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Hybrid Broadcast Broadband Television;
Operator Applications

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Foreword

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

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Modal verbs terminology

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

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1 Scope

The present document specifies a platform, based on the existing HbbTV® specification ETSI TS 102 796 [1], that supports the signalling, transport and presentation of an operator application. The operator application is able to replace some of the terminal's user interface. The extent to which the terminal user interface is replaced by an operator application depends on the type of the operator application and the business models of the operator and manufacturer. The present document assumes the presence of an agreement between an operator and the device manufacturer. Operator applications will not run in the absence of such an agreement. Topics that could or need to be covered by such a bilateral agreement are listed in annex D.

The present document makes use of functionalities described in ETSI TS 102 796 which is describing a platform for signalling, transport, and presentation of enhanced and interactive applications intended for running on hybrid terminals that include both a DVB compliant broadcast connection and a broadband connection to the Internet. The usage of a hybrid terminal for IPTV delivered audio-visual content is described in "IP-delivered Broadcast Channels and Related Signalling of HbbTV® Applications" [i.4].

2 References

2.1 Normative references

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

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

[1] ETSI TS 102 796: "Hybrid Broadcast Broadband TV".

NOTE: The present document is not suitable to be used with versions before 1.4.1.

[2] Open IPTV Forum Release 2 specification, volume 5 (V2.3): "Declarative Application Environment".

[3] ETSI TS 102 809: "Digital Video Broadcasting (DVB); Signalling and carriage of interactive applications and services in Hybrid broadcast/broadband environments".

[4] ETSI TS 102 851: "Digital Video Broadcasting (DVB); Uniform Resource Identifiers (URI) for DVB Systems".

[5] CI Plus™ specification (V1.3.2) (2015-03): "Content Security Extensions to the Common Interface".

[6] IETF RFC 2782: "A DNS RR for specifying the location of services (DNS SRV)".

[7] ETSI TS 103 205: "Digital Video Broadcasting (DVB); Extensions to the CI Plus™ Specification".

[8] W3C® Recommendation "Web Notifications", 22 October 2015.

[9] ISO/IEC 21320-1 (2015-10-15): "Information Technology - Document Container File".

[10] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[11] IETF RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".

[12] IETF RFC 5652: "Cryptographic Message Syntax (CMS)".

[13] IETF RFC 4055: "Additional Algorithms and Identifiers for RSA Cryptography for use in the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".

[14] ETSI EN 300 468: "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems".

[15] Open IPTV Forum Release 2 specification, volume 7 (V2.3): "Authentication, Content Protection and Service Protection".

[16] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[17] IETF RFC 4501: "Domain Name System Uniform Resource Identifiers".

[18] IETF RFC 3447: "Public-Key Cryptography Standards (PKCS) #1: RSA Cryptography Specifications Version 2.1".

[19] W3C® Recommendation (28 October 2014): "HTML5 - A vocabulary and associated APIs for HTML and XHTML"..

[20] W3C® Recommendation: "Web Storage (Second Edition)".

[21] W3C® Recommendation "Media Source Extensions".

[22] W3C® Editor's Draft (18 January 2020): "Media Playback Quality".

[23] "Streaming Quality of Experience Events, Properties and Metrics (CTA-2066)".

[24] Notifications API, WHATWG Review Draft - Published 23 July 2018.

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

[26] IETF RFC 5646 - BCP 47: "Tags for Identifying Languages", A. Phillips, Ed., M. Davis, Ed. September 2009.

[27] ETSI TS 102 034: "Digital Video Broadcasting (DVB); Transport of MPEG-2 TS Based DVB Services over IP Based Networks".

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

[29] Open IPTV Forum Release 2 specification, volume 3 (V2.3): "Content Metadata".

[30] W3C® Recommendation: "Browsing contexts".

2.2 Informative references

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

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

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

[i.1] ETSI TS 103 464: "Hybrid Broadcast Broadband TV Application Discovery over Broadband".

[i.2] Open IPTV Forum Release 2.3 specification volume 5a (V2.3): "Web Standards TV Profile".

[i.3] W3C® Candidate Recommendation: "Secure Contexts".

[i.4] HbbTV®: "IP-delivered Broadcast Channels and Related Signalling of HbbTV® Applications".

[i.5] IETF RFC 6454: "The Web Origin Concept".

[i.6] DIAL Discovery and Launch Protocol Specification.

[i.7] W3C® Proposed Candidate Recommendation: "Page Visibility Level 2".

[i.8] W3C® Candidate Recommendation (08 October 2015): "Mixed Content".

[i.9] IETF draft-west-let-localhost-be-localhost-06: "Let 'localhost' be localhost" Mike West.

[i.10] HbbTV® Association: "HbbTV Specification 2.0.3".

[i.11] Fullscreen API, WHATWG Review Draft - Published 18 January 2021.

[i.12] ETSI EN 303 560: "Digital Video Broadcasting (DVB); TTML subtitling systems".

[i.13] ETSI TS 103 285: "Digital Video Broadcasting (DVB); MPEG-DASH Profile for Transport of ISO BMFF Based DVB Services over IP Based Networks".".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

bilateral agreement: agreement between a terminal manufacturer and an operator defining commercial, operational, technical and user interface arrangements for the use of an operator application

broadband: bi-directional IP connection with sufficient bandwidth for streaming or downloading A/V content

broadcast: uni-directional MPEG-2 transport stream based broadcast using DVB technologies

companion screen device: device (not another HbbTV® terminal) that can run applications that in turn link to or work with an HbbTV® terminal or HbbTV® application

NOTE: Such a device can be for example a mobile phone or a tablet.

hybrid terminal: terminal supporting delivery of A/V content both via broadband and broadcast

operator: entity that aggregates a set of channels and offers them to the user

operator application: application from an operator that takes over some of the user interface of the terminal

operator application created channel: content that is offered to the consumer in the operator application UI in a way that looks like a TV channel but where the terminal has no independent knowledge of it

operator application presented channel: channels for which streamed media presentation is handled by an operator application using an HTML5 media element

operator-specific operator application: operator application that is installed on a terminal and that, when it is active, provides most of the terminal's user interfaces

NOTE: This type of operator applications is intended for set-top-boxes where the manufacturer provides little or no user interface except perhaps for the basic device setup and installation.

privileged operator application: operator application that is installed on a terminal, can be activated by the user and, when it is active, replaces some of the terminal's user interface

NOTE: This type of operator applications is intended for TV sets.

regular HbbTV® application: HbbTV® application that uses the features defined in ETSI TS 102 796 [1] and nothing from the present document except for features specifically identified as being available to regular HbbTV® applications

NOTE: Clause 4.3 identifies features in the present document that are specifically identified as being available to regular HbbTV® applications.

standard operator application: application providing operator functionality using only the features defined in ETSI TS 102 796 [1]

NOTE: A standard operator application is also a regular HbbTV® application.

terminal: HbbTV® terminal (as defined in ETSI TS 102 796 [1]) which also supports the detection, installation and execution of operator applications as defined in the present document

3.2 Symbols

Void.

3.3 Abbreviations

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

AIT	Application Information Table
APDU	Application Protocol Data Unit
API	Application Programme Interface
A/V	Audio/Video
ASCII	American Standard Code for Information Interchange
BAT	Bouquet Association Table
CA	Certificate Authority
CSP	Content and Service Protection
CMS	Cryptographic Message Syntax
CI	Common Interface
CICAM	Common Interface Conditional Access Module
CRL	Certificate Revocation List
DAE	Declarative Application Environment
DASH	Dynamic Adaptive Streaming over HTTP
DER	Distinguished Encoding Rules
DNS	Domain Name Service
DOM	Document Object Model
DRM	Digital Rights Management
DSM-CC	Digital Storage Media - Command and Control
DVB	Digital Video Broadcasting
DVB-SI	Digital Video Broadcasting - Service Information
DVB-C	Digital Video Broadcasting - Cable
DVB-S	Digital Video Broadcasting - Satellite
EPG	Electronic Programme Guide
FDP	File Delivery Protocol
FQDN	Fully Qualified Domain Name
HbbTV®	Hybrid broadcast broadband TV
HDMI	High Definition Multimedia Interface
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol - Secure
IP	Internet Protocol
IPTV	Internet Protocol TeleVision
MMI	Man Machine Interface
MPEG	Motion Picture Experts Group
NIT	Network Information Table
OIPF	Open IPTV Forum
PVR	Personal Video Recorder
PKI	Public Key Infrastructure