

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

J.202

(04/2008)

SERIES J: CABLE NETWORKS AND TRANSMISSION
OF TELEVISION, SOUND PROGRAMME AND OTHER
MULTIMEDIA SIGNALS

Application for Interactive Digital Television

**Harmonization of procedural content formats for
interactive TV applications**

ITU-T Recommendation J.202



ITU-T Recommendation J.202

Harmonization of procedural content formats for interactive TV applications

Summary

ITU-T Recommendation J.202 defines APIs, semantic guarantees and system aspects of platform behaviour for harmonized procedural content formats for interactive TV applications.

Since this Recommendation was approved in 2003, several procedural content formats for interactive TV applications developed by other standardization bodies have been updated or newly developed. Updated specifications include: DVB-GEM, DVB-MHP 1.0 and 1.1, OCAP-1.0, and ARIB STD-B23. Also, ATSC has now developed ACAP.

This Recommendation has been revised to produce this Recommendation, J.202 Rev.2, to include the updated GEM 1.2 for harmonization which has been developed with contributions from DVB, SCTE, ARIB and ATSC. Therefore, the only normative references in ITU-T Recommendation J.202 Rev.2 are GEM 1.21 and ITU-T Recommendation J.200, describing the overall architecture. The other specifications listed above are included for information as well as the appendices which describe the additional APIs specific to these specifications and are therefore not included in the harmonized normative part.

Source

ITU-T Recommendation J.202 was approved on 13 April 2008 by ITU-T Study Group 9 (2005-2008) under the ITU-T Recommendation A.8 procedure.

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.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

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/>.

© ITU 2008

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

	Page
1 Scope	1
2 References.....	1
2.1 Normative references.....	1
2.2 Informative references.....	1
3 Terms and definitions	2
4 Abbreviations and acronyms	2
5 Conventions	2
6 Common platform definitions for interactive TV using procedural applications.....	2
Annex A – Common core APIs	3
Annex B – Globally executable MHP	4
Appendix I – Specific additional APIs common to MHP 1.0.3, MHP 1.1.1 and MHP 1.2....	5
Appendix II – OCAP 1.0-specific additional APIs.....	5
Appendix III ARIB STD-B23-specific additional APIs.....	5
Appendix IV – MHP 1.2-specific additional APIs	6
Appendix V – ACAP-specific additional APIs.....	7
Appendix VI – Proposed changes to the MHP specification in order to assist migration to MHP from MHEG-5.....	8

ITU-T Recommendation J.202

Harmonization of procedural content formats for interactive TV applications

1 Scope

This Recommendation is intended to harmonize the application environment for interactive TV applications. The potential for commonality in the procedural application environment is based on the analysis of the common core identified in the work leading to this Recommendation. Such commonality would benefit content providers through knowledge of commonly adopted procedural functionality and economies of scale.

NOTE – The structure and content of this Recommendation have been organized for ease of use by those familiar with the original source material; as such, the usual style of ITU-T Recommendations has not been applied.

2 References

In this clause, references are either specific (identified by date of publication, edition number, version number, etc.) or non-specific:

- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

2.1 Normative 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 Recommendation J.200 (2001), *Worldwide common core – Application environment for digital interactive television services*. Plus Corrigendum 1 (2004).
- ETSI TS 102 543 V1.1.1 (2008-03), *Digital Video Broadcasting (DVB) Globally Executable MHP (GEM) Specification 1.2*.

http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=25079

2.2 Informative references

- ETSI TS 102 590 v1.1.1, *Digital Video Broadcasting (DVB); Multimedia Home Platform specification 1.2*.

http://webapp.etsi.org/WorkProgram/Report_WorkItem.asp?WKI_ID=26303

- OCAP 1.0.2 (March 2008), OCAP 1.0.2 Profile,
<http://www.opencable.com/specifications/ocap.html>

- ARIB STD-B24 V5.1 (2007), *Data Coding and Transmission Specification for Digital Broadcasting*.

<http://www.arib.or.jp/english/html/overview/archives/br.html>

- ARIB STD-B23 V1.1 (2004), *Application Execution Engine Platform for Digital Broadcasting*
<http://www.arib.or.jp/english/html/overview/archives/br.html>
- ATSC A/101 (2005), *Advanced Common Application Platform (ACAP)*.
http://www.atsc.org/standards/a_101.pdf.
- ISO/IEC 13522-5:1997, *Information technology – Coding of multimedia and hypermedia information – Part 5: Support for base-level interactive applications*.
- ETSI ES 202 184 V.1.1.1 (2004-11), *MHEG-5 Broadcast Profile*.

3 Terms and definitions

See ETSI TS 102 543 V1.1.1 clause 3.1.

4 Abbreviations and acronyms

See ETSI TS 102 543 V1.1.1 clause 3.2.

5 Conventions

See ETSI TS 102 543 V1.1.1 clause 4.

6 Common platform definitions for interactive TV using procedural applications

The recommended platform definitions for interactive TV consist of:

- 1) the common core in Annex A which is derived from the commonality in ARIB STD-B23, MHP 1.0.3, MHP 1.1.1, MHP 1.2, ACAP and OCAP 1.0;
- 2) the specification given in ETSI TS 102 543 V1.1.1 as described in Annex B, that provides semantic guarantees and system aspects of platform behaviour. The strict adherence to the APIs in Annex A ensure binary interoperability;
- 3) the complete specifications that build on ETSI TS 102 543 V1.1.1, by providing additional guarantees required by individual organizations, where necessary;
- 4) the system-specific additions such as those given in Appendices I through VI and possible future additions, if necessary.

Further, attention is drawn to the fact that where there are current systems, such as BML (see ARIB STD-B24) and MHEG-5, which are in extensive use, the addition of some functionalities may be required to assist migration to the harmonized system in future. An example is given in Appendix VI.

Annex A

Common core APIs

java.awt
java.awt.event
java.awt.image
java.beans
java.io
java.lang
java.lang.reflect
java.math
java.net
java.rmi
java.security
java.security.cert
java.security.spec
java.util
java.util.zip
javax.media
javax.media.protocol
javax.net
javax.net.ssl
javax.security.cert
javax.tv.graphics
javax.tv.locator
javax.tv.media
javax.tv.net
javax.tv.service
javax.tv.service.guide
javax.tv.service.navigation
javax.tv.service.selection
javax.tv.service.transport
javax.tv.util
javax.tv.xlet
org.davic.media
org.davic.resources
org.davic.mpeg
org.davic.mpeg.sections
org.davic.net
org.davic.net.tuning

org.dvb.application
org.dvb.dsmcc
org.dvb.event
org.dvb.io.ixc
org.dvb.io.persistent
org.dvb.lang
org.dvb.media
org.dvb.net
org.dvb.net.tuning
org.dvb.net.rc
org.dvb.test
org.dvb.ui
org.dvb.user
org.havi.ui
org.havi.ui.event

Annex B

Globally executable MHP

For this annex, ETSI TS 102 543 V1.1.1 applies. This Standard specifies a set of interfaces, and the semantic guarantees underlying those interfaces, to enable binary interoperability of applications between different receiver specifications and/or standards.

The full text of ETSI TS 102 543 V1.1.1 can be found on the ETSI website at http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=25079

NOTE – This Recommendation covers the broadcast and IPTV targets and defines the common core which is mandatory. There are a few APIs that are not required when only the broadcast target is implemented. Similarly, there are a few APIs that are not required when only the IPTV target is implemented. However, when one or both targets are implemented, it is mandatory that all the required APIs and other definitions are included as specified in this Recommendation.

Appendix I

Specific additional APIs common to MHP 1.0.3, MHP 1.1.1 and MHP 1.2

org.davic.mpeg.dvb
org.davic.net.ca
org.dvb.net.ca
org.dvb.si

Appendix II

OCAP 1.0-specific additional APIs

org.ocap
org.ocap.application
org.ocap.event
org.ocap.hardware
org.ocap.hardware.pod
org.ocap.media
org.ocap.mpeg
org.ocap.net
org.ocap.resource
org.ocap.service
org.ocap.si
org.ocap.system
org.ocap.ui.event

Appendix III

ARIB STD-B23-specific additional APIs

jp.or.arib.tv.media
jp.or.arib.tv.net
jp.or.arib.tv.si
jp.or.arib.tv.ui
org.davic.net.ca

Appendix IV

MHP 1.2-specific additional APIs

java.awt.color
java.awt.font
java.awt.im
java.lang.reflect
java.rmi.registry
java.security.acl
java.security.interfaces
java.text
java.util.jar
javax.security.auth.x500
javax.microedition.pki
javax.microedition.xlet
javax.microedition.xlet.ixc
org.dvb.application.inner
org.dvb.application.privileged
org.dvb.application.plugins
org.dvb.application.storage
org.dvb.auth.callback
org.dvb.dom.bootstrap
org.dvb.dom.css
org.dvb.dom.dvbhtml
org.dvb.dom.environment
org.dvb.dom.event
org.dvb.dom.inner
org.dvb.internet
org.dvb.smartcard
org.dvb.spi
org.dvb.tvanytime
org.dvb.xml
org.w3c.dom
org.w3c.dom.events
org.w3c.dom.views

Appendix V

ACAP-specific additional APIs

org.atsc.dom
org.atsc.dom.environment
org.atsc.dom.events
org.atsc.dom.events
org.atsc.dom.html
org.atsc.dom.views
org.atsc.si
org.ocap.media
org.ocap.net
org.ocap.si
org.ocap.ui.event
org.ocap.application
org.ocap.event
org.ocap.service
org.ocap.system
org.ocap.hardware.pod
org.w3c.dom
org.w3c.dom.css
org.w3c.dom.events
org.w3c.dom.html2
org.w3c.dom.views

Appendix VI

Proposed changes to the MHP specification in order to assist migration to MHP from MHEG-5

The process of migration may be assisted by modification and/or addition to a harmonized specification. By way of example, proposals for migration from MHEG-5 to DVB-MHP, as mentioned in clause 6, are given below:

- 1) Extend the graphics APIs to support drawing lines thicker than 1 pixel for all primitives. This could be implemented by extending the underlying PersonalJava specification or by making DVB-specific extensions.
- 2) Add 14:9 font support to the DVBTextLayoutManager. If this is not feasible, then it may be possible to use a defensive solution of 16:9 for all display types. This would distort the font (by compressing it horizontally) but would ensure the expected text flow.

However, the logical widths calculated when using this aspect ratio would be different, resulting in the line breaks being inserted at different points in the body of text. More importantly, anything other than very basic formatted text (relying on tabulation) would have a slim chance of being rendered correctly.
- 3) Add VK_CANCEL to the set of minimum supported key events.
- 4) Synchronize the character repertoire to MHEG repertoire specified in ETSI ES 202 184.
- 5) Provide CI AppMMI extensions; the ability for an interoperable plug-in to register itself as a handler for specific application domains, and the ability to operate a data pipe to the source module.

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	Global information infrastructure, Internet protocol aspects and next-generation networks
Series Z	Languages and general software aspects for telecommunication systems