



Recommendation ITU-R BT.1699-2
(01/2013)

**Harmonization of declarative application
formats for interactive TV**

BT Series
Broadcasting service
(television)



International
Telecommunication
Union
Documents
Document Sharing Hub

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

Electronic Publication
Geneva, 2013

© ITU 2013

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

RECOMMENDATION ITU-R BT.1699-2

Harmonization of declarative application* formats for interactive TV

(Questions ITU-R 131/6 and ITU-T 4/9)

(2005-2009-2013)

Scope

This Recommendation is intended to harmonize the application environment for declarative applications for interactive TV. It specifies common elements, media types, and APIs at the syntactic level of the declarative application environment.

The ITU Radiocommunication Assembly,

considering

- a) that digital broadcasting services (satellite, terrestrial and cable) are becoming widely available and offer multimedia applications;
- b) that multimedia applications comprising video, audio, still-picture, text, graphics, etc. associated with interactive features have been developed;
- c) that multimedia applications planned or deployed in some Regions are using the declarative application environment;
- d) that common application formats are desirable for production and international exchange of multimedia applications;
- e) that Recommendation ITU-T J.200 defines, in addition to the definition above, the high-level architecture for a harmonized set of interactive application formats and application programming interfaces (APIs) and identifies the structure of application environment comprising the procedural application environment and the declarative application environment for digital television services;
- f) that Recommendation ITU-T J.202 specifies the common core of procedural application formats in the procedural application environment for interactive TV applications;
- g) that specification of harmonized declarative content formats in the declarative application environment is also required for interactive TV applications,

recommends

that for interactive TV applications in the declarative application environment, the harmonized declarative application formats specified in Annexes 1-7 should be used.

* Recommendation ITU-R BT.1889 provides the definition for “declarative application”: An application which primarily makes use of declarative information to express its behaviour; an XML document instance is an example of a declarative application.

Annex 1

Common core of the declarative application formats for interactive TV

1 Introduction

This Recommendation identifies functional commonality among the declarative application environments for interactive TV application specifications ACAP-X, BML and DVB-HTML. Elements which are common to these three standards are identified as a “Common Core”. The value of the Common Core is to assist program authors to exchange declarative applications internationally using these standards. This Recommendation also notes features outside of the Common Core of the covered standards. The goal of this Recommendation is to note these differences to encourage efforts toward increasing commonality between the standards to further improve functionality and enhance economies of scale.

2 Overview

This Recommendation is intended to harmonize the application environment for declarative applications for interactive TV. It specifies common elements, media types and APIs at the syntactic level of the declarative application environment to satisfy regional application requirements for the three standards ACAP-X, BML and DVB-HTML as specified in the normative references below. This Recommendation is divided into seven annexes. Annex 2 describes the Common Core of the three standards. Annex 3 describes additional functionality outside the Common Core for BML. Annex 4 describes additional functionality outside the Common Core for ACAP-X. Annex 5 describes additional functionality outside the Common Core for DVB-HTML.

The format described in Annex 6 is an intermediate format for translation between formats including the Common Core and the standards covered in this Recommendation. The format described in Annex 7 is a framework to bind content authored in multiple formats into single content.

It is noted that there are other declarative formats such as ETSIMHEG-5, which are not covered in this Recommendation. However, the migration from environments in use to the harmonized environment is assisted by the identification of a Common Core and the translation using the intermediate format.

3 References

3.1 Normative references

[1] BML	ARIB STD-B24 V5.3
[2] ACAP-X	ATSC A/101
[3] DVB-HTML	ETSI TS 102 812 V1.2.2
[4] wTVML	ETSI TS 102 322 V1.1.1
[5] NCL	ABNT NBR 15606-2 V2

Users of this Recommendation are encouraged to investigate the possibility of applying the most recent editions of the references listed above, whose maintenance is the responsibility of the issuing standard bodies. Content authors should refer to the cited documentation to ensure conformity with the semantics provided by those elements, media types and APIs.

NOTE 1 – BML, ACAP-X, DVB-HTML, wTVML and NCL standards are available via the links in Appendix 1.

NOTE 2 – By agreement between ITU-R, ABNT, ATSC, ARIB and ETSI, the versions listed in § 3.1 were authorized for use by ABNT, ATSC, ARIB and ETSI, and accepted by ITU-R for inclusion in this Recommendation. Any subsequent versions of these standards which have not been accepted and approved by ITU-R are not part of this Recommendation.

3.2 Informative references

[1] ETSI-MHEG	ETSI TS 202 184 V1.1.1
[2] J.202	ITU-T J.202
[3] J.200	ITU-T J.200

3.3 Terms and definitions

See the normative references listed in § 3.1.

Annex 2

Common Core

1 Overview

Methodology for Common Core, Common Core of Media types, XML Markup, Stylesheet Markup, Monomedia and Behavioural APIs, which are based on the commonality between ACAP-X, BML and DVB-HTML are described below. Note that BML has four content profiles. Except where otherwise noted, all four profiles of BML are assumed.

1.1 Methodology

1.1.1 Layer model

Graphics layer should lie on top of other layers such as video or text plane.

1.1.2 Application life cycle

There should be a mechanism to destroy an application from outside the application itself.

1.2 Media type

Common media types are listed in Table 1.

TABLE 1
Common media type

Image/jpeg
Image/png
Text/css
Application/xhtml+xml

1.3 Schema

Common schema is listed in Table 2.

TABLE 2
Common schema

http://
https://

1.4 XML markup

Common XML markups are listed in Table 3.

TABLE 3
Common XML markup module

Structure
Text
Hypertext
List
Presentation
Bidirectional text
Forms
Image
Client Side Image Map
Object
Frames
Target
Meta Information
Scripting
Stylesheet
Style Attribute
Link
Base

Common XML markups for BML for basic services (fixed terminal profile), ACAP-X and DVB-HTML are listed in Table 4.

TABLE 4

Common XML markup for BML for basic services, ACAP-X and DVB-HTML

Common attributes		
Core attributes		id class
Style attributes		
		style
Core modules		
Structure module		
	body	%Core.attrib;
	head	
	title	
Text module		
	br	%Core.attrib
	div ⁽¹⁾	%Common.attrib
	p ^{(1), (2)}	%Common.attrib
	span	%Common.attrib
Hypertext module		
	a	%Common.attrib accesskey href
Forms module		
	input ⁽¹⁾	%Common.attrib accesskey disabled readonly maxlength type value
Object module		
	object ⁽¹⁾	%Common.attrib data type
Metainformation module		
	meta	name content
Scripting module		
	script	
Stylesheet module		
	style	

⁽¹⁾ Only these elements can be a child element of <div>.

⁽²⁾ Only these elements and CDATA can be a child element of <p>.

1.5 Stylesheet

1.5.1 Common stylesheet properties

Common stylesheet properties are listed in Table 5.

TABLE 5
Common stylesheet properties

Background	Clear	Outline-color
Background-attachment	Clip	Outline-style
Background-color	Color	Outline-width
Background-image	Content	Overflow
Background-position	Counter-increment	Padding
Background-repeat	Counter-reset	Padding-bottom
Border	Display	Padding-left
Border-bottom	Float	Padding-right
Border-bottom-color	Font	Padding-top
Border-bottom-style	Font-family	Position
Border-bottom-width	Font-size	Right
Border-color	Font-style	Text-align
Border-left	Font-variant	Text-decoration
Border-left-color	Font-weight	Text-indent
Border-left-style	Height	Text-transform
Border-left-width	Left	Top
Border-right	Letter-spacing	Vertical-align
Border-right-color	Line-height	Visibility
Border-right-style	List-style	White-space
Border-right-width	List-style-image	Width
Border-style	List-style-position	Word-spacing
Border-top	List-style-type	Z-index
Border-top-color	Margin	Nav-index
Border-top-style	Margin-bottom	Nav-left
Border-top-width	Margin-left	Nav-right
Border-width	Margin-right	Nav-up
Bottom	Margin-top	Nav-down
Caption-side	Outline	

Common stylesheet properties for BML for basic services, ACAP-X and DVB-HTML are listed in Table 6.

TABLE 6
**Common stylesheet properties for BML for basic services,
ACAP-X and DVB-HTML**

@media
Margin
Padding-top
Padding-right
Padding-bottom
Padding-left
Border-width
Border-style
Position
Left ⁽¹⁾
Top ⁽¹⁾
Width ⁽¹⁾
Height ⁽¹⁾
Z-index
Line-height
Display
Visibility
Overflow
Background-image
Background-repeat
Font-family
Font-size
Font-weight
Text-align
Letter-spacing
White-space

⁽¹⁾ The elements <input>, <object>, <div>, and <p> must have these property values. The elements
, <a>, must not have these property values.

Furthermore, the following restrictions should be applied:

- Display property
Only block element can be applied for <p>, <div>, <body>, <input> and <object>.
Only inline values can be applied for
, <a> and .
- Position property
Only absolute values can be applied for <p>, <div>, <input> and <object>.
Only static values can be applied for
, and <a>.