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OF TELEVISION, SOUND PROGRAMME AND OTHER
MULTIMEDIA SIGNALS

Application for Interactive Digital Television

Requirements for an application control framework using integrated broadcast and broadband digital television

Recommendation ITU-T J.205

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Requirements for an application control framework using integrated broadcast and broadband digital television

Summary

Consumer electronic devices get more and more connected every day. This tendency has also reached digital television (DTV) receivers, blu-ray players, personal video recorder (PVR) devices and even games consoles.

Consumer electronics manufacturers are taking advantage of the increasing broadband availability and embedding their products with applications that are able to retrieve content from proprietary services available through the Internet. Additionally, increased storage capacity and improved computational capabilities of these devices would allow the end users to customize their devices by installing new applications, as currently being done with mobile phones or games consoles.

Similarly, DTV broadcasters are extending their systems to make the most of increased broadband availability to improve their services by adding interactive non-linear and on-demand content to what they already offer. However, most of the current solutions are closed / proprietary, and they are focused on each industry specific problems.

Recommendation ITU-T J.205 proposes the requirements that should be met by an application control framework for DTV-enabled devices, which is responsible for managing and controlling the interactive content and applications available through cable DTV services that have been installed by the end-user or embedded by the device manufacturer, and providing network agnostic delivery mechanisms and a unified execution environment for them.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T J.205	2012-01-13	9

FOREWORD

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T J.205

Requirements for an application control framework using integrated broadcast and broadband digital television

1 Scope

This Recommendation defines high-level requirements for an application control framework based on integrated broadcast and broadband (IBB) DTV services where broadcasters or cable operators are continually engaged with their network. This application control framework is intended to harmonize the behaviour and the interaction of a variety of types of applications, provided by network agnostic delivery mechanisms, including applications that are broadcast-delivered, broadband-delivered, pre-installed, installed via an application repository, or home area network delivered. This Recommendation is intended to define a baseline for such an integrated application framework.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T J.200] Recommendation ITU-T J.200 (2010), *Worldwide common core – Application environment for digital interactive television services*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 application: Any active DTV service content aimed at end-user interaction.

3.2.2 application catalogue: Data structure listing available applications (interactive content). This data structure is local to the IBB DTV receiver, and describes the IBB applications installed on the IBB DTV receiver.

3.2.3 application catalogue user interface: A user interface functionality over the IBB DTV receiver, intended to allow the end user to browse the available applications in the application catalogue or to query application catalogues exposed by application repositories. Also, it lists applications that are currently available in the selected IBB DTV service or broadcast DTV service.

3.2.4 application component: A block of data that forms part of an application. Application component types are: code, resources, meta-data, control and user settings.

3.2.5 application component delivery mechanism: A mechanism, channel or medium used to deliver application components to an IBB DTV receiver.

3.2.6 application control data structure: Data structures transmitted within the integrated broadcast and broadband (IBB) DTV service to control IBB applications (e.g., AIT in [b-GINGA, b-MHP]).

3.2.7 application install package: Application delivery mechanism in which several application components are bundled together in a single file.

3.2.8 application repository: Entity, reachable through the broadband channel, that provides access to integrated broadcast and broadband (IBB) applications contained in it. These IBB applications can be downloaded and installed on the IBB DTV receiver, manually, by the end user, or, in case of being signalled within an IBB DTV service, launched or installed automatically under the IBB DTV service's control using the IBB application control mechanism. An application repository can be managed by IBB service providers, IBB DTV receiver manufacturers, or other third party entities.

3.2.9 authorized IBB application provider: An entity allowed to develop and provide integrated broadcast and broadband (IBB) applications within a given implementation of an IBB digital television (DTV) system.

3.2.10 broadband channel: A medium used to deliver interactive content. Usually this medium is based on the Internet and allows the delivery of non-linear and on-demand content. A broadband channel allows access to servers that may be located in the Internet.

3.2.11 broadcast channel: A medium used to deliver digital television (DTV) services. Examples: free to air, satellite and cable.

3.2.12 broadcast DTV service: Any digital television (DTV) service, delivered through a broadcast channel.

3.2.13 cable integrated broadcast and broadband DTV service: An integrated broadcast and broadband digital television (DTV) service managed by cable operators.

3.2.14 DTV service: This is the unit for delivering audio-visual content to the end users. In a more extensive definition (the one adopted in this Recommendation), this unit also comprehends the delivery of interactive content. It constitutes an editorially consistent whole and it is an aggregation of different kinds of service components.

3.2.15 DTV service component: Each one of the audio, visual or interactive elements that compose a digital television (DTV) service.

3.2.16 DTV service component delivery mechanism: Used to refer to any mechanism, channel or medium to deliver digital television (DTV) service components to an integrated broadcast and broadband (IBB) DTV receiver.

3.2.17 DTV service content: Audio/visual/interactive components delivered within a digital television (DTV) service as single editorially consistent whole.

3.2.18 IBB application: An Application that is meant to be handled and executed within an integrated broadcast and broadband (IBB) application control framework defined by this Recommendation. Such applications can have their application contents delivered using different application component delivery mechanisms.

3.2.19 IBB application control mechanism: A mechanism used by integrated broadcast and broadband (IBB) digital television (DTV) service providers to signal and control IBB applications associated to their respective IBB DTV services. The mechanism contemplates the transmission of an IBB DTV service's application control data structure within the IBB DTV service. Such data structure can support the signalling of IBB applications that are retrievable from the broadcast channel or through the broadband channel from HTTP servers or application repositories.

3.2.20 IBB DTV receiver: A device capable of receiving and displaying DTV Services as well as integrated broadcast and broadband (IBB) DTV services.

3.2.21 IBB DTV service provider: An entity (i.e., broadcasters) making available and delivering IBB DTV services.

3.2.22 IBB installable application: An integrated broadcast and broadband (IBB) application that can be downloaded and saved onto the IBB DTV receiver's persistent storage for later usage.

3.2.23 IBB resident application: An integrated broadcast and broadband (IBB) application embedded into the IBB DTV receiver by the device manufacturer.

3.2.24 integrated broadcast and broadband (IBB) DTV service: A service that simultaneously provides an integrated experience of broadcasting and interactivity relating to media content, data and applications from multiple sources, where the interactivity is sometimes associated with broadcasting programmes.

3.2.25 remote application catalogue: Application catalogue exported from an application repository. This differs from the normal application catalogue in that, if the remote application catalogue is very large, there must be a mechanism for querying it and retrieving it in small parts that can be handled in an efficient way by the integrated broadcast and broadband (IBB) DTV receiver.

3.2.26 service associated IBB application: An application that is part of the integrated broadcast and broadband (IBB) DTV service tuned by the user at a given time.

3.2.27 service exclusive IBB application: An application that is listed as a component of an integrated broadcast and broadband (IBB) DTV service and its life cycle is strictly tied to the exhibition of such an IBB DTV service.

3.2.28 service shared IBB application: An application that is listed as a component of several different integrated broadcast and broadband (IBB) DTV services. Its life cycle is for as long as any of those IBB DTV services are being exhibited.

3.2.29 stand-alone IBB application: Resident or downloaded integrated broadcast and broadband (IBB) installable application that is not part of an IBB DTV service. Such an application can be created by an authorized IBB application provider, and typically delivered through the application repository.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ACF	Application Control Framework
AIP	Application Install Package
AIT	Application Information Table
DAV	Distributed Authoring and Versioning
DSMCC DC	Digital Storage Media Command and Control – Data Carousel
DSMCC OC	Digital Storage Media Command and Control – Object Carousel
DTV	Digital Television
EPG	Electronic Programme Guide
HAN	Home Area Network
HTTP	Hyper Text Transfer Protocol
HTTPS	Secure Hyper Text Transfer Protocol