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OF TELEVISION, SOUND PROGRAMME AND OTHER  
MULTIMEDIA SIGNALS

Application for Interactive Digital Television

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**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**

This Recommendation 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 include the updated and newly developed procedural content formats. Harmonization is based on GEM 1.0.1 which has been developed with contributions from DVB, SCTE, ARIB and ATSC. Therefore, the only normative references in this Recommendation are GEM 1.0.1 and ITU-T Rec. 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 29 November 2005 by ITU-T Study Group 9 (2005-2008) under the ITU-T Recommendation A.8 procedure.

## FOREWORD

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# 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.

### 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 102 819 V1.2.1 (2004)<sup>1</sup>, *Digital Video Broadcasting (DVB) Globally Executable MHP (GEM)*. [http://webapp.etsi.org/workprogram/Report\\_WorkItem.asp?WKI\\_ID=19737](http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=19737).

#### 2.2 Informative references

- ETSI TS 101 812 V1.3.1, *Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) specification 1.0.3*. [http://webapp.etsi.org/workprogram/Report\\_WorkItem.asp?WKI\\_ID=18799](http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=18799).
- SCTE 90-1 (2004), *OCAP 1.0 Profile*. <http://www.scte.org/documents/pdf/ANSISCTE9012004.pdf>.
- ARIB STD-B24 V4.0 (2004), *Data Coding and Transmission Specification for Digital Broadcasting*. [http://www.arib.or.jp/english/html/overview/img/arib\\_std-b24v4.0\\_e.pdf](http://www.arib.or.jp/english/html/overview/img/arib_std-b24v4.0_e.pdf).
- ARIB STD-B23 V1.1 (2004), *Application Execution Engine Platform for Digital Broadcasting (in Japanese)*. [http://www.arib.or.jp/english/html/overview/sb\\_j.html](http://www.arib.or.jp/english/html/overview/sb_j.html).

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<sup>1</sup> ETSI TS 102 819 V1.3.1 is a revision of ETSI TS 102 819 V1.2.1 which contains some new material. However, none of this new material is relevant to ITU-T Rec. J.202 (2005), therefore, ETSI TS 102 819 V1.2.1 remains the Normative reference for this Recommendation.

- ATSC A/101 (2005), *Advanced Common Application Platform (ACAP)*.  
[http://www.atsc.org/standards/a\\_101.pdf](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, *MHEG-5 Broadcast Profile*.
- ETSI TS 102 812 V1.2.1, *Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) Specification 1.1.1*.  
[http://webapp.etsi.org/workprogram/Report\\_WorkItem.asp?WKI\\_ID=18801](http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=18801).

### **3 Terms and definitions**

See ETSI TS 102 819 V1.2.1 clause 3.1.

### **4 Abbreviations and acronyms**

See ETSI TS 102 819 V1.2.1 clause 3.2.

### **5 Conventions**

See ETSI TS 102 819 V1.2.1 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, ACAP and OCAP 1.0;
- 2) the specification given in ETSI TS 102 819 V1.2.1 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 102 819 V1.2.1, 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.awt.peer
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 102 819 V1.2.1 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 102 819 V1.2.1 can be found on the ETSI website at [http://webapp.etsi.org/workprogram/Report\\_WorkItem.asp?WKI\\_ID=19737](http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=19737).

## Appendix I

### Specific additional APIs common to MHP 1.0.3 and MHP 1.1.1

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 1.1.1-specific additional APIs

java.applet
java.awt.datatransfer
java.text
org.dvb.application.inner
org.dvb.application.plugins
org.dvb.application.storage
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.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 DVBTLayoutManager. 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.





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