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OF ITU

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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

IPTV multimedia services and applications for IPTV –
IPTV multimedia application frameworks

Overview of multimedia application frameworks for IPTV services

Recommendation ITU-T H.760

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For further details, please refer to the list of ITU-T Recommendations.

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Overview of multimedia application frameworks for IPTV services

Summary

Recommendation ITU-T H.760 identifies and describes the relevant standards of multimedia application frameworks for interoperability and harmonization in IPTV services. It gives an overview of standards for declarative application frameworks as well as standards for procedural application frameworks. For declarative application frameworks, standards to be used for IPTV are described (such as HTML, CSS, DOM, ECMAScript, SVG, BML, MHEG-5 and Ginga-NCL), while procedural application frameworks are represented by GEM-based frameworks. It also contains descriptions of ISO/IEC International Standards for application frameworks, namely M3M, BIFS and LAsER. Recommendation ITU-T H.760 also has an annex on common usage of web-related technologies.

Source

Recommendation ITU-T H.760 was approved on 16 March 2009 by ITU-T Study Group 16 (2009-2012) under Recommendation ITU-T A.8 procedures.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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Overview of multimedia application frameworks for IPTV services

1 Scope

This Recommendation identifies and describes the relevant standards for interoperability and harmonization among IPTV multimedia application frameworks.

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.201] Recommendation ITU-T J.201 (2008), *Harmonization of declarative content format for interactive television applications*.
- [ITU-T T.170] Recommendation ITU-T T.170 (1998), *Framework of the T.170-Series of Recommendations*.
- [ITU-T T.172] Recommendation ITU-T T.172 (1998) | ISO/IEC 13522-5:1997, *MHEG-5 – Support for base-level interactive applications*.
- [ITU-T T.175] Recommendation ITU-T T.175 (1998), *Application programming interface (API) for MHEG-5*.
- [ITU-R BT.1699-1] Recommendation ITU-R BT.1699-1 (2009), *Harmonization of declarative application formats for interactive TV*.
- [ITU-R BT.1722-1] Recommendation ITU-R BT.1722-1 (2007), *Harmonization of the instruction set for the execution engine for interactive TV applications*.
- [ANSI/SCTE 90-1] ANSI/SCTE 90-1 (2005), *SCTE Application Platform Standard OCAP 1.0 Profile*.
- [ARIB STD-B24] ARIB STD-B24 Ver5.3 (2009), *Data coding and Transmission Specification for Digital Broadcasting; ARIB, Association of Radio Industries and Businesses (Japan)*.
- [ATSC A/101A] ATSC Document A/101 A (2009), *ATSC Standard: Advanced Common Application Platform (ACAP)*.
- [CEA-2014] CEA-2014 (2006), *Web-based Protocol and Framework for Remote User Interface on UPnP Networks and the Internet (Web4CE)*.
- [ETSI TS 102 322] ETSI TS 102 322 V1.1.1 (2004), *Specification for a Lightweight Microbrowser for interactive TV applications, based on and compatible with WML*.
- [ETSI TS 102 812] ETSI TS 102 812 V1.2.2 (2006), *Digital Video Broadcasting (DVB) – Multimedia Home Platform (MHP) Specification 1.1.1*.
- [ETSI TS 102 819] ETSI TS 102 819 V1.4.1 (2008), *Digital Video Broadcasting (DVB) – Globally Executable MHP version 1.0.3 (GEM 1.0.3)*.

[ISO/IEC 14496-11]	ISO/IEC 14496-11 (2005), <i>Information technology – Coding of audio-visual objects – Part 11: Scene description and application engine</i> .
[ISO/IEC 14496-20]	ISO/IEC 14496-20 (2008), <i>Information technology – Coding of audio-visual objects – Part 20: Lightweight Application Scene Representation (LAsE) and Simple Aggregation Format (SAF)</i> .
[ISO/IEC 16262]	ISO/IEC 16262 (2002), <i>Information technology – ECMAScript language specification</i> .
[ISO/IEC 23004.x]	ISO/IEC 23004.x-series (2007), <i>Information technology – Multimedia Middleware</i> .
[W3C CSS1]	Cascading Style Sheets, level 1 (2008), <i>W3C Recommendations: Cascading Style Sheets, level 1</i> .
[W3C DOM1]	Document Object Model (DOM) Level 1 Specification Version 1.0 (1998), <i>W3C Recommendation: Document Object Model (DOM) Level 1 Specification</i> .
[W3C DOM2]	Document Object Model (DOM) Level 2 Core Specification Version 1.0 (2000), <i>W3C Recommendation: Document Object Model (DOM) Level 2 Core Specification</i> .
[W3C SVG 1.1]	Scalable Vector Graphics (SVG) 1.1 Specification (2003), <i>W3C Recommendation: Scalable Vector Graphics (SVC) 1.1 Specification</i> .
[W3C XHTML]	XHTML 1.0 Second Edition (2002), <i>W3C Recommendation: XHTML 1.0, The Extensible HyperText Markup Language (Second Edition)</i> .

3 Definitions

3.1 Terms defined elsewhere

This clause is intentionally left blank.

3.2 Terms defined in this Recommendation

This clause is intentionally left blank.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ACAP	Advanced Common Application Platform
API	Application Programming Interface
BD-J	Blu-ray Disc Java
BIFS	BIInary Format for Scene
BIFS-Anim	BIFS Animation
BML	Broadcast Markup Language
CE	Consumer Electronics
CSS	Cascading Style Sheet
DASE	Digital television Application Software Environment
DDE-T	Declarative Data Essence-Transitional