INTERNATIONAL TELECOMMUNICATION UNION

ITU-T J.201

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(07/2004)

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

Application for Interactive Digital Television

Harmonization of declarative content format for interactive television applications

ITU-T Recommendation J.201

ITU-T Recommendation J.201

Harmonization of declarative content format for interactive television applications

Summary

This Recommendation identifies the functional commonality among the declarative application environments for interactive TV application specifications DVB-HTML, ACAP-X and BML. Based on the analysis of such commonality, this Recommendation describes the harmonized declarative application environment and additional elements to implement those specifications. It complements the harmonized procedural applications environment in ITU-T Rec. J.202 whose relationship with the declarative environment is described in ITU-T Rec. J.200. Common elements, media types, and APIs of the declarative environment are specified and additional elements to satisfy regional requirements are identified. This harmonization assists content authors to create internationally exchangeable programmes and provides an opportunity to obtain the benefits of economies of scale.

Source

ITU-T Recommendation J.201 was approved on 14 July 2004 by ITU-T Study Group 9 (2001-2004) 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. 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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

Introduction

Digital broadcasting services (satellite, terrestrial and cable) are currently becoming widely available and offer multimedia applications. Such applications comprise video, audio, still-picture, text graphics, etc., associated with interactive features.

Multimedia applications planned or deployed in some regions are using the declarative application environment and it is desirable that common content formats should be adopted for production and international exchange of multimedia content. In addition, specification of harmonized declarative content formats in the declarative application environment is also required for interactive TV applications.

For instance, ITU-T Rec. J.200 defines the high-level architecture for a harmonized set of interactive content formats and Application Programming Interfaces (APIs). It identifies the relationship between the procedural application environment and the declarative application environment for digital television services. ITU-T Rec. J.202 specifies the common core of procedural content formats in the procedural application environment for interactive TV applications.

This Recommendation identifies the functional commonality among the declarative application environments for interactive TV application specifications DVB-HTML, ACAP-X and BML. Based on the analysis of such commonality, it describes the harmonized declarative application environment and additional components outside the core required to implement those specifications. It thus complements the harmonized procedural application environment in ITU-T Rec. J.202 whose relationship with the declarative environment is described in ITU-T Rec. J.200. ITU-T Rec. J.200 specifies that both procedural and declarative environments are required for harmonized interoperability of interactive TV services and programme exchange.

ITU-T Recommendation J.201

Harmonization of declarative content format for interactive television applications

1 Scope

This Recommendation is intended to harmonize the application environment for declarative content 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 four annexes. Annex 1 describes the common core of the three standards. Annex 2 describes additional functionality outside the common core for BML. Annex 3 describes additional functionality outside the common core for ACAP-X. Annex 4 describes additional functionality outside the common core for DVB-HTML.

It is noted that there are other declarative formats such as ETSI-MHEG and ETSI-WTVML, which are not covered in this Recommendation. However, the migration from environments in current use to the harmonized environment is assisted by the identification of a common core with which they may share some media types such as PNG in the case of ETSI-MHEG.

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. A list of the currently valid ITU-T Recommendations is regularly published. Users of this Recommendation are encouraged to investigate the possibility of applying the most recent editions of the references listed, 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.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

2.1 Normative references

[J.200] ITU-T Recommendation J.200 (2001), *Worldwide common core – Application environment for digital interactive television services*.

[ARIB] ARIB STD-B24 v3.2 (2001), *Data Coding and Transmission Specification for Digital Broadcasting*.

[ACAP] ATSC CS/101A: ACAP-X

[ETSI 102 812] ETSI TS 102 812 V1.2.1 (2003), *Digital Video Broacasting (DVB); Multimedia Home Platform (MHP) Specification 1.1.1*.

2.2 Informative references

[ETSI 202 184] ETSI ES 202 184 V1.1.1 (2004), *MHEG-5 Broadcast Profile*.

[J.202] ITU-T Recommendation J.202 (2003), *Harmonization of procedural content formats for interactive TV applications*.

[ETSI 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*.

3 Terms and definitions

The terms and definitions used in this Recommendation are the same as those that are used in the normative references.

4 Abbreviations

The abbreviations and acronyms used in this Recommendation are the same as those that are used in the normative references.

5 Conventions

This Recommendation does not use any special conventions.

6 Recommendation

The harmonized declarative content formats specified in Annexes 1-4 should be used for interactive TV applications in the declarative application environment.

Annex 1

Common core

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 lifecycle

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/J.201 – Common media type

Image/jpeg
Image/png
Text/css

1.3 XML markup

Common XML markups are listed in Table 2.

Table 2/J.201 – 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 the BML for basic services ("fixed terminal profile"), ACAP-X and DVB-HTML are listed in Table 3.

Table 3/J.201 – 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	

Table 3/J.201 – Common XML markup for BML for basic services, ACAP-X and DVB-HTML

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 modules		
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 .

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

1.4 Stylesheet

1.4.1 Common stylesheet properties

Common stylesheet properties are listed in Table 4.

Table 4/J.201 – 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	Cisplay	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 5.

Table 5/J.201 – Common stylesheet properties for BML for basic services, ACAP-X and DVB-HTML

@media	Left[1)]	Background-image
Margin	Top[1)]	Background-repeat
Padding-top	Width[1)]	Font-family
Padding-right	Height[1)]	Font-size
Padding-bottom	Z-index	Font-weight
Padding-left	Line-height	Text-align
Border-width	Display	Letter-spacing
Border-style	Visibility	White-space
Position	Overflow	Background-image
[1)] The elements <input>, <object>, , 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>, , <body>, <input>, and <object>.

  Only inline values can be applied for <br>, <a>, and .

– Position property:

  Only absolute values can be applied for <p>, , <input> and <object>. Only static values can be applied for <br>, , and <a>.

1.4.2 Common CSS selectors

Common CSS selectors are listed in Table 6.

Table 6/J.201 – Common CSS selectors

Universal
Type
Descendant
Class
Id
:first-child pseudo-class
:link pseudo-class
:hover pseudo-class
:active pseudo-class
:focus pseudo-class
:lang pseudo-class
:pseudo-elements (:first-child, :first-letter, :before, :after)

Common CSS selectors for BML for basic services, ACAP-X and DVB-HTML are listed in Table 7.

Table 7/J.201 – Common CSS selectors for BML for basic services, ACAP-X and DVB-HTML

Universal
Type
Dynamic(:focus and :active)
Class
Id

1.5 Scripting language

Common scripting language is ECMAScript 2nd Edition with the following restriction:

– Number type supports integer operation only.

Common native objects for BML for basic services, ACAP-X and DVB-HTML are listed in Table 8.

Table 8/J.201 – Common native objects for BML for basic services, ACAP-X and DVB-HTML

Object	Methods, properties
(global)	NaN parseInt(string, radix) isNaN(number)
Object	All
Object.prototype	All
Function	prototype length
Function.prototype	All
Array	All
Array.prototype	All
String	All
String.prototype	All
Boolean	All
Boolean.prototype	All
Number	Prototype MAX_VALUE MIN_VALUE NaN Number([value]) New number([value])
Number.prototype	All
Date	prototype Date([year [, month [, date [, hours [, minutes [, seconds [, ms]]]]]]]) new Date([year [, month [, date [, hours [, minutes [, seconds [, ms]]]]]]])

Table 8/J.201 – Common native objects for BML for basic services, ACAP-X and DVB-HTML

Object	Methods, properties
Date.prototype	toString() getFullYear() getUTCFullYear() getMonth() getUTCMonth() getDate() getUTCDate() getDay() getUTCDay() getHours() getUTCHours() getMinutes() getUTCMinutes() getSeconds() getUTCSeconds() getMilliseconds() getUTCMilliseconds() getImtezoneOffset() setMilliseconds(ms) setUTCMilliseconds(ms) setSeconds(sec [, ms]) setUTCSeconds(sec [, ms]) setMinutes(min, [, sec [, ms]]) setUTCMinutes(min, [, sec [, ms]]) setHours(hours, [,(min, [, sec [, ms]])] setUTCHours(hours, [,(min, [, sec [, ms]])] setDate(date) setMonth(mon [, date]) setUTCMonth(mon [, date]) setFullYear(year [, mon [, date]]) setUTCFullYear{year [, mon [, date]]} toLocaleString() toUTCString()

For BML for basic services, the length to represent signed integer is 32 bits including sign.

1.6 DOM API

Common DOM APIs in DOM level 1 are listed in Table 9.

Table 9/J.201 – Common DOM level 1 APIs

Core fundamental	DOMException
	DOMIplementation
	DocumentFragment
	Document
	Node
	NodeList
	NamedNodeMap
	CharacterData
	Attr
	Element
	Text
	Comment

Common DOM level 1 APIs for the BML for basic services, ACAP-X and DVB-HTML are listed in Table 10. Interfaces listed in Table 10 that have no specified attributes or methods cover all attributes and methods of the interfaces.

Table 10/J.201 – Common DOM level 1 APIs for BML for basic services, ACAP-X and DVB-HTML

	Interface	**Attributes, methods**
Core fundamental	DOMImplementation	
	Document	implementation documentElement
	Node	parentNode firstChild lastChild previousSibling nextSibling
	CharacterData	data length
	Element	tagName
	Text	

Annex 2

Additional elements, media types, and APIs for BML

Elements, media types and APIs for BML in addition to those listed in Annex 1 (Common core) are described below. Items marked "BD)" are common to BML and DVB-HTML. Items marked "BA)" are common to BML and ACAP-X.

2.1 Additional BML media types

Additional BML media types are listed in Table 11.

Table 11/J.201 – Additional BML media types

Multipart/mixed
Text/xml[BD)]
Text/xsl
Text/html
Text/plain[BD)]
Text/X-arib-bml;charset="euc-jp"
Text/X-arib-bml;charset="UTF-16"
Text/X-arib-bml;charset="Shift_JIS"
Text/X-arib-jis8text
Text/X-arib-ecmascript;charset="euc-jp"
Text/X-arib-ecmascript;charset="UTF-16"
Text/X-arib-ecmascript;charset="Shift_JIS"
Image/X-arib-png
Image/X-arib-mng
Image/X-arib-mpeg2-I
Image/X-arib-mpeg4-I-simple
Image/X-arib-mpeg4-I-core
Audio/X-arib-mpeg2-aac
Audio/X-arib-mpeg2-bc
Audio/X-arib-mpeg4
Audio/X-arib-aiff
Audio/X-arib-additional
Audio/X-arib-romsound
Application/X-arib-stream-text;charset="euc-jp"
Application/X-arib-stream-text;charset="UTF-16"
Application/X-arib-stream-text;charset="Shift_JIS"
Application/X-arib-stream-jis8text
Application/X-arib-stream-png
Application/X-arib-stream-jpeg
Application/X-arib-stream-mpeg2-I

Table 11/J.201 – Additional BML media types

Application/X-arib-stream-mpeg4-I-simple
Application/X-arib-stream-mpeg4-I-core
Application/X-arib-mpeg2-tts
Application/X-arib-bmlclut
Application/X-arib-btable
Application/X-arib-drcs
Application/X-arib-PDI
Application/X-arib-resourceList
Video/X-arib-mpeg1
Video/X-arib-mpeg2
Video/X-arib-mpeg4-simple
Video/X-arib-mpeg4-core

2.2 Additional BML XML markup

Additional BML XML markups are listed in Table 12.

Table 12/J.201 – Additional XML markups

Module	Tag
Table[BA)]	All
Intrinsic events[BA)]	All
Name identification[BA)]	All
Applet	All
Basic forms	All
Basic table[BD)]	All
Server side image map	All
Iframe[BD)]	All
Legacy	All
BML extension	Bml, bevent, beitem, iframe&, body&, div&, span&, a&, bdo&, object&

2.3 Additional BML CSS properties

Additional BML CSS properties are listed in Table 13.

Table 13/J.201 – Additional CSS properties

Clut[1)]
Color-index[1)]
Background-color-index[1)]
Border-color-index
Border-top-color-index[1)]
Border-right-color-index[1)]
Border-bottom-color-index[1)]
Border-left-color-index[1)]
Outline-color-index
Resolution[1)]
Display-aspect-ratio[1)]
Grayscale-color-index[1)]
Used-key-list[1)]
[1)] These attributes are employed for BML for basic services.

2.4 Additional BML DOM APIs

2.4.1 Additional BML DOM level 1 APIs are listed in Table 14.

Table 14/J.201 – Additional BML DOM level 1 APIs

Core extension[BA)]	CDATASection
	DocumentType
	Notation
	Entity
	EntityReference
	ProcessingInstruction
HTML	HTMLCollection[BA)]
	HTMLDocument[BA)]
	HTMLElement[BA)]
	HTMLAnchorElement[BA)]
	HTMLFormElement[BA)]
	HTMLInputElement[BA)]
	HTMLOptionElement[BA)]
	HTMLSelectElement[BA)]
	HTMLTextAreaElement[BA)]
	HTMLImageElement[BA)]
	HTMLObjectElement[BA)]
	HTMLBodyElement[BA)]

Table 14/J.201 – Additional BML DOM level 1 APIs

HTML	HTMLBlockquoteElement
	HTMLPreElement
	HTMLHeadingElement
	HTMLHRElement
	HTMLDivElement[1)]
	HTMLParagraphElement[1)]
	HTMLQuoteElement
	HTMLBRElement[1)]
	HTMLModElement
	HTMLBaseElement
	HTMLLinkElement
	HTMLDListElement
	HTMLOlistElement
	HTMLUListElement
	HTMLLIElement
	HTMLButtonElement
	HTMLFieldSetElement
	HTMLLabelElement
	HTMLLegendElement
	HTMLOptGroupElement
	HTMLTableCaptionElement
	HTMLTableColElement
	HTMLTableElement
	HTMLTableSectionElement
	HTMLTableCellElement
	HTMLTableRowElement
	HTMLAreaElement
	HTMLMapElement
	HTMLParamElement
	HTMLFrameSetElement
	HTMLFrameElement
	HTMLIFrameElement
	HTMLMetaElement[1)]
	HTMLTitleElement[1)]
	HTMLScriptElement[1)]
	HTMLStyleElement[1)]
	HTMLHeadElement[1)]
	HTMLHtmlElement[1)]
[1)] These elements are employed for BML for basic services.	

2.4.2 BML extensions of DOM APIs are listed in Table 15.

Table 15/J.201 – Additional BML extensions

BML extension	BMLDocument()[1)]
	BMLCSS2Properties[1)]
	BMLEvent[1)]
	BMLIntrinsicEvent[1)]
	BMLBeventEvent[1)]
	BMLDocument[1)]
	BMLElement
	BMLBlockquoteElement
	BMLPreElement
	BMLHeadingElement
	BMLHRElement
	BMLDivElement[1)]
	BMLSpanElement[1)]
	BMLParagraphElement[1)]
	BMLQuoteElement
	BMLBRElement[1)]
	BMLModElement
	BMLAnchorElement[1)]
	BMLLinkElement
	BMLDListElement
	BMLOListElement
	BMLUListElement
	BMLLIElement
	BMLButtonElement
	BMLFieldSetElement
	BMLFormElement
	BMLInputElement[1)]
	BMLLabelElement
	BMLLegendElement
	BMLOptGroupElement
	BMLOptionElement
	BMLSelectElement
	BMLTextAreaElement
	BMLTableCaptionElement
	BMLTableColElement
	BMLTableElement
	BMLTableSectionElement

Table 15/J.201 – Additional BML extensions

BML extension	BMLTableCellElement
	BMLTableRowElement
	BMLImageElement
	BMLAreaElement
	BMLMapElement
	BMLObjectElement[1)]
	BMLFrameSetElement
	BMLFrameElement
	BMLIFrameElement
	BMLBodyElement[1)]
	BMLBmlElement[1)]
	BMLBeventElemen[1)]
	BMLBeitemElement[1)]
[1)] These elements are employed for BML for basic services.	

Annex 3

Additional elements, media types, and APIs for ACAP-X

Elements, media types and APIs for ACAP-X in addition to those listed in Annex 1 (Common core) are described below. Items marked "AD)" are common to ACAP-X and DVB-HTML. Items marked "AB)" are common to ACAP-X and BML.

3.1 Additional ACAP-X media types

Additional ACAP-X media types are listed in Table 16.

Table 16/J.201 – Additional ACAP-X media types

Application/acap-j
Application/acap-certificate
Application/acap-digest
Application/acap-permission
Application/acap-signature
Application/acap-x
Application/acap-x-metadata
Application/font-tdpfr
Application/java
Application/zip
Application/xhtml+xml
Audio/ac3

Table 16/J.201 – Additional ACAP-X media types

Audio/basic
Audio/mpeg[AD)]
Image/mpeg[AD)]
Text/ecmascript[AD)]
Video/mng
Video/mpeg
Video/mpv

3.2 Additional ACAP-X XML markup

Additional ACAP-X XML markups are listed in Table 17.

Table 17/J.201 – Additional ACAP-X XML markups

Module	Tag
Table[AB)]	All
Intrinsic Events[AB)]	All
Name Identification[AB)]	All

3.3 Additional ACAP-X CSS properties

Additional ACAP-X CSS properties and selectors are listed in Table 18.

Table 18/J.201 – Additional ACAP-X CSS properties and selectors

Properties	Atsc-dynamic-refresh
Selectors	Child
	Adjacent sibling
	Attribute and attribute values

3.4 Additional ACAP-X stylesheet attributes

Additional ACAP-X stylesheet attributes are CSS level 2, CSS-BOX, CSS-COLOR, CSS-TV, CSS-UI and their related DOM APIs.

3.5 Additional ACAP-X DOM APIs

Additional ACAP-X DOM level 2 APIs are listed in Table 19.

Table 19/J.201 – Additional ACAP-X DOM level 2 APIs

Core fundamental[AD)]	DOMException
	DOMIplementation
	DocumentFragment
	Document
	Node
	NodeList

Table 19/J.201 – Additional ACAP-X DOM level 2 APIs

Core fundamental[AD)]	NamedNodeMap
	CharacterData
	Attr
	Element
	Text
	Comment
Core extension[AB)]	CDATASection
	DocumentType
	Notation
	Entity
	EntityReference
	ProcessingInstruction
HTML[AB)]	HTMLAnchorElement
	HTMLBodyElement
	HTMLCollection
	HTMLDocument
	HTMLElement
	HTMLFormElement
	HTMLInputElement
	HTMLObjectElement
	HTMLOptionElement
	HTMLSelectElement
	HTMLTextAreaElement
	HTMLImageElement
View	AbstractView
	DocumentView
Stylesheets[AD)]	DocumentStyle
	LinkStyle
	MediaList
	Stylesheet
	StylesheetList
CSS	Counter
	CSSCharsetRule
	CSSFontFaceRule
	CSSImportRule
	CSSMediaRule
	CSSPageRule
	CSSPrimitiveValue
	CSSRule

Table 19/J.201 – Additional ACAP-X DOM level 2 APIs

CSS	CSSRulesList
	CSSStyleDeclaration
	CSSStyleRule
	CSSStyleSheet
	CSSUnknownRule
	CSSValue
	CSSValueList
	DocumentCSS
	DOMImplementationCSS
	ElementCSSInlinieStyle
	Rect
	RGBColor
	ViewCSS
Event [AD)]	DocumentEvent
	Event
	EventException
	EventListner
	EventTarget
EventSet	KeyEvent
	KeyModifiers
	MouseEvent[AD)]
	MutationEvent[AD)]
	UIEvent[AD)]
	VirtualKeys

ACAP-X Extensions of DOM APIs are listed in Table 20.

Table 20/J.201 – Additional ACAP-X extensions

ACAP-X Extension	DOMExceptionExt
	HTMLAnchorElementExt
	HTMLDocumentExt
	HTMLImageElementExt
	HTMLFormElementExt
	HTMLObjectElementExt
	HTMLTriggerObjectElementExt
	HTMLOptionsCollection
	DocumentViewExt

Annex 4

Additional elements, media types, and APIs for DVB-HTML

Elements, media types and APIs for DVB-HTML in addition to those listed in Annex 1 (Common core) are described below. Items marked "DB)" are common to DVB-HTML and BML. Items marked "DA)" are common to DVB-HTML and ACAP-X.

4.1 Additional DVB-HTML media types

Additional DVB-HTML media types are listed in Table 21.

Table 21/J.201 – Additional DVB-HTML media types

Application/xml
Application/dvbj
Application/dvb.pfr
Audio/mpeg[DA)]
Image/gif
Image/mpeg[DA)]
Text/ecmascript[DA)]
Text/plain[DB)]
Text/css
Text/xml[DB)]
Text/dvb.utf8
Multipart/dvb.service
Video/dvb.mpeg.drip

4.2 Additional DVB-HTML XML markups

Additional DVB-HTML XML markups are listed in Table 22.

Table 22/J.201 – Additional XML markups

Basic Table[DB)]
Iframe[DB)]

4.3 Additional DVB-HTML CSS properties

Additional DVB-HTML CSS properties and selectors are listed in Table 23.

Table 23/J.201 – Additional DVB-HTML CSS properties and selectors

Properties	Direction
	Unicode-bidi
	Min-width
	Max-width
	Min-height
	Max-height
	Font-stretch
	Font-size-adjust
	Table-layout
	Empty-cells
	Speak-header
	Opacity
	Nav-first
	Clip-video
	Compose-rule
Selectors	Child
	Adjacent sibling
	Attribute and attribute values

4.4 Additional DVB-HTML DOM APIs

4.4.1 Additional DVB-HTML DOM level 1 APIs

Additional DVB-HTML DOM level 1 APIs are listed in Table 24.

Table 24/J.201 – Additional DVB-HTML DOM level 1 APIs

HTML	DVBHTMLCollection
	DVBHTMLDocument
	DVBHTMLElement
	DVBHTMLAnchorElement
	DVBHTMLButtonElement
	DVBHTMLFormElement
	DVBHTMLInputElement
	DVBHTMLOptionElement
	DVBHTMLSelectElement
	DVBHTMLTextAreaElement
	DVBHTMLImageElement
	DVBHTMLAreaElement
	DVBHTMLMapElement

Table 24/J.201 – Additional DVB-HTML DOM level 1 APIs

HTML	DVBHTMLObjectElement
	DVBHTMLFrameSetElement
	DVBHTMLFrameElement
	DVBHTMLIFrameElement

4.4.2 Additional DVB-HTML DOM level 2 APIs

Additional DVB-HTML DOM level 2 APIs are listed in Table 25.

Table 25/J.201 – Additional DVB-HTML DOM level 2 APIs

Core fundamental[DA)]	DOMException
	DOMIplementation
	DocumentFragment
	Document
	Node
	NodeList
	NamedNodeMap
	CharacterData
	Attr
	Element
	Text
	Comment
View	AbstractView
	DocumentView
Style sheets[DA)]	DocumentStyle
	LinkStyle
	MediaList
	Stylesheet
	StylesheetList
Event[DA)]	DocumentEvent
	Event
	EventException
	EventListner
	EventTarget
EventSet[DA)]	MouseEvent
	MutationEvent
	UIEvent

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
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	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
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 and open system communications
Series Y	Global information infrastructure, Internet protocol aspects and Next Generation Networks
Series Z	Languages and general software aspects for telecommunication systems

Printed in Switzerland
Geneva, 2004