M	
@numOfItems	M	M	M	
GroupType	M	M	M	
BasicDescription	M	M	M	

Image Variants and Size (Content Guide)

Images are used as logos, service banners and promotional imagery

The receiver may request an image with a specific size by using the following query parameter according to clause 5.2.8.2.2 of ETSI TS 103770 [1]: <image_URL>?w=<width>
If the request has no width parameter, or the width parameter is not supported by the server, service providers shall provide default (EPG) images with a width of 640 pixels; the file size of these images (when compressed) should not exceed 100 kB.
The receiver may also request an image_variant according to clause 5.2.8.2.1 of ETSI TS 103770 [1].
If no image_variant is specified, the default image_variant 16:9 colour is returned.

Image Variant	Query Parameter	Service Provider Requirement
16:9 colour (default)	16x9_colour	mandatory
1:1 colour	square_colour	optional
4:3 colour	4x3_colour	optional
16:9 white on transparent	16x9_white	optional
1:1 white on transparent	square_white	optional
16:9 colour light on transparent	16x9_colour_light	optional
1:1 colour light on transparent	square_colour_light	optional
16:9 colour dark on transparent	16x9_colour_dark	optional
1:1 colour dark on transparent	square_colour_dark	Optional

Note: The colour_dark and colour_light variants refer to the colours of the image, so colour_light is a light-coloured image for use on a dark background and colour_dark is a dark coloured image for use on a light background.

The receiver shall support now/next (current and next events) and timestamp schedule requests using the defined ScheduleInfoEndpoint for the channel, as defined in ETSI TS 103 770 V1.2.1 [1] clauses 5.5.6, 5.5.7, and 6.5.

Note: Support for now/next window requests is not required and not supported by the server.

The receiver shall support programme information requests using the ProgramInfoEndpoint for the channel, as defined in ETSI TS 103 770 V1.2.1 [1] clauses 5.5.6, 5.5.7, and 6.6.

For programme events:

- Events shall be shown for:
  - The current day.
  - 7 days in the future.
- Events should be shown for:
  - 7 days in the past.
- HbbTV Linked Applications shall be supported as defined in ETSI TS 103 770 V1.2.1 [1] clause 5.2.4:
  - On-demand, for forwarding the user to a catch-up service.
  - Restart, for the current item programme.
- A programme synopsis with @length set to "long" should be supported.

Boxed sets

- Receivers should support More Episodes and Box Set features as defined in ETSI TS 103 770 V1.2.1 [1] clauses 6.7 and 6.8 respectively, as well as clauses 5.2.4 and 6.9.

Use Case

Content Guide on TVs typically display schedules for 7 days forward. For backward navigation, the Content Guide allows users to access catch-up content for up to 7 days, provided the broadcaster offers replay features. A basic content guide metadata set can provide title, language, event text, images, restart Information, catchup links, information on audio, video and subtitles, parental guidance, genre, accessibility features, start time and duration.

Testcase

- TC-8
- TC-9
- TC-10
- TC-11
- TC-22
- TC-23
- TC-37

IT-7: DVB-I Service Registry

Requirements

A receiver shall support a service list discovery via a national market Service List Registry (SLR).

When querying the Service List Registry, a receiver shall include the TargetCountry and relevant Delivery parameters.

The DVB-I service list registry for Germany is available at: "https://csr.dvb-i-slr.de/query"

Use Case

A receiver must support automatic discovery of service lists through a national Service Registry. If a DVB-provided national subdomain (e.g., *deu.csr.dvbservices.org* for Germany) is available, the receiver should prioritize this URL over any manually configured one. The Service Registry URL for Germany should be made available and integrated into the receiver configuration as soon as possible.

Example

A receiver performing a hybrid terrestrial service-list installation shall use the following query:

https://csr.dvb-i-slr.de/query?TargetCountry=DEU&Delivery[]=dvb-dash&Delivery[]=dvb-t

Spec Reference

ETSI TS 103770 V1.2.1 [1], clause 5.1.3.2

IT-8: DVB-I Service List Registry (SLR) - Listing Order

Requirements

A receiver adds the following query parameters to The Service List registry request:

- the receiver shall use 'TargetCountry' with its value set to 'DEU'
- the receiver shall not use 'regulatorListFlag' with its value set to 'false'

Per clause 5.1.3.2 of ETSI TS 103 770 [1], HTTP response codes 400 (Bad Request) and 422 (Unprocessable Content) will be returned if The Service List registry request is not according to the above.

When searching through the returned Service List Registry document, DVB-I receivers can find the default service list for Germany as follows:

- the receiver shall check that ServiceListRegistryEntity@regulatorFlag is set to true, and
- the receiver shall select the ProviderOffering, where
    - Provider@regulatorFlag is set to true, and
    - ServiceListOffering@regulatorListFlag is set to true

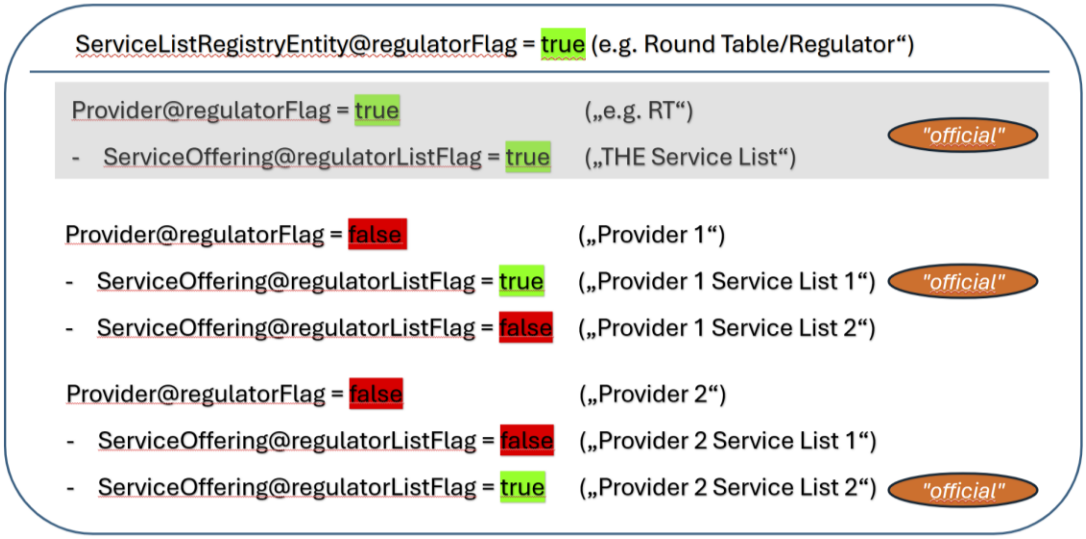
A receiver shall place the default service list first in their UI and place a highlight or focus for selection on it.
Remaining service lists shall be placed after the default service list in the UI and can be selected by the user. The exact order of ProviderOffering and ServiceListOffering XML nodes shall be preserved when rendering the service list entries in the UI after the default service list.

Every ServiceListOffering with regulatorListFlag set to True should be marked in the UI as e.g.“geprüft” (for German language UI) or “official” (for non-German language UI).

Every Provider with regulatorFlag set to true should be marked in the UI as e.g. “geprüft” (for German language UI) or “official” (for non-German language UI).

Use Case

The partners of the Round Table DVB-I Germany work out a harmonized service list “The Service List” which is to serve as the default service list for Germany. The receiver UI should place a highlight or focus for selection on this service list in a selection of service lists, see figure below.



Example

The recommended query for receivers with their region set to “Germany” is:

https://csr.dvb-i-slr.de/query?TargetCountry=DEU&regulatorListFlag=true
(if only “official” lists are requested)

https://csr.dvb-i-slr.de/query?TargetCountry=DEU
(if all available lists are requested)

Testcase

- TC-71

IT-9: Service Listing Order

Requirements

A receiver shall list the services following the Logical Channel Number (LCN) order defined by the LCNTable corresponding to the user's selected region.

- If a LCN number is not used, a receiver should handle it in a user-friendly way (e.g. jump from LCN #12 to LCN #14 if LCN #13 is not assigned).
- Services not mapped to a specific LCN should be assigned LCNs in a defined LCN range, signalled using an LCNRange element.

The Service List does not make use of the Service Prominence element for ordering.

If a service is outside of availability window it should be listed.

Use Case

A receiver shall present services in LCN order, based on the service list rules.

Testcase

- TC-39
- TC-30

Spec Reference

ETSI TS 103770 V1.2.1 [1], clause 5.5.10, 5.5.11,5.5.12 (LCNRange)

ETSI TS 103770 V1.2.1 [1], clause 5.5.27 (Service Prominence)

IT-10: Service Instance Priority and Fallback Management

Requirements

A receiver shall prioritize service instances as defined in ETSI TS 103 770 V1.2.1 [1] clause 5.2.13.

This includes instructions for failover switching to another service instance in the event that a service instance fails during replay playback of the originally chosen service instance.

Use Case

Service instance priority and fallback management are important features of DVB-I that offer Service Providers a wide range of options for signalling their programme offerings. This can lead to situations in which the receiving device has to check several service instances until a valid signal is found.

A receiver should perform the optimal user experience by failover switching without unnecessary instance toggling during service replay.

Testcase

- TC-1

IT-11: DVB-T Wildcard Triplets

Requirements

Support of DVB-T Triplet wildcard in DVBTDeliveryParametersType (see ETSI TS 103 770 V1.2.1 [1] clause 5.5.18.1) is already mandatory. In the German network the combination of serviceID and origNetId is sufficient for a match of the instance. If the tsId attribute is not listed, any value in the broadcast TSID shall be ignored for service instance matching. See also ETSI TS 103 770 V1.2.1 [1] clause 5.2.1 Service Instance Matching.

Use Case

Coverage of a number of multiplexes with varying tsId or networkId.

Example

```
<DVBTDeliveryParameters>
     <DVBTriplet origNetId="8468" serviceId="769" />
</DVBTDeliveryParameter >
```

Testcase

- TC-61

IT-12: DVB-C Integration

Requirements

Support of DVB-C Triplet wildcard in DVBCDeliveryParametersType (see ETSI TS 103 770 V1.3.1 [12] clause 5.5.18.3) is already mandatory in IP2. In the German network the serviceID is sufficient for a match of the instance. If the tsId and origNetId attributes are not listed, any value in the broadcast TSID or ONID shall be ignored for service instance matching. See also ETSI TS 103 770 V1.2.1 [1] clause 5.2.1 Service Instance Matching.
As well as the service instance matching is valid if either no NetworkID is specified or the scanned Network ID matches any of the specified NetworkID values.

Use Case

The receivers should be able to associate DVB-C instances with generic service IDs while ignoring the network ID.

Example

```
<DVBCDeliveryParameters>
     <DVBTriplet serviceId="10301" />
</DVBCDeliveryParameter >
```

Testcase

- TC-62

IT-13: DVB-S/S2 Direct Tuning

Requirements

A DVB-I receiver with an enabled DVB-S/S2 tuner should support Instant Setup and Direct Tuning for DVB-S/S2 Services, according to clause 5.2.12 of ETSI TS 103 770 V1.2.1 [1].

Direct tuning parameters are provided for all DVB-S/S2 service instances.

- OrbitalPosition
- Frequency
- Polarization
- SymbolRate

Use Case

A hybrid DVB-I receiver should use direct tuning parameters to skip the DVB-S scanning procedure during First Time Installation. The receiver can follow up with a DVB-S scan later, for example overnight.

Example

DVBSDeliveryParameters>
<DVBTriplet origNetId="1" tsId="1057" serviceId="61201"/>
<OrbitalPosition>19.2</OrbitalPosition>
<Frequency>1083200</Frequency>
<Polarization>horizontal</Polarization>
<SymbolRate>27500</SymbolRate>
</DVBSDeliveryParameters>

Testcase

- TC-12

IT-14: DRM Support

Requirements

A) DRM Support in DVB-I linked application type 1.2:

If a receiver intends to decode a protected service, which uses a DVB-I linked application type 1.2 to playback the stream, at least one DRM system must be supported (referring to IP2 in ETSI TS 103 770 (V1.2.1) [1]). DRM support in linked applications shall be in agreement with the guidelines in "HbbTV DRM Specification (2025-07)" (ETSI TS 104 227 V1.1.1 [11]).

B) Persistent storage of Authentication Tokens and Consent status:

A receiver shall be able to persistently store Authentication Tokens and Consent status (cookies, web storage).

Use Case

Since some functionalities such as DRM options, SignIn and tracking / monitoring cannot fully be managed by the receivers at native level, e.g. using the native DASH player, Broadcasters can use an HbbTV application, signalled as a DVB-I linked application type 1.2 for controlling media presentation. In the scenario for the market in Germany, those HbbTV applications under the responsibility of Broadcasters (primarily Private Broadcasters) manage their SignIn and playback of linear DRM- protected streams. LogIns, e.g. by the usage of Broadcasters streaming services, may enable upsell-options (e.g. SD→ HD). To avoid a bad user experience, a reliable, persistent storage of authentication Tokens (cookies, web storage) on the receiver is needed, e.g. the receiver has to remember the LogIn after receiver switch off/on. The same applies for the consent status, assuming that consent management is also handled by the HbbTV application.

Example

```
<DisplayName>VOX HD</DisplayName>
<RelatedMaterial>
<tva:HowRelated href="urn:dvb:metadata:cs:LinkedApplicationCS:2019:1.2"/>
<tva:MediaLocator>
<tva:MediaUri contentType="application/vnd.dvb.ait+xml">https://hbbtv-test.cbc.de/DVB-I/voxait.aitx</tva:MediaUri>
</tva:MediaLocator>
</RelatedMaterial>
```

Testcase:

- TC-31, TC-32

IT-15: CI Plus Instance Handling

Requirements

Receivers shall handle scrambled Broadcast service instances according to DVB BlueBook A184 [14] clause 4.12, „Scrambled broadcast content" .

Use Case

DVB-I offers the option, that CI Plus encrypted DVB C/T/S channels of commercial broadcasters (in Germany typically HD/UHD channels, provided by platforms, e.g. HD+, Vodafone, Freenet) can be presented together with SD Broadcast and Streaming Services in one LCN, using different priorities. In current distribution scenarios HD and SD Broadcast are presented in different LCNs. The description on the CI Plus Instance handling helps Broadcasters and CEMs to provide a good user experience.

Example

```
<ServiceInstance priority="1">
    <DisplayName>VOX HD</DisplayName>
    <ContentProtection>
        <CASystemId>0x098C</CASystemId>
        <CASystemId>0x098D</CASystemId>
        <CASystemId>0x09F0</CASystemId>
        <CASystemId>0x1830</CASystemId>
        <CASystemId>0x1842</CASystemId>
        <CASystemId>0x1843</CASystemId>
        <CASystemId>0x1860</CASystemId>
        <CASystemId>0x186A</CASystemId>
        <CASystemId>0x186D</CASystemId>
        <CASystemId>0x4AF4</CASystemId>
    </ContentProtection>
    <AltServiceName>VOX HD</AltServiceName>
    <DVBSDeliveryParameters>
        <DVBTriplet origNetId="1" tsId="1057" serviceId="61201"/>
        <OrbitalPosition>19.2</OrbitalPosition>
        <Frequency>1083200</Frequency>
        <Polarization>horizontal</Polarization>
    </DVBSDeliveryParameters>
</ServiceInstance>
<ServiceInstance priority="2">
    <DisplayName>VOX</DisplayName>
    <AltServiceName>VOX</AltServiceName>
    <DVBSDeliveryParameters>
        <DVBTriplet origNetId="1" tsId="1089" serviceId="12060"/>
        <OrbitalPosition>19.2</OrbitalPosition>
        <Frequency>1218800</Frequency>
        <Polarization>horizontal</Polarization>
```

```
    </DVBSDeliveryParameters>
</ServiceInstance>
```

Testcase

- TC-14

IT-16: Accessibility

Requirements

The receiver should generally follow the Accessibility Implementation Guidelines according to DVB BlueBook A185 [15].

Instance prioritization optimised for users with specific accessibility needs is described in the section 5.2.1 of the DVB BlueBook A185 [15].

The following table shows which features will be supported for DVB-I market launch by Broadcasters and how they are provided:

AV Features	**Broadcast**	**Broadband**
Subtitling	DVB-Subtitling	EBU-TT-D linked in mpd / DVB-TTML linked in mpd
Audio Description	Audio-PID in PMT	Stream linked in mpd
Enhanced Dialogue	Audio-PID in PMT	Stream linked in mpd
Signer	DASH via HbbTV-App	DASH via HbbTV-App

App Features	**Broadcast**	**Broadband**
Screenreader for Apps	ARIA in HbbTV	ARIA in HbbTV
Screen Magnifier for Apps	HbbTV	HbbTV

AV accessibility features will be provided using codecs which are defined as mandatory in this document.

HbbTV apps will (at least partly) support native screenreaders via the ARIA standard and support layout variants for users with visual impairments.

For interoperability between accessibility setting and features on the receiver side and those on the application side, implementation of the HbbTV Accessibility Framework is required.

The static availability of accessibility features will be signalled in The Service List and the features related individually to each event in the Content Guide according to section 4.5 of DVB-I, service list and content guide specifications in DVB-I and the TV-Anytime specification.

Service List Installation

Receivers

- Receivers shall inform the user in the Content Guide about the accessibility features available for each programme.

- Receivers shall also provide options to filter or mark the content guide for programme events with accessibility features known to be of interest to the user e.g. audio description.
- Receivers shall not list accessibility features in the content guide that are not supported by the receiver natively or by a supported application environment (see also clause 5.2.2 of the DVB BlueBook A185 [15]).

In the area of HbbTV applications, Service Providers will use

- the HbbTV Accessibility Framework as specified in section 15 of HbbTV 2.0.4 [2] expecting all Accessibility Features supported by the device and Accessibility Features settings by the users which are covered by this framework will be given back correctly to the applications. This relates to user settings for all AV and App Features listed in the table above. Use of the "suppress API" may be made.
- ARIA as specified in section 15.3.6 of HbbTV 2.0.4 [2] to support the integration with native screenreaders

Full accessibility support on the device side will require these two HbbTV related features.

Use Case

Service Providers:

- Service Instances: Accurate capabilities signalling for all Accessibility Features that are provided shall be present.
- Content Guide: Accurate capabilities signalling for all Accessibility Features that are provided should be present.

Testcase

- TC-65

IT-17: Privacy Policy

Requirement

Display Privacy Policy

Use Case

When loading and presenting a DVB-I service list, the receiver may contact multiple servers. Accesses triggered directly by a user action and strictly necessary to perform the requested function are generally not relevant from a data protection perspective. A postcode, on its own, is generally not personal data; however, it may become personal data when combined with other information or used in a way that enables identification.

The situation is different for access to the programme providers' various content guide servers. Programme information is hosted on separate servers that may all have to be queried to render display a complete EPG, even if the user has no intention of watching those programmes. Because this behaviour is not reasonably expected by the user, and the service list provider cannot ensure whether programme providers engage in tracking. When their content guide servers are contacted, prior consent would be required. Consequently, the Content Guide/EPG cannot be provided to users who do not or cannot give consent.

Possible Solution

Consent management on service list level is available in DVB BlueBook A177r7 [12]. Current implementations are based on DVB BlueBook A177r6 ETSI TS 103 770 (V1.2.1) [1]: which does not provide means for consent management. Receivers based on A177r6 only can show a static text information when DVB-I is activated.

A consent wouldn't be necessary, if the content guide servers are accessed via a proxy of the service list provider, thereby ensuring that no user tracking is practized. End-user devices would only access this proxy and thus direct contact to the content guide servers of the service providers is prevented.

This could be ensured by certification and awarding the ‘Regulator Flag’ to lists that comply with the procedure described above and describing this in the text information page. For all other lists, users have to be aware that tracking might be applied.

Deeply integrated consent management is not possible with DVB-I in the first phase (using DVB BlueBook A177r6). It is therefore recommended that user tracking, if required, be implemented as usual via HbbTV. In this way, consent can be obtained via HbbTV.

With the availability of receivers based on DVB BlueBook A177r7 [12], the situation can be reassessed.

IT-18: Service List Updates

Requirements

A receiver should promptly adopt changes in an updated service list and shall therefore check for updates of the installed Service List at least every 24 hours as described in clause 5.1.7 of ETSI TS 103 770 [1].

The German service list server supports both Cache-Control and If-Modified-Since Headers that should be used by DVB-I receivers in order to reduce traffic.

For regionalized requests (see IT-5) in the form <ServiceList_URL>?postcode=<postcode>, HTTP Request Headers shall be ignored every time a postcode is used for the first time.

If, for any reason, a current service list cannot be retrieved from the service list server, the receiver shall continue to use the last list received.

Use Case

DVB-I service lists contain elements that are updated frequently. These include, for example, Pop-Up channels, which must be displayed in the user interface in a timely manner and must also be removed again when they are deleted from The Service List.

Also changes in transmission parameters (e.g. satellite frequency) should be adopted by the DVB-I receiver promptly.

Example

A Pop-Up channel for an event starting on 01.01.2026 is planned by a Service Provider. The Service Providers need to add the pop-up service to their service list latest on 30.12.2025 in order to make sure that it is available on the DVB-I receiver at the start of the event.

Testcase

- TC-40
- TC-41

Spec Reference

ETSI TS 103770 V1.2.1, 5.1.7 Service List Updates

ETSI TS 103770 V1.2.1, 4.3.2 HTTP Request Headers

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