ETSI TS 103 320 V1.1.2 (2015-05)

Digital Video Broadcasting (DVB);
GEM Companion Screen Service Framework

EBU
OPERATING EUROVISION

DVB
Digital Video Broadcasting

Reference
RTS/JTC-DVB-361

Keywords
companion screen, GEM, UPnP

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: 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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The Digital Video Broadcasting Project (DVB) is an industry-led consortium of broadcasters, manufacturers, network operators, software developers, regulatory bodies, content owners and others committed to designing global standards for the delivery of digital television and data services. DVB fosters market driven solutions that meet the needs and economic circumstances of broadcast industry stakeholders and consumers. DVB standards cover all aspects of digital television from transmission through interfacing, conditional access and interactivity for digital video, audio and data. The consortium came together in 1993 to provide global standardization, interoperability and future proof specifications.

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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Introduction

Enhanced TV DVB-services, based on the "Digital Convergence" paradigm, are becoming available today in a variety of forms in the digital marketplace. The market has seen an explosion in the distribution and consumption of audio and video content through a variety of connected devices, like smart phones, tablets, PCs, and hybrid STBs and TVs (typically connected to the broadcast and to the broadband channels).

It is recognized that a new, emerging trend is expanding the focus of interactive services from the main TV screen only to a wide range of different connected companion screens, extending the range of possibilities and providing new levels of engagement to end users.

The commercial success of personal and portable devices, often used as a second or companion screen by the user to search and retrieve information or additional content while watching traditional TV services, creates new opportunities to provide compelling services based on interactions among users, devices and content.

For the DVB GEM Middleware (specified in ETSI TS 102 728 [1]), a deeper investigation of the evolution of interactive TV services has happened, envisaging how those services will integrate companion devices to meet user's expectations in the near future.

Based on clear use cases to support interactions with the main TV screen and related content consumption also from companion screens, a set of GEM extensions has been defined which are described by the present document.

These extensions are called the *GEM Companion Screen Service Framework*.

The GEM *Companion Screen Service Framework* includes a service capable of delivering synchronization information as defined by ETSI TS 103 286-2 [2]: "Digital Video Broadcasting (DVB); Companion Screens and Streams; Part 2: Content Identification and Media Synchronization".

1 Scope

The present document specifies the *GEM Companion Screen Service Framework*, which is addressing the Phase 1 and 1+ of DVB's companion screen requirements. These requirements ask for extensions of the GEM middleware specification ETSI TS 102 728 [1], to support information exchange and synchronization between the companion screen and the primary service.

The *Companion Screen Service Framework* provides the infrastructure for GEM companion services that offer their functionality to companion devices in the home network. GEM companion services allow broadcasters and content providers to dynamically provide companion services that integrate screen devices, such as mobile phones, tablets, PCs etc. into the viewing experience.

GEM *companion services* can be deployed via regular GEM applications and enable the broadcaster and content provider to dynamically add companion services, thus augmenting the experience of the viewer to companion devices.

These companion devices can communicate with the GEM companion services via standardized protocols (e.g. UPnP, REST, WebSockets) or can chose to implement proprietary communication protocols.

The framework defines a common discovery mechanism based on the UPnP Application Management Service for these services.

The companion screen service framework as defined by the present document is orthogonal to GEM profiles and versions and can be used on all GEM platforms and derived platforms (MHP, OCAP, BD-J).

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.

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

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

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

[1] ETSI TS 102 728: "Digital Video Broadcasting (DVB); Globally Executable MHP (GEM) Specification 1.3 (including OTT and hybrid broadcast/broadband)".

NOTE: Available at http://www.etsi.org/deliver/etsi_ts/102700_102799/102728/01.02.01_60/ts_102728v010201p.pdf.

[2] ETSI TS 103 286-2: "Digital Video Broadcasting (DVB); Companion Screens and Streams; Part 2: Content Identification and Media Synchronization".

NOTE: Available at http://www.etsi.org/deliver/etsi_ts/103200_103299\10328602/01.01.01_60/ts_10328602v010101p.pdf.

[3] ISO/IEC 29341 (September 2014): "UPnP ApplicationManagement:1 Service".

NOTE: Available at http://upnp.org/specs/ms/UPnP-ms-ApplicationManagement-v1-Service.pdf.

[4] IETF RFC 2616 (1999): "Hypertext Transfer Protocol -- HTTP/1.1".

NOTE: Available at http://www.ietf.org/rfc/rfc2616.txt.

[5] IETF RFC 6455 (December 2011): "The WebSocket Protocol".

NOTE: Available at http://tools.ietf.org/html/rfc6455.