



ECMAScript Mobile Profile

A Wireless Markup Scripting Language

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Continues the Technical Activities
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1. Scope

Open Mobile Alliance (OMA) is a consortium of mobile industry companies working to define an industry-wide specification for developing applications that operate over wireless communication networks. The scope for the OMA is to define a set of specifications to be used by service applications. The wireless market is growing very quickly and reaching new customers and services. To enable operators and manufacturers to meet the challenges in advanced services, differentiation and fast/flexible service creation, OMA defines a set of protocols in transport, session and application layers. For additional information on the Wireless Application Environment, refer to [WAESPEC].

This specification describes the OMA wireless markup scripting language known as ECMAScript – Mobile Profile (ESMP). It is strongly based upon ECMAScript Release 3 [ECMA262] from the ECMA TC-39 Working Group. The same ECMA working group has also released a profile of the ECMAScript language for mobile devices [ECMA327]. The language has been modified to better support low bandwidth communication and thin clients. All changes from [ECMA327] are reflected in this specification and noted as static conformance requirements. ESMP should be used together with the OMA profile of the XHTML Markup Language [XHTMLMP] to provide added intelligence to the clients.

The specification will concentrate on three areas:

- Language differences between the ECMAScript Mobile Profile and Wireless Markup Scripting Language [WMLSCRIPT]
- Language syntax differences between [ECMA262] and ECMAScript Mobile Profile.
- The environment in which ECMAScript – Mobile Profile executes.

2. References

2.1. Normative References

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<http://www.openmobilealliance.org/>

2.2. Informative References

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NETSCAPE	“Client-side Javascript Reference, v1.3”, Netscape Communications Corporation, 1999, URL: http://developer.netscape.com/docs/manuals/js/client/jsref/index.htm
WCSS	“WAP CSS Specification”, WAP Forum™, WAP-239-WCSS, URL: http://www.wapforum.org/
WML1	“Wireless Markup Language - Version 1.3”, WAP Forum™, WAP-191-WML, URL: http://www.wapforum.org/
WMLSL	“WMLScript Standard Libraries Specification”, WAP Forum™, WAP-194-WMLSL, URL: http://www.wapforum.org/
WOOTTON	“JavaScript – Programmer’s Reference”, Cliff Wootton, 2001, Wrox Press Ltd., ISBN 1-861004-59-1
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2.3. How to Read this Document

This section is informative.

This specification draws heavily upon a number of existing standards, and assumes familiarity with:

- The ECMAScript Language Specification [ECMA262]
- Document Object Model (DOM) Level 2 Core Specification [DOM2CORE]

This specification is written for two audiences. First and foremost, it is directed towards implementers of ECMAScript Mobile Profile. Secondly, it is written to be a reference for developers. As stated elsewhere in this document ECMA262 is the normative basis for the language syntax. To reduce clutter, normative statements relative to ECMA262 (per RFC2119) are made only when there is a difference between this specification and ECMA262. While this specification is not written as a tutorial, examples may be given, and informative text from relevant specifications may be included. The examples are not exhaustive, and are generally informative only. These examples do not stand as the normative definition, but are there to support normative prose.

In all cases where there may be a question or ambiguity in the specification, source standards always take precedent, unless explicitly noted otherwise.

Where possible reference pointers to base standards are given. They are noted as:

Reference: Reference Document Chapter

Statements which cause the generation of, or are a part of, a static conformance requirement are noted with a boxed, drop shadowed statement:

This statement MUST be construed as a static conformance requirement.

Notes which relate the specification to WMLScript are noted as:

WMLScript Note: A note about wmlscript

References to implementations from Netscape or Microsoft may be referred to by either company name (i.e. Netscape), product name (i.e. Internet Explorer or IE) or scripting name (i.e. Javascript or Jscript). These are used interchangeably.

3. Definitions and Abbreviations

3.1. Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” (Section 1) and “Introduction” (Section 4) are normative, unless they are explicitly indicated to be informative.

3.2. Definitions

Client	a device (or application) that initiates a request for connection with a server.
Content	subject matter (data) stored or generated at an origin server. Content is typically displayed or interpreted by a user agent in response to a user request.
Content Encoding	when used as a verb, content encoding indicates the act of converting a data object from one format to another. Typically the resulting format requires less physical space than the original, is easier to process or store and/or is encrypted. When used as a noun, content encoding specifies a particular format or encoding standard or process.
Content Format	actual representation of content.
Device	a network entity that is capable of sending and receiving packets of information and has a unique device address. A device can act as both a client and a server within a given context or across multiple contexts. For example, a device can service a number of clients (as a server) while being a client to another server.
ECMAScript Mobile Profile	a scripting language used to program the mobile device. ECMAScript Mobile Profile is a syntactic subset of the ECMAScript scripting language defined in ECMA262. It includes object extensions from both JavaScript and W3C specified functionality.
JavaScript	a <i>de facto</i> standard language that can be used to add dynamic behaviour to HTML documents. JavaScript is one of the originating technologies of ECMAScript.
Origin Server	the server on which a given resource resides or is to be created. Often referred to as a Web server or an HTTP server.
Resource	a network data object or service that can be identified by a URL. Resources may be available in multiple representations (e.g. multiple languages, data formats, size and resolutions) or vary in other ways.
Server	a device (or application) that passively waits for connection requests from one or more clients. A server may accept or reject a connection request from a client.
User	a user is a person who interacts with a user agent to view, hear or otherwise use rendered content.
User Agent	a user agent (or content interpreter) is any software or device that interprets markup language such as XHTML, script language, such as ECMAScript or resources. This may include textual browsers, voice browsers, search engines, etc.
Web Server	a network host that acts as an HTTP server.
WML	the Wireless Markup Language is a hypertext markup language used to represent information for delivery to a narrowband device, e.g. a phone.

3.3. Abbreviations

API	Application Programming Interface
DOM	Document Object Model
ECMA	European Computer Manufacturer Association
EFI	External Functionality Interface

ESMP	ECMAScript Mobile Profile
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
IE	Internet Explorer
OMA	Open Mobile Alliance
RFC	Request For Comments
URL	Uniform Resource Locator
UTF	UCS Transformation Format
W3C	World Wide Web Consortium
WAP	Wireless Application Protocol
WINA	WAP Interim Naming Authority
WWW	World Wide Web
XHTMLMP	XHTML - Mobile Profile

4. Introduction

This section is informative.

The OMA has recognized that convergence between the wired Web and wireless devices, as targeted by the WAP architecture, is an important step toward bringing wireless devices into the mainstream. As a part of the convergence process, OMA has redefined the markup language that is to be used by WAP devices [XHTMLMP]. This specification is the redefinition of the scripting language that accompanies that markup.

Goals for this scripting language are:

- The language specified can be executed from within common browsers found on the wired web (i.e. Netscape Communicator and Microsoft Internet Explorer).
- The language must maintain the standard programming paradigms that are associated with wired implementations of script.
- The language must represent a minimal functional implementation, to support small devices.
- The language must be extensible, allowing for the support of future extensions either standard or proprietary.
- The language should support enough runtime discovery mechanisms to support error management through version control, and to support identification of optional, extended or proprietary features.

4.1. Why Scripting?

ECMAScript Mobile Profile is designed to provide general scripting capabilities for the mobile applications environment. Specifically, ECMAScript Mobile Profile is used to complement the XHTML markup language [XHTMLMP]. XHTMLMP is based on the W3C Extensible Hypertext Markup Language [XHTML]. It is designed to be used for specifying application content for small screen, narrowband devices like cellular phones and pagers. This content can be represented with text, images, selection lists etc. Formatting and styling [WCSS] can be used to make the user interfaces more readable as long as the client device used to display the content can support it. However, all this content is *static* and there is no way to extend the language without modifying the markup itself. The following list contains some capabilities that are not supported by XHTML:

- The ability to check the validity of user input (forms validation)
- The ability to apply mathematic and procedural logic locally to document data.
- Providing access to facilities of the device. For example, on a phone, allow the programmer to make phone calls, send messages, add phone numbers to the address book, access the SIM card etc.
- The ability to generate messages and dialogs locally, reducing the need for expensive round-trip for alerts, error messages, confirmations etc.
- The ability to handle events
- The ability to allow the dynamic creation and/or modification of documents on the client.

ECMAScript Mobile Profile is designed to overcome these limitations and to provide programmable functionality that can be used over narrowband communication links and in clients with limited capabilities.

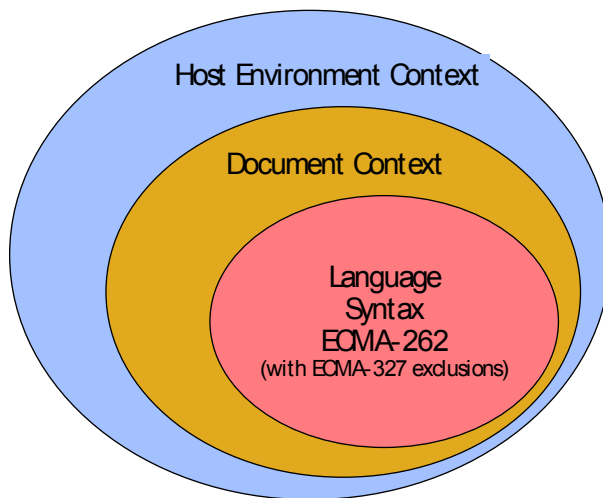
4.2. Language Construction

ECMAScript Mobile Profile (ESMP) is actually a combination of a number of standards and technologies. The basis of ESMP is the scripting language codified by ECMA as ECMA262. This provides the syntax and language semantics. The language is a general purpose scripting language that can be applied in many environments. Since the mobile applications environment is oriented toward small wireless devices, we subset the language by further including ECMA327 (ECMAScript

Compact Profile) as specified by ECMA. This specification allows us to remove a small number of ECMAScript features which are deemed too memory or compute intensive for the wireless environment.

As pointed out in the ECMA262 specification, the language has no context specified in which to execute. So ESMP must provide the execution environment. The context is provided as a set of “host objects” which make available access to the markup document which contains the script, and access to the host environment in which that document executes. Specifically, access to the document is provided by including a subset of the W3C Document Object Model interface DOM2CORE and DOM2HTML to the markup document. And access to the environment is given by importing four common compatible objects taken from JavaScript (**history** object, **navigator** object, **location** object and the **document** object).

Since ECMA262, DOM2HTML and DOM2CORE are supported by the major web browsers on the wired web, ESMP represents a proper subset of these browsers. Thus scripts written to run in the ESMP environment should function (taking into account version etc.) on the wired web.



4.3. Language Differences

Specific differences between WMLScript [WMLSCRIPT] and ECMAScript Mobile Profile, and between ECMAScript Mobile Profile and [ECMA262] are detailed in Appendix D and Appendix E.

5. Language Syntax

Unless explicitly stated [ECMA262] is normative for the definition of the syntax used in ECMAScript Mobile Profile.

5.1. Lexical Conventions

5.1.1. Language and Character Set

Reference: ECMA-262 Section 6

ECMAScript Mobile Profile program source text consists of a sequence of code points from the [UNICODE] character set. New code points may be added to the [UNICODE] standard so ECMAScript Mobile Profile implementations must accept any value in the allowed (but possibly unallocated) range specified in the [UNICODE] standard.

At a minimum, ECMAScript Mobile Profile implementations MUST support the UTF-8 and UTF-16 encoding of code points into bit patterns for the source text.

The program source encoding does not imply anything about an ECMAScript Mobile Profile implementation's internal representation of strings. Note: This is a change from [ECMA262] which says it only supports UTF-16 input.

As long as the source text character set and encoding can be mapped to and from UNICODE (e.g., ASCII), other character sets and encodings may be supported. It is intended that documents containing ECMAScript Mobile Profile need not conform to a very limited set of characters and encodings to be acceptable.

An ECMAScript Mobile Profile implementation's internal representation of text (e.g., strings) is not constrained in any way by this specification. However, the specification of certain language features (e.g., `string.charCodeAt()`) mandates exposure of a specific 16-bit representation. Note: This is also a change from [ECMA262] which says it only supports 16 bit characters internally.

Implementations MUST support character level indexing for appropriate methods, independent of internal character length.

When "characters" are output, the encoding for output depends on the output destination. For example, output to an existing document usually adopts the existing encoding of the document. Controlling output encoding is not a part of this specification and will generally be implied by the output destination or take on a setting by default.

ECMAScript Mobile Profile is a case-sensitive language. All language keywords, variables, objects, methods and properties must use the proper capitalization of letters.

5.1.2. Whitespace and Line Terminator Characters

Reference: ECMA-262 Section 7.2

Whitespace and line terminator characters are used to improve source text readability and to separate tokens from each other, but are otherwise insignificant. Whitespace may occur within literal strings and is therein considered significant.

Whitespace::

Symbol	Character Represented	Codepoint
<TAB>	Tab	\u0009
<VT>	Vertical Tab	\u000B

<FF>	Form Feed	\u000C
<SP>	Space	\u0020
<NBSP>	Non-breaking Space	\u00A0
<USP>	Unicode space separators	\u2000- \u200A

Reference: ECMA-262 Section 7.3

Line terminators may not occur within literal strings or tokens.

*Line
Terminator::*

Symbol	Character Represented	Codepoint
<LF>	Line Feed	\u000A
<CR>	Carriage Return	\u000D
<ULS>	Unicode Line Separator	\u2028
<UPS>	Unicode Paragraph Separator	\u2029

5.1.3. Semicolon Usage

Unlike ECMAScript [ECMA262], semicolons MUST be included as statement separators, and are required following ECMAScript Mobile Profile language statements.

5.1.4. Comments

Reference: ECMA-262 Section 7.4

The language defines two comment constructs: *line comments* (i.e., start with // and end in the end of the line) and *block comments* (i.e., consisting of multiple lines starting with /* and ending with */).

```
//This is a single line comment example.
/* This is an example of a multi-line block comment that extends for a few lines.
This is typical of a 'C' style comment. */
```

It is illegal to have nested block comments.

5.1.5. Language Tokens

Reference: ECMA-262 Section 7.5

Reserved words, keywords and future reserved words are as defined in [ECMA262].

5.1.6. Identifiers

Reference: ECMA-262 Section 7.6

Identifiers are as defined in [ECMA262].

WMLScript Note: '\$' is a valid character in a ECMAScript Mobile Profile identifier, whereas it was illegal in WMLScript. [WMLSCRIPT]

Examples of legal identifiers:

```
aVar $speed NEW_ADDRESS skram_ttenneb myLoopCnt myloopcnt $$BigVar$$
```

Note: `myLoopCnt` and `myloopcnt` are different variables since identifiers are case sensitive.

Examples of illegal identifiers:

```
while for if 4things 35345 dotted.var
```

Note: `while`, `for` and `if` are reserved words.

5.1.7. Punctuators

Reference: ECMA-262 Section 7.7

Punctuators are as defined in [ECMA262].

5.1.8. Literals

5.1.8.1. Null

Reference: ECMA-262 Section 7.8.1

Null literals are as defined in [ECMA262].

5.1.8.2. Boolean

Reference: ECMA-262 Section 7.8.2

Boolean literals are as defined in [ECMA262].

Boolean Literal::

true

false

WMLScript Note: In WMLScript these literals were capitalized. [WMLSCRIPT]

5.1.8.3. Numeric

Reference: ECMA-262 Section 7.8.3

Numeric literals are as defined in [ECMA262].

WMLScript Note: Literals referred to as “binary” literals in WMLScript [WMLSCRIPT] are referred to as HexIntegerLiterals in ECMAScript. [ECMA262]

5.1.8.4. String

Reference: ECMA-262 Section 7.8.4

String literals are as defined in [ECMA262].

WMLScript Note: Slash is no longer an escapable character and octal encoding is no longer supported. [WMLSCRIPT]

For those characters that are not representable with strings, ECMAScript Mobile Profile supports special escape sequences by which these characters can be represented:

Sequence	Character represented	Code Point	Symbol
\'	Apostrophe or single quote	\u0027	'
\"	Double quote	\u0022	"
\\	Backslash	\u005C	\
\/	Slash	\u002F	/
\b	Backspace	\u0008	<BS>
\f	Form feed	\u000C	<FF>
\n	Newline	\u000A	<LF>
\r	Carriage return	\u000D	<CR>
\t	Horizontal tab	\u0009	<TAB>
\xhh	The character with the encoding specified by two hexadecimal digits <i>hh</i> (Latin-1 ISO8859-1)		
\uhhhh	The Unicode character with the encoding specified by the four hexadecimal digits <i>hhhh</i> .		

5.1.8.5. Regular Expression

Reference: ECMA-262 Section 7.8.5

Regular expression Literals are as defined in [ECMA262].

5.2. Variable and Data Types

5.2.1. String Type

Reference: ECMA-262 Section 8.4

The string type is as defined in [ECMA262].

5.2.2. Numeric Types

Reference: ECMA-262 Section 8.5

The numeric data type is a 64-bit IEEE-754 floating number as defined in [ECMA262]. For OMA devices, precision need only be displayed to 14 decimal digits (even though IEEE-754 64-bit floats guarantee ~21 digits).

The language MUST support the display of numbers to a minimum of 14 digits of accuracy.

It is important to note that the [ECMA262] does not specify actual internal numeric representations, only that the numbers stored act as if they are indistinguishable from full IEEE-754 64 bit floats. Hence, the requirement from [ECMA262] is to maintain accuracy, and to provide a uniform external representation, not to mandate internal format. Script language implementers are free to use any appropriate mathematical language optimisations for the purposes of saving space or reducing computing requirements.

5.2.3. Object Type

Reference: ECMA-262 Section 8.6

The Object type is as defined in [ECMA262].

5.2.4. Other Types

5.2.4.1. Undefined

Reference: ECMA-262 Section 8.1

The Undefined type is as defined in [ECMA262].

The Undefined type has exactly one value, called “**undefined**”. Any variable that has not been assigned a value has the value “**undefined**”.

5.2.4.2. Null

Reference: ECMA-262 Section 8.2

The Null type is as defined in [ECMA262].

The Null type has exactly one value, called “**null**”.

5.2.4.3. Boolean

Reference: ECMA-262 Section 8.3

The Boolean type is as defined in [ECMA262].

The Boolean type represents a logical entity having two values, called “**true**” and “**false**”.

5.3. Type Conversions

ECMAScript Mobile Profile is a weakly typed language and like both WMLScript[WMLSCRIPT] and ECMAScript [ECMA262] performs automatic type conversion as needed. Variables may contain values of any standard type:

- Undefined
- Null
- Boolean
- String
- Number
- Object

Reference: ECMA-262 Section 9

Operators described in ECMAScript conversions operate as specified in [ECMA262].

Legal conversions of data types are summarized in the following table.

From	To Boolean	To Number	To String	To Object
Undefined	'false'	NaN (not-a-number)[IEEE754]	"undefined"	Error Exception
Null	'false'	+0 (zero)	"null"	Error Exception
Boolean 'true'		1.	"true"	Creates a new boolean object with the value 'true'
Boolean 'false'		+0. (zero)	"false"	Creates a new boolean object with the value 'false'
Number '0' (zero)	'false'		"0"	Creates a new number object with the value +0 (zero)
Number (non-zero)	'true'	Floating point value with at least 14 digits of total precision.	See ECMA-262 Section 9.8.1	Creates a new number object with the value of the starting number.
Empty string	'false'	+0 (zero)		Creates a new String object with the value of "" (the null string)
Non-empty string	'true'	See ECMA-262 Section 9.3.1		Creates a new String object with the value of the starting string.
Object	'true'	Object dependant	Object dependant	

5.4. Execution Contexts

Reference: ECMA-262 Section 10

Execution context is inherited from the XHTML context. The top-level execution context in which the ECMAScript Mobile Profile code operates is defined as the context of the calling document. ECMAScript Mobile Profile cannot be called from outside an existing document context.

5.4.1. Variable Context

Reference: ECMA-262 Section 10.1.3

Variable instantiation is as defined in [ECMA262].

5.4.2. Dynamically Created Code

Reference: ECMA-262 Section 10.1.2

Reference: ECMA-327 Section 5.1

As defined by the ECMAScript Compact Profile [ECMA327] support for `eval()` is optional, and is not required for conformance to ECMAScript – Mobile Profile. In those cases where the `eval()` method is not supported, an **EvalError** exception shall be thrown as per [ECMA327].

As defined by the ECMAScript Compact Profile [ECMA327] support for the dynamic creation of functions is optional, and is not required for conformance to ECMAScript Mobile Profile.

Support for the `eval()` function either directly or in support of dynamic function compilation is OPTIONAL (“NOT REQUIRED for implementation” per [ECMA327]) in ECMAScript Mobile Profile.

If `eval()` is not supported ECMAScript – Mobile Profile MUST throw an **EvalError** exception when `eval()` is called.

5.5. Language Syntax and Semantics

Reference: ECMA-262 Section 11

Operator semantics are as described in [ECMA262] section 11. The language semantics are defined in terms of expressions and operators:

- Expressions
 - primary expressions
 - left-hand-side expressions
 - postfix expressions
- Operators
 - unary operators
 - multiplicative operators
 - additive operators
 - shift operators
 - relational operators
 - equality operators
 - binary bitwise operators
 - binary logical operators
 - conditional operator

- Assignment operators
- comma operator

NOTE: Regarding the comma operator: For the assignment $x=1,2,3$, ECMA-262 states that x will get 3. However, there is an inconsistency with the Netscape and IE browsers, which will assign $x=1$ in this case.

5.5.1. Expressions

Reference: ECMA-262 Sections 11.1,11.2,11.3

Expressions are as defined in [ECMA262].

5.5.2. Operators

Reference: ECMA-262 Sections
11.4,11.5,11.6,11.7,11.8,11.9,11.10,11.12,11.13,11.14

Operators are as defined in [ECMA262].

The following section contains a summary of the language operators available and possible return values.

Unary Operators

Operator	Result Type	Description	Note
delete	Boolean	deletes referent	ECMA-262 Section 11.4.1
void	undefined	converts unary operand to undefined type.	ECMA-262 Section 11.4.2
typeof	string	returns a description of the referent type	<div style="border: 1px dashed black; padding: 2px; display: inline-block;">WMLScript Note: WMLScript returned integers</div> ECMA-262 Section 11.4.3
++	number	increments value of referent by 1	ECMA-262 Section 11.4.4
--	number	decrements value of referent by 1	ECMA-262 Section 11.4.5
+ (unary)	number	converts unary operand to a number.	ECMA-262 Section 11.4.6
- (unary)	number	negates numeric referent	ECMA-262 Section 11.4.7
~	number (integer)	bitwise complement of integer	ECMA-262 Section 11.4.8
!	boolean	reverses Boolean sense of referent	ECMA-262 Section 11.4.9

Additive and Multiplicative Operators

Operator	Result Type	Description	Note
*	number	multiplication	ECMA-262 Section 11.5.1
/	number	division	ECMA-262 Section 11.5.2
%	number	remainder	ECMA-262 Section 11.5.3
+	number	addition	ECMA-262 Section 11.6.1,11.6.3
-	number	subtraction	ECMA-262 Section 11.6.2,11.6.3

Bitwise Shift, Relational and Equality Operators

Operator	Result Type	Description	Note
<<	number (integer)	bitwise left shift	ECMA-262 Section 11.7.1
>>	number (integer)	signed bitwise right shift	ECMA-262 Section 11.7.2
>>>	number (integer)	unsigned bitwise right shift	ECMA-262 Section 11.7.3
<	Boolean, undefined	relational less-than comparison	ECMA-262 Section 11.8.1
>	Boolean, undefined	relational greater-than comparison	ECMA-262 Section 11.8.2
<=	Boolean, undefined	relational less-than or equal comparison	ECMA-262 Section 11.8.3
>=	Boolean, undefined	relational greater-than or equal comparison	ECMA-262 Section 11.8.4
instanceof	Boolean	tests whether left-hand variable is an object of the specified type	ECMA-262 Section 11.8.6
in	Boolean	tests whether a property is in an object	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> WMLScript Note: This was not in WMLScript </div> ECMA-262 Section 11.8.7
==	Boolean	tests for equality (allows conversions)	ECMA-262 Section 11.9.1,11.9.3 NOTE: IE and Netscape will return FALSE if left side of == is NULL or undefined. (ECMA-262 says return TRUE)
!=	Boolean	tests for inequality (allows conversions)	ECMA-262 Section 11.9.2,11.9.3
===	Boolean	tests for “strict” equality (type must match, else failure)	ECMA-262 Section 11.9.4,11.9.6 NOTE: IE and Netscape will return FALSE if left side of === is NULL or undefined. (ECMA-262 says return TRUE)
!==	Boolean	tests for “strict” inequality (type must match, else failure)	ECMA-262 Section 11.9.5,11.9.6

Logical, Conditional and Simple Assignment

Operator	Result Type	Description	Note
&	number (integer)	bitwise ‘AND’ of two integers	ECMA-262 Section 11.10

^	number (integer)	bitwise 'XOR' of two integers	ECMA-262 Section 11.10
	number (integer)	bitwise 'OR' of two integers	ECMA-262 Section 11.10
&&	boolean	logical 'AND' of two expressions	ECMA-262 Section 11.11
	boolean	logical 'OR' of two expressions	ECMA-262 Section 11.11
? :	any	conditional expression	ECMA-262 Section 11.12
=	any	simple assignment	ECMA-262 Section 11.13
,	any	comma – multiple evaluation	ECMA-262 Section 11.14

Compound Assignment

Operator	Result Type	Description	Note
*=	number	assignment after multiply	ECMA-262 Section 11.13.2
/=	number	assignment after division	ECMA-262 Section 11.13.2
%=	number	assignment after modulo	ECMA-262 Section 11.13.2
+=	number	assignment after addition	ECMA-262 Section 11.13.2
-=	number	assignment after subtraction	ECMA-262 Section 11.13.2
<<=	number (integer)	assignment after bitwise right shift	ECMA-262 Section 11.13.2
>>=	number (integer)	assignment after bitwise left shift	ECMA-262 Section 11.13.2
>>>=	number (integer)	assignment after bitwise left shift with zero fill	ECMA-262 Section 11.13.2
&=	number (integer)	bitwise 'AND' with assignment	ECMA-262 Section 11.13.2
^=	number (integer)	bitwise 'XOR' with assignment	ECMA-262 Section 11.13.2
=	number (integer)	bitwise 'OR' with assignment	ECMA-262 Section 11.13.2

5.5.3. Grammar and Syntax

Reference: ECMA-262 Section 12

Statements are as defined in [ECMA262].

Reference: ECMA-327 Section 5.3

In accordance with the ECMAScript Compact Profile [ECMA327] conforming implementations support for the **with** statement (ECMA-262 section 12.10) is OPTIONAL. If **with** is not supported, use of a **with** statement results in a syntax error.

6. Native (Built-in) Objects

Native or built-in objects are those facilities built into the language that support basic language constructs and mechanisms. All of the native ECMAScript Mobile Profile objects are defined in [ECMA262].

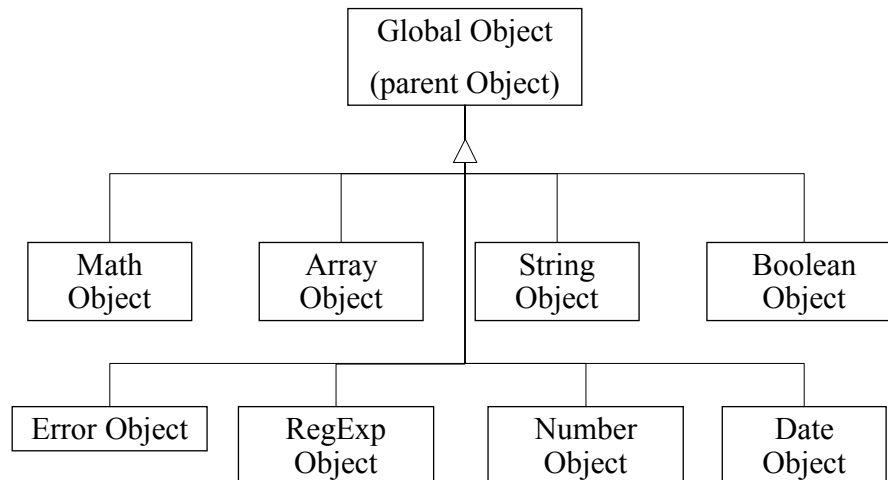
Reference: ECMA-327 Section 5.2

As specified in [ECMA327] a conforming implementation of ECMAScript Mobile Profile SHOULD NOT support addition, deletion or assignment to the properties of built-in objects, other than the global object. If the implementation does not allow modifications to built-in objects, then it SHALL throw a **ReferenceError** exception (See section 6.11) when evaluating such modifications.

6.1. Object Relationships

Reference: ECMA-262 Section 10.1.5, 15.1

All objects are the properties of the unique global object, which is instantiated prior to entering any execution context. In this implementation of ECMAScript the global object may be referred to as 'self', 'top', 'parent', or 'window'.



Note: Unless object constructors have “interesting” or “unique” syntax, their existence will be taken for granted and not described as part of any object method descriptions.

6.2. Object Management

6.2.1. Version Property

All native (built-in) objects MUST contain an enumerable, read-only version property.

This property is a string. The version property string will be of the following format:

M.m.I.i

Where:

M = Major release number, corresponding to the scripting major release number. For this document the major release number is 1. The owner of this value is OMA and WINA [WINA].

m = minor release number, corresponding to documented changes or bug fixes mandated by OMA. Objects will start with the value 1 and increment for any change documented by OMA. The owner of this value is OMA and WINA [WINA].

I = Implementers Release number, corresponding to the implementation version of the object. Implementers are encouraged to start with the value 1 and increment whenever syntax and/or semantics of an object are changed. The owner of this value is the implementer of the script specification.

i = Implementers minor number. Implementers should increment this value whenever making a change to an object implementation. The owner of this value is the implementer of the script specification. This value may be used for relating behaviours to specific implementation builds. Actual utilization of this field is up to the implementer.

OMA controlled values (M.m) will only be updated if the above-mentioned criteria are met. Thus an object that is initially released as 1.1[x.x] will remain 1.1 unless there is either a major new release of the language or there is a documented change in the functioning of the object in question.

Current defined versions for each object are specified in this document, along with a history of version changes for each object. They can be found in the chapters for each object and look like:

Version	Affected	Comment
1.1		ECMAScript initial version
1.2	fooMethod(), property1	This is an example of a change from OMA

Note: This is an extension to [ECMA262].

An implementation SHOULD make best effort to deal with versioning issues.

The actual support, in the field, for multiple versions and the identification of situations where there are either version incompatibilities or cause for execution failure based upon version is the responsibility of the implementation.

6.2.2. Object Enumeration

All non-native objects MUST be enumerable.

Note: This is an extension to [ECMA262]. This allows any object extension to be visible and its existence to be testable using standard ECMAScript constructs.

All standard ECMAScript Mobile Profile objects (objects defined in this specification) SHOULD be enumerable. This is an extension to [ECMA262].

Sample code:

```

<html>
<head>
<script type="text/ecmascript">
function showContainedObjects(obj,objName) {
    document.write("-- " + objName,".version=",obj.version," --<br/>");
    for ( var i in obj) {
        if(typeof(obj[i]) == "object" && obj[i] != null )
            document.write( objName + "." + i + " = " + obj[i] + "<br/>");
    }
}
</script>
</head>
<body>
<p>
<b>Current window(top) properties:</b>
<p></p>
<script type="text/ecmascript">
    showContainedObjects(top, "top");
</script>
</p>
</body>
</html>

```

6.3. Global Object (parent Object)

Reference: ECMA-262 Section 10.1

All utility built-in functions are properties of the global object. Built-in properties of the global object are **READ-ONLY** and **DONTDELETE**. Properties of the global object introduced by declarations (ECMA262 section 10.1.3) may be modified but not deleted. The global object may be referred to directly as “top”, “parent”, “self”, or “window” (for compatibility with IE and Netscape).

6.3.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.3.2. Properties

There is no constructor property for the global object. The global object is not directly callable.

6.3.3. Methods

A number of utility methods are associated directly with the global object.

6.3.3.1. encodeURI()

Syntax:	<code>encodeURI (URI)</code>
Argument List:	URI – a complete URI
Description:	<p>encodes a complete URI, with knowledge of what parts of the URI to encode, and what parts, such as the “: /” not to encode, as defined by RFC2396. In general the special URI characters, when used as such are not encoded. These include:</p> <p style="text-align: center;">; / ? : @ & = + \$,</p> <p>This function is I18N aware. It replaces the <code>escape()</code> function.</p>
Return Value Type:	a URI encoded string, with appropriate characters encoded into escaped octet sequences
Errors or Exceptions:	throws a URIError exception if code point is invalid
Example(s):	<pre>var encStr=encodeURI("http://www.foo.skram/card?dest=#ben dave"); //encStr="http://www.foo.skram/card?dest=#ben%20dave"</pre>
Reference	ECMA-262 Section 15.1.3.3

6.3.3.2. encodeURIComponent()

Syntax:	<code>encodeURIComponent(pieceOfURI)</code>
Argument List:	pieceOfURI – a string fragment to be encoded
Description:	encodes a string according to URI encoding rules [RFC2396], but unaware of the URI separators
Return Value Type:	a UTF-8 encoded string
Errors or Exceptions:	throws a URIError exception if code point is invalid
Example(s):	<pre>var encString = encodeURIComponent("http://www.foo.skram/card?dest=#ben"); //encString =http%3A%2F%2Fwww.foo.skram%2Fcard%3Fdest%3D%23ben</pre>
Reference	ECMA-262 Section 15.1.3.4

6.3.3.3. decodeURI()

Syntax:	<code>decodeURI (URI)</code>
Argument List:	URI – a URI string encoded via <code>encodeURIComponent ()</code>
Description:	Unescapes encoded URI strings according to the URI separator rules in RFC2396. It replaces the <code>unescape ()</code> function.
Return Value Type:	an unencoded URI
Errors or Exceptions:	throws a <code>URIError</code> exception if the code points defined by %XXX are out of bounds
Example(s):	<pre>var decStr=decodeURI (http://www.foo.skram/card?dest=#ben%20dave); //decStr="http://www.foo.skram/card?dest=#ben dave"</pre>
Reference	ECMA-262 Section 15.1.3.1

6.3.3.4. decodeURIComponent()

Syntax:	<code>decodeURIComponent (aString)</code>
Argument List:	aString – a string with UTF-8 octet encodings embedded in it
Description:	blindly decodes UTF-8 octet encoded strings
Return Value Type:	a string with the UTF-8 octet encodings (%XXX) restored to the character that it represents
Errors or Exceptions:	throws a <code>URIError</code> exception if the code points defined by %XXX are out of bounds
Example(s):	<pre>var decStr=decodeURLComponent ("http%3A%2F%2Fwww.foo.skram%2Fcard%3Fdest%3D%23ben%20dave"); // decStr = "http://www.foo.skram/card?dest=#ben dave"</pre>
Reference	ECMA-262 Section 15.1.3.2

6.3.3.5. isFinite()

Syntax:	<code>isFinite (value)</code>
Argument List:	value – input to which <code>toNumber</code> is applied.
Description:	built-in function that checks for the infinity value.
Return Value Type:	Boolean - true if the value is a valid number, false if value is NaN or one of the infinity values.
Errors or Exceptions:	None

Example(s):	<code>testVal = isFinite(12.5); //returns true</code>
	<code>testVal = isFinite(NaN); //returns false</code>
Reference:	ECMA-262 15.1.2.5

6.3.3.6. isNaN()

Syntax:	<code>isNaN(value)</code>
Argument List:	value – input to which <code>isNaN()</code> is applied.
Description:	checks value for the Not-a-Number value
Return Value Type:	Boolean
	true if value == the Not-a-Number (NaN) value or if the value is not a number primitive, or undefined .
	false if value is a valid number, infinity, a boolean or null
Errors or Exceptions:	None
Example(s):	<code>testVal = isNaN("53"); // returns false</code> <code>testVal = isNaN("34GF2"); //returns true</code> <code>testVal = isNaN(false); //return false</code> <code>testVal = isNaN("false"); //returns true</code> <code>testVal = isNaN(23.01E+12); //returns false</code>
Reference:	ECMA-262 Section 15.1.2.4

6.3.3.7. parseInt()

Syntax:	<code>myNumb = parseInt(InputString, radix)</code>
Argument List:	<p>InputString – string to be converted</p> <p>radix –integer radix applied to the conversion string. If radix is undefined then the string is converted according the leading characters, '0'=octal, '0x,0X'=hexadecimal. Otherwise assume decimal.</p>
Description:	parses an input string into an integer value. <code>parseInt ()</code> will scan only until it encounters an invalid integer number character
Return Value Type:	number primitive or NaN if the string cannot be resolved
Errors or Exceptions:	If the string cannot be resolved as an integer then NaN is returned
Example(s):	<pre>anInt = parseInt("654.321"); //anInt = 654 anInt = parseInt("9A4",16); //anInt = 2468 anInt = parseInt("321 oz."); //anInt = 321 anInt = parseInt("hi there"); //anInt = NaN</pre>
Reference:	ECMA-262 Section 15.1.2.2
<div style="border: 1px dashed black; padding: 5px; width: fit-content; margin-left: auto;"> WMLScript Note: The WMLScript version of this function did not support a radix parameter. </div>	

6.3.3.8. parseFloat()

Syntax:	<code>myFloat = parseFloat(InputString)</code>
Argument List:	InputString – string to be converted to a floating point number
Description:	parses an input string into a float point value. <code>parseFloat ()</code> will scan only until it encounters an invalid floating point number character. White space at the beginning of the input string is stripped.
Return Value Type:	number primitive or NaN if the string cannot be resolved
Errors or Exceptions:	If the input string cannot be resolved as a floating point number then NaN is returned
Examples(s):	<pre>aFloat = parseFloat("+987.0123"); /* aFloat = 987.012 (assume only 6 digits of accuracy) */ aFloat=parseFloat(" -9.342JUNK"); //aFloat=-9.342 aFloat = parseFloat("M213213.1"); //aFloat=NaN</pre>
Reference:	ECMA-262 Section 15.1.2.3

6.3.3.9. toString()

The `toString` method is inherited by all native object types. Built-in class `toString` handlers may be different than the generic global method.

Syntax:	<code>mystr = Object.toString()</code> [See also <code>String()</code> , <code>array.toString()</code>]
Argument List:	
Description:	returns a string primitive representation of the receiving Object
Return Value Type:	string primitive
Errors or Exceptions:	None
Examples(s):	<pre>var a; var b; b=a.toString(); //b="undefined" a=345; b=a.toString(); //b="345" a=true; b=a.toString(); //b="true"</pre>
Reference:	ECMA-262 Section 9.8
	Note: this is similar to the <code>String()</code> method of the <code>String</code> object, which is really a <code>String</code> object constructor.

6.3.3.10. eval()

Reference: ECMA-262 Section 10.1.2, 15.1.2.1

Support for the `eval()` method is OPTIONAL ("NOT REQUIRED to be implemented per [ECMA327]) in ECMAScript Mobile Profile. See Section 5.4.2.

6.4. Array Object

Reference: ECMA-262 Section 15.4

An array is an indexed collection of references to other objects or values. It is a set of properties, owned by an object, that can be accessed by name or by index position in the containing array.

An array may be constructed either by the function call `Array(...)` or by the explicit array object creation `new Array(...)`. Both are equivalent.

6.4.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.4.2. Properties

6.4.2.1. length

Syntax:	<code>array.length</code>
Type:	Number (integer)
Description:	The length property of an array is 1+ the largest index assigned to a property in that array. Array indexing is zero based.
Errors or Exceptions:	None
Example(s):	<pre>var months = new Array("Jan","Feb",Mar","Apr","May","Jun","Jul","Aug","Sep","Oct", "Nov","Dec"); cnt = months.length; //cnt = 12</pre>
Reference	ECMA-262 Section 15.4.3, 15.4.5.2

6.4.3. Methods

6.4.3.1. concat()

Syntax:	<code>bigArray = firstArray.concat([array1 [, array2 [, ...]])</code>
Argument List:	array1 – the array to be concatenated to the firstArray object array2 etc. – 2 nd , 3 rd etc. arrays also to be concatenated.
Description:	Allows the joining of two or more arrays into a new, combined array object (bigArray – resultant array object). If no array parameters are specified, then the method creates a new duplicate array.
Return Value Type:	Array Object
Errors or Exceptions:	None
Example(s):	<pre>var arrayNums = new Array(23.5,345.2,55.5); var arrayChars = new Array("x","y","z"); var mixedArray = arrayNums.concat(arrayChars); //mixedArray = 23.5,345.2,55.5, "x","y","z"</pre>
Reference	ECMA-262 15.4.4.4

6.4.3.2. join()

Syntax:	<code>newVar = myArray.join([delimiterString])</code>
Argument List:	delimiterString – the separator string used to separate array elements in the output string. If the string is not specified (undefined), it is set to the comma character (“,”).
Description:	Joins the contents of array entries into a single string
Return Value Type:	a String
Errors or Exceptions:	None Note: if the returned string is empty, an empty string will be returned (not a NULL).
Example(s):	<pre>myArray = new Array("This", "is", "a", "collection", "of", "words"); str1 =myArray.join();//str1="This,is,a,collection,of,words"; str=myArray.join(" ");//str="This is a collection of words";</pre>
Reference	ECMA-262 Section 15.4.4.5

6.4.3.3. toString()

`Array.toString()` is identical to `Array.join(“,”)`. NOTE: IE and Netscape will use comma as the separator regardless of `delimiterString` passed.

6.4.3.4. pop()

Syntax:	anArray.pop()
Argument List:	
Description:	Gets the last array value in an array (array[length-1]), deletes the value in the array and returns the value. Decreases array.length by 1
Return Value Type:	Any
Errors or Exceptions:	If the array is empty "undefined" is returned.
Example(s):	<pre>var bytecodeArray = new Array("nop","lda 1","mult","dup"); var nextcode = bytecodeArray.pop(); //nextcode = "dup" //bytecodeArray="nop","lda 1","mult"</pre>
Reference	ECMA-262 Section15.4.4.6 See also push() , shift() and unshift()

6.4.3.5. push()

Syntax:	anArray.push(value)
Argument List:	value – the value to be added to the end of an array
Description:	appends a value to the end of an array, increases the array.length by 1
Return Value Type:	The new length of the array is returned
Errors or Exceptions:	None
Example(s):	<pre>var bytecodeArray = new Array("nop","lda 1","mult","dup"); len = bytecodeArray.push("b_and"); //len=5 //bytecodeArray="nop","lda 1","mult","dup","b_and"</pre>
Reference	ECMA-262 Section15.4.4.7 See also pop() , shift() and unshift()

6.4.3.6. reverse()

Syntax:	<code>anArray.reverse()</code>
Argument List:	
Description:	The elements of an array are rearranged, so as to reverse their order.
Return Value Type:	The object is returned.
Errors or Exceptions:	<u>If the array is empty, the reverse method does nothing.</u>
Example(s):	<pre>var ordArray = new Array(1,2,3,4,5,6); ordArray.reverse(); //ordArray= 6,5,4,3,2,1</pre>
Reference	ECMA-262 Section15.4.4.8

6.4.3.7. shift()

Syntax:	<code>anArray.shift()</code>
Argument List:	
Description:	Removes the first value of an array, shifting down all indexes
Return Value Type:	Any – the value shifted out of the array
Errors or Exceptions:	returns undefined if the array is empty
Example(s):	<pre>var bytecodeArray = new Array("nop","lda 1","mult","dup"); var nextcode = bytecodeArray.shift(); //nextcode = "nop" //bytecodeArray="lda 1","mult","dup"</pre>
Reference	ECMA-262 Section15.4.4.9

6.4.3.8. slice()

Syntax:	<code>newArray = anArray.slice(startIndex [, endIndex])</code>
Argument List:	<p>startIndex – number (integer)</p> <p>endIndex – optional number (integer), if not included it defaults to the full array</p>
Description:	<p>takes an array and returns a new array with the elements at startIndex up to but not including the optional element pointed to by endIndex.</p> <p>If startIndex, or endIndex is a negative number (integer) it is treated as length+index.</p> <p><u>If the endIndex is greater than the length of the array, then the full array is considered.</u></p>
Return Value Type:	Array
Errors or Exceptions:	<p>If the array is empty the function returns undefined.</p> <p>If the startIndex is undefined or its value is greater than the length of the array, then the function returns undefined.</p>
Example(s):	<pre>var tArray = new Array(0,1,2,3,4,5,6); var slArray= tArray.slice(3); //slArray=3,4,5,6 var slArray= tArray.slice(1,3); //slArray=1,2 var slArray= tArray.slice(-4); //slArray=3,4,5,6</pre>
Reference	ECMA-262 Section15.4.4.10

6.4.3.9. sort()

Syntax:	<code>anArray.sort([compareFunc]);</code>
Argument List:	<p><code>compareFunc(elem1, elem2)</code> – an optional function that returns a value, either negative, zero, or positive when comparing two elements (elem1,elem2) of the source array.</p> <p>If <code>compareFunc()</code> is not specified, sorting occurs based on character string value sort order.</p>
Description:	a general array sort method where the comparison function may be supplied by the developer, based upon the contents of the array to be sorted.
Return Value Type:	the initial array, with the contents sorted according to the presented comparison function
Errors or Exceptions:	A TypeError exception is thrown if a specified compareFunc cannot be found. (This is an extension to ECMA-262.)
Example(s):	<pre>var myArray = new Array(0,5,6,2,1); function myCompare(a,b) {return a-b;}; myArray.sort(myCompare); //myArray= 0,1,2,5,6</pre>
Reference	ECMA-262 Section 15.4.4.11

6.4.3.10. splice()

Syntax:	<code>newArray = someArray.splice(startIndex,deleteCount [, item1 [, item2 [, ...]]])</code>
Argument List:	<p>startIndex – number(integer)</p> <p>deleteCount – number (integer)</p> <p>itemX – optional data elements of any type which replace deleted elements</p>
Description:	<p>Splice deletes specified array elements inside an array, starting at startIndex for a count of deleteCount replacing these elements with the optionally supplied items, if given, putting the result into the original array</p> <p>A new array with the removed elements is created in the assigned array if specified.</p> <p>Note: if the deleteCount is zero and there are items specified in the optional item fields, these items will be inserted into the original array at the startIndex position.</p>
Return Value Type:	Original and new array objects
Errors or Exceptions:	None
Example(s):	<pre>var stArray = new Array; (1,2,3,4); var delArray = stArray.splice(2,2,100); //stArray = [1,2,100]; //delArray = [3,4];</pre>
Reference	ECMA-262 Section15.4.4.12

6.4.3.11. unshift()

Syntax:	<code>someArray.unshift([item₁ [,item₂ [, ...]]])</code>
Argument List:	item _n = elements of any type
Description:	zero or more items are prepended to the start of an array such that their order within the array is the same as the argument list order. Note: No new array is created.
Return Value Type:	returns the count of items prepended to the target
Errors or Exceptions:	None
Example(s):	<pre>var bytecodeArray = new Array("nop","lda 1","mult","dup"); cnt = bytecodeArray.unshift("incr"); //cnt=1 //bytecodeArray="incr","nop","lda 1","mult","dup"</pre>
Reference	ECMA-262 Section15.4.4.13

6.5. String Object

Reference: ECMA-262 Section 15.5

The **string** object in ECMAScript Mobile Profile provides the storage and methods for manipulating strings. All string functions that use indexes into strings assume that the indexes are to codepoints (characters), independent of the internal encoding used.

6.5.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.5.2. Properties

6.5.2.1. length

Syntax:	<code>someString.length</code>
Type:	Number(integer)
Description:	– Value that is the character length of the target string The target must be a string, or else the string specific property will not be returned, and the result can be surprising.
Errors or Exceptions:	None
Example(s):	<code>"WAPForum".length; //an 8 is returned</code> <code>"".length // a zero is returned</code>
Reference	ECMA-262 Section 15.5.4

6.5.3. Methods

6.5.3.1. toString()

This is a description of the string specific instantiation of the toString method. Note: every native object has an instantiation of the toString method.

Syntax:	<code>strObj.toString()</code>
Argument List:	
Description:	returns the string value of the String object.
Return Value Type:	string value
Errors or Exceptions:	A TypeError exception is thrown if the target object cannot be converted to a string.
Example(s):	<code>var strObj = new String("This is an Object!");</code> <code>val=strObj.toString(); //val = "This is an Object!"; [but</code> <code>its not, its just a string value]</code>
Reference	ECMA-262 Section 15.5.4.2

6.5.3.2. valueOf()

This section describes the **String** object specific version of the **valueOf()** method. It should not be confused with other instantiations of this method.

Syntax:	<code>myStrObj.valueOf()</code>
Argument List:	
Description:	returns the string value of the String object. The argument must be a String object for the method to return a string.
Return Value Type:	string value
Errors or Exceptions:	None
Example(s):	<pre>var theStringObj = new String("Yo Ho Ho"); var chant = theStringObj.valueOf(); //chant="Yo Ho Ho"; (which is a simple string value)</pre>
Reference	ECMA-262 Section 15.5.4.3

Note: In the case of strings the **valueOf()** method and the **toString()** method are identical.

6.5.3.3. charAt()

Syntax:	<code>someString.charAt(pos)</code>
Argument List:	pos – number (integer) which is the index into the target string.
Description:	returns a single character string pointed to by the position argument. Index is zero based.
Return Value Type:	a single character string value
Errors or Exceptions:	if pos < 0 or greater than the length of the target string then the empty string is returned
Example(s):	<pre>"Help me".charAt(3); // returns "p"</pre>
Reference	ECMA-262 Section 15.5.4.4

6.5.3.4. charCodeAt()

Syntax:	<code>targetStr.charCodeAt(position)</code>
Argument List:	position – number (integer)
Description:	returns the code point value of the character in the target string, pointed to by the index (position) argument. Index is zero based.
Return Value Type:	number (integer in the range 0 to $2^{16}-1$)
Errors or Exceptions:	If there is no Unicode character in the target, pointed to by the index, or <code>pos < 0</code> then NaN is returned
Example(s):	<pre>val = "WAP™".charCodeAt(3); //returns the Unicode encoding value (2122)</pre>
Reference	ECMA-262 Section 15.5.4.5

6.5.3.5. concat()

Syntax:	<code>targetStr.concat([str1 [,str2 [, ...]])</code>
Argument List:	str1-strN – zero or more String objects or values
Description:	concatenates zero or more string values to the target string
Return Value Type:	string value
Errors or Exceptions:	None
Example(s):	<pre>var speech = "For score".concat("and ", "seven years ", "ago"); //speech="For score and seven years ago"; var strObj = new String("Three blind mice, "); strObj.concat("see how they run."); //strObj = "Three blind mice, see how they run." (an object)</pre>
Reference	ECMA-262 Section 15.5.4.6

Note: The string "+" operator is more often used for the same purpose.

6.5.3.6. indexOf()

Syntax:	<code>targetStr.indexOf(searchString [,position])</code>
Argument List:	<p>searchString – a String object or string value</p> <p>position – number (integer), optional</p>
Description:	searches for the first substring match of the searchString in the targetStr, optionally starting at the position defined by the second argument. If the second argument is not specified ("undefined"), then the search starts from index 0 (zero).
Return Value Type:	-1 if there is no match number(integer) - index of the first match found. Index is zero based.
Errors or Exceptions:	<u>If position < 0, or position > (string length -1), then NaN is returned.</u>
Example(s):	<pre>var sstr="big"; ret = "It's Big, really big. Big,big,big".indexOf(sstr); // ret = 17</pre>
Reference	ECMA-262 Section 15.5.4.7

6.5.3.7. lastIndexOf()

Syntax:	<code>targetStr.lastIndexOf(searchString [,position])</code>
Argument List:	searchString – a String object or string value position – number (integer), optional
Description:	searches for the last substring match of the searchString in the targetStr, optionally starting at the position defined by the second argument, searching backwards toward index 0. If the second argument is not specified (“undefined”), then the search starts from the end of the string.
Return Value Type:	-1 if there is no match number(integer) - index of the first match found. Index is zero based.
Errors or Exceptions:	If position < 0, or position > (string length -1), then NaN is returned.
Example(s):	<pre>var sstr="big"; ret = "It's Big, really big. Big,big,big".lastIndexOf(sstr); // ret = 30</pre>
Reference	ECMA-262 Section 15.5.4.8

6.5.3.8. localeCompare()

Syntax:	<code>thisString.localeCompare(thatString)</code>
Argument List:	thatString – a [converted] string or String Object
Description:	compares two strings, in a locale dependant way, to determine sort order. thisString comes before thatString ; return a negative value thisString is equivalent to thatString; return zero thisString comes after thatString; return a positive value
Return Value Type:	number (integer) negative, zero or positive to denote comparison 0 denotes canonical equivalence by the Unicode [UNICODE] standard positive (usually 1) denotes “thisString” comes after “thatString” in sort order negative (usually -1) denotes “thatString” comes after “thisString” in sort order
Errors or Exceptions:	None
Example(s):	<code>"this".localeCompare("that"); //returns a positive value</code>
Reference	ECMA-262 Section 15.5.4.9

6.5.3.9. match()

Syntax:	<code>myString.match(regExp)</code>
Argument List:	regExp – a pattern or RegExp Object representing a valid regular expression
Description:	Find all matches in the target string, as defined by the regular expression, and return them in an array whose length is equal to the number(integer) of matches found. The method target (myString) is a string value or String object.
Return Value Type:	Array with its length set to the number(integer) matches returned in the array.
Errors or Exceptions:	Matches with the empty string (“”) are legal.
Example(s):	<pre>var resArray = new Array; resArray = "Do da ditty do ".match(/\bd.\b/ig); //resArray[0] = "Do" //resArray[1] = "da" //resArray[2] = "do" //resArray.length = 3</pre>
Reference	ECMA-262 Section 15.5.4.10

6.5.3.10. replace()

ECMAScript Mobile Profile does not support the use of a function as the second parameter, even though it is supported in [ECMA262].

Syntax:	targetString.replace(searchRegExp, replaceStr) targetString.replace(searchStr, replaceStr)															
Argument List:	searchRegExp – a regular expression object searchStr – a [converted] string or String object replaceStr – a string value with special character meanings as defined below															
Description:	find the substring match(es) defined by the search expression or string and replace it with the string or expression defined by replaceStr. Certain \$ (dollar) sequences have special meaning in the replacement string															
	<table border="1"> <thead> <tr> <th>Dollar Sequence</th> <th>Replacement text</th> </tr> </thead> <tbody> <tr> <td>\$\$</td> <td>Escape for dollar sign</td> </tr> <tr> <td>\$&</td> <td>The matched substring</td> </tr> <tr> <td>\$`</td> <td>The portion of the string that precedes the matched string.</td> </tr> <tr> <td>\$'</td> <td>The portion of the string that follows the matched string.</td> </tr> <tr> <td>\$n</td> <td>the nth parentheses captured string</td> </tr> <tr> <td>\$nn</td> <td>the nnth parentheses captured string where nn is a two digit decimal number 01-99</td> </tr> </tbody> </table>		Dollar Sequence	Replacement text	\$\$	Escape for dollar sign	\$&	The matched substring	\$`	The portion of the string that precedes the matched string.	\$'	The portion of the string that follows the matched string.	\$n	the n th parentheses captured string	\$nn	the nn th parentheses captured string where nn is a two digit decimal number 01-99
Dollar Sequence	Replacement text															
\$\$	Escape for dollar sign															
\$&	The matched substring															
\$`	The portion of the string that precedes the matched string.															
\$'	The portion of the string that follows the matched string.															
\$n	the n th parentheses captured string															
\$nn	the nn th parentheses captured string where nn is a two digit decimal number 01-99															
Return Value Type:	a String value															
Errors or Exceptions:	none															
Example(s):																
Reference	ECMA-262 Section 15.5.4.11															

6.5.3.11. search()

Syntax:	aString.search(aRegExp)
Argument List:	aRegExp – a regular expression object
Description:	searches for the first occurrence of the string specified by the regular expression within the target string, and returns an index to that substring.
Return Value Type:	number (integer)
Errors or Exceptions:	-1 if no pattern match was found
Example(s):	val = "\$200.88 97% John Smith".search(/\b\d*%\b/); //val=8
Reference	ECMA-262 Section 15.5.4.12

6.5.3.12. slice()

Syntax:	targetString.slice(start, [end])
Argument List:	start – number(integer) end – number(integer) or “undefined”
Description:	returns the substring defined by indexes ‘start’ and ‘end’. If ‘start’ is negative it indexes back from the end of the target string. If ‘end’ is negative, it indexes from the beginning of the target string. If ‘end’ is not specified (“undefined”) the index is through the end of the target string.
Return Value Type:	string value
Errors or Exceptions:	If ‘start’ is undefined, the result may be surprising.
Example(s):	"slice-of-life".slice(6,8); //returns "of"
Reference	ECMA-262 Section 15.5.4.13

6.5.3.13. split()

Syntax:	<code>aString.split(regExpSeparator [,limit])</code> <code>aString.split(strSeparator [, limit])</code>
Argument List:	<p><code>regExpSeparator</code> – a regular expression object, which is to be interpreted as a regular expression or,</p> <p><code>strSeparator</code> – a string which is to be interpreted as a literal string.</p> <p><code>limit</code> – optional number(integer)</p>
Description:	returns an array into which are stored substrings from the result of splitting the target string. Substrings are determined by searching from left to right for occurrences of the separator, as defined by a regular expression or string value. The number of array elements may be optionally limited by setting the 'limit' parameter.
Return Value Type:	Array object
Errors or Exceptions:	If 'limit' equals 0, an empty array is returned.
Example(s):	<pre>resArray = new Array; resArray= "Hola".split(""); //resArray has one character at each array location resArray= "This,is weird".split(/[,]/); //resArray[0]="This" resArray[1]="is" resArray[2]="weird"</pre>
Reference	ECMA-262 Section 15.5.4.14

6.5.3.14. substring()

Syntax:	<code>targetStr.substring(start [,end])</code>
Argument List:	start – number(integer) end – number(integer) or “undefined” if not specified
Description:	returns a string defined by the indexes start and end. If either start or end is negative or NaN, it is set to zero (0). If start > end then they are swapped. If end is “undefined” it is set to string.length
Return Value Type:	a string value
Errors or Exceptions:	none
Example(s):	<code>“sadlkjfouiewr”.substring(4,8); //returns “kjfo”</code> <code>“sadlkjfouiewr”.substring(8,4); //returns “kjfo”</code>
Reference	ECMA-262 Section 15.5.4.15

6.5.3.15. toLowerCase(), toLocaleLowerCase()

[ECMA262] defines two string methods `toLowerCase()` and `toLocaleLowerCase()`. The method `toLocaleLowerCase()` is the same as `toLowerCase()` except that it is I18N aware. In ECMAScript Mobile Profile, both these methods are synonyms and are I18N aware (act as `toLocaleLowerCase()`).

Syntax:	<code>myString.toLowerCase()</code> <code>yourString.toLocaleLowerCase()</code>
Argument List:	
Description:	Takes the String object, or any object that can evaluate to a string and converts the string to all lowercase characters as defined by the Unicode Character Database [UNICODE] for the host environment’s current locale. The method target (myString, yourString) is a String object.
Return Value Type:	string value
Errors or Exceptions:	none Results may be language dependant
Example(s):	
Reference	ECMA-262 Section 15.5.4.16, 15.5.4.17

6.5.3.16. toUpperCase(), toLocaleUpperCase()

[ECMA262] defines two string methods `toUpperCase()` and `toLocaleUpperCase()`. The method `toLocaleUpperCase()` is the same as `toUpperCase()` except that it is I18N aware. In ECMAScript Mobile Profile, both these methods are synonyms and are I18N aware (act as `toLocaleUpperCase()`).

Syntax:	<code>someStringObject.toUpperCase();</code> <code>aStringObject.toLocaleUpperCase();</code>
Argument List:	
Description:	Takes the String object, or any object that can evaluate to a string and converts the string to all uppercase characters as defined by the Unicode Character Database [UNICODE] for the host environment's current locale. The method target (<code>someStringObject</code> , <code>aStringObject</code>) is a String object.
Return Value Type:	String value
Errors or Exceptions:	none Results may be language dependant
Example(s):	<code>myStr = "TempestB".toUpperCase(); //myStr = "TEMPESTB"</code>
Reference	ECMA-262 Section 15.5.4.18, 15.5.4.19

6.6. RegExp Object

Reference: ECMA-262 Section 15.10

Regular expressions as defined in [ECMA262] are supported in ECMAScript Mobile Profile.

6.6.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.6.2. Pattern Summary

Patterns are denoted as `"/ pattern string /"`.

The following metacharacters can be used as elements in the pattern string:

Matching characters

Character	Meaning
\b	word boundary
\B	word non-boundary
\d	numeral (as defined by Unicode definition of current charset)
\D	any character except numeral (as defined by Unicode definition of current charset)
\s	a white space
\S	a non-white space
\w	letter, numeral or underscore (as defined by Unicode definition of current charset)
\W	any character that is not a letter, numeral or underscore (as defined by Unicode definition of current charset)
.	any character except a newline
^	Pattern is anchored to the beginning of a line.
\$	Pattern is anchored to the end of a line.
\	Escapes the meaning of a subsequent special pattern character when it precedes one. May be used to escape the meaning of: .\ \$ ^ * + ? () [] { }

Count and range modifiers

Character	Meaning
[...]	range or set delimiter
[^ ...]	negation range or set
*	zero or more times modifier for previous character
?	zero or one time modifier for previous character
+	one or more times modifier for previous character
[n]	exactly 'n' times modifier for previous character
[n,]	'n' or more times modifier for previous character

[n,m]	at least 'n', but not more than 'm' times modifier for previous character
-------	---

regular expression modifiers

Character	Meaning
g	global search modifier
i	ignorecase modifier
m	multiline modifier – not supported

6.6.3. Pattern Semantics

Reference: ECMA-263 Section 15.10.2

Pattern semantics are as defined in [ECMA262].

6.6.4. Properties

Each instance of a regexp object inherits the following properties from the regexp prototype:

6.6.4.1. source

Syntax:	aRegExpObj.source
Type:	String value, read-only
Description:	This is the original pattern string of the regular expression object
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.7.1

6.6.4.2. global

Syntax:	aRegExpObj.global
Type:	Boolean, read-only
Description:	–Property that shows the state of the global modifier (“g”) of this object
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.7.2

6.6.4.3. ignoreCase

Syntax:	aRegExpObj.ignoreCase
Type:	Boolean, read-only
Description:	This is the state of the ignoreCase modifier (“i”) of this object
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.7.3

6.6.4.4. lastIndex

Syntax:	aRegExpObj.lastIndex
Type:	Number (integer)
Description:	–Property that specifies the index in the target string, at which to start the next match.
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.7.5

6.6.4.5. multiline

The property ‘multiline’ and associated modifier ‘m’ are not supported in ECMAScript Mobile Profile.

6.6.5. Methods

6.6.5.1. exec()

Syntax:	<code>regExpObj.exec(targetString)</code>
Argument List:	targetString – [converted] String object or string value against which the regular expression match is applied
Description:	Performs a regular expression match of “targetString” against the regular expression and returns an array object containing the results of the match.
Return Value Type:	Array Object
Errors or Exceptions:	“null” is returned if there is no match
Example(s):	<pre>var myRExp = /\b\d*\b/g; var myArray = new Array; myArray = myRExp.exec("joe 100 fred 106 ralph 97 greg 102 "); //myArray[0]=100 myArray[1]=106 myArray[2]=97 myArray[3]=102</pre>
Reference	ECMA-262 Section 15.10.6.2

6.6.5.2. test()

Syntax:	<code>aRegExpObj.test(someString)</code>
Argument List:	someString – a [converted] string or String object
Description:	Tests whether a match exists or not. This is equivalent to <code>RegExp.exec("someString") != null;</code>
Return Value Type:	Boolean
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.6.3

6.6.5.3. toString()

This is the description of `toString()` method specific to the regular expression object.

Syntax:	<code>myRegExpObj.toString()</code>
Argument List:	
Description:	returns a string which is in the form of a regular expression pattern generated from the pattern which is part of the regular expression object. “/” chars are concatenated at the beginning and end of the pattern, and the appropriate modifiers (“g”, “i”) are appended if true. The method target (myRegExpObj) is a regular expression object.
Return Value Type:	a string value
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.10.6.4

6.6.5.4. compile()

The `compile()` function is not supported.

6.7. Boolean Object

Reference: ECMA-262 Section 15.6

6.7.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.7.2. Methods

6.7.2.1. toString()

This is a description of the boolean object specific instantiation of the `toString()` method. Note: Every native object has an instantiation of the `toString` method.

Syntax:	<code>aBool.toString()</code>
Argument List:	
Description:	converts the Boolean value or object to the string “true” or “false” based on the input value The method target (<code>aBool</code>) is an object of the type Boolean .
Return Value Type:	string value
Errors or Exceptions:	none
Example(s):	<pre>var mySwitch = new Boolean(1); aStr = mySwitch.toString(); //aStr = "true"</pre>
Reference	ECMA-262 Section 15.6.4.2

6.7.2.2. valueOf()

This is a description of the boolean object specific instantiation of the `valueOf()` method.

Syntax:	<code>myBool.valueOf()</code>
Argument List:	
Description:	coerces a Boolean object into a Boolean value The method target (<code>myBool</code>) is an object of the type Boolean .
Return Value Type:	Boolean value
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.6.4.3

6.8. Number Object

Reference: ECMA-262 Section 15.7

The number object is a container for useful constants and functions that may need to be constructed.

6.8.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.8.2. Constants

6.8.2.1. MAX_VALUE

Reference: ECMA-262 Section 15.7.3.2

64-bit Double Precision Floating Point	$\sim 2^{1024}$ ($\sim 1.797693134862316e+308$)
--	---

6.8.2.2. MIN_VALUE

Reference: ECMA-262 Section 15.7.3.3

64-bit Double Precision Floating Point	$\sim 2^{-1024}$ ($\sim 5.562684646268e-309$)
--	---

6.8.2.3. NaN

Reference: ECMA-262 Section 15.7.3.4

The value of `aNumber.NaN` is NaN. The assignment of a particular bit pattern representing NaN is implementation specific.

6.8.2.4. NEGATIVE_INFINITY

Reference: ECMA-262 Section 15.7.3.5

The value of `aNumber.NEGATIVE_INFINITY` is $-\infty$. The assignment of a particular bit pattern representing $-\infty$ is implementation specific.

6.8.2.5. POSITIVE_INFINITY

Reference: ECMA-262 Section 15.7.3.6

The value of `aNumber.POSITIVE_INFINITY` is $+\infty$. The assignment of a particular bit pattern representing $+\infty$ is implementation specific.

6.8.3. Properties

No special properties are specified for the Number object.

6.8.4. Methods

6.8.4.1. toExponential()

Note: The fractionDigits value in [ECMA262] is defined as being between 0 and 20 inclusive. In this implementation, the language is only required to support a fractionDigits value between 0 and 13 inclusive.

Syntax:	<code>aNumber.toExponential([fractionDigits])</code>
Argument List:	fractionDigits – a number (integer) [range is implementation dependant]
Description:	converts a number to display in exponential format with ‘fractionDigits’ to the right of the decimal point. Missing digits are zero filled.
Return Value Type:	string value
Errors or Exceptions:	<p>If the input number is NaN then “NaN” is returned</p> <p>Only 14 digits of output accuracy are guaranteed across implementations.</p> <p>If ‘fractionDigits’ < 0 or ‘fractionDigits’ > supported implementation (at least 13) a RangeError exception is thrown.</p>
Example(s):	
Reference	ECMA-262 Section 15.7.4.6

6.8.4.2. toFixed()

Note: The fractionDigits value in [ECMA262] is defined as being between 0 and 20 inclusive. In this implementation, the language is only required to support a fractionDigits value between 0 and 13 inclusive.

Syntax:	<code>aNumber.toFixed([fractionDigits])</code>
Argument List:	fractionDigits – a number (integer) [range is implementation dependant]
Description:	<p>converts a number to display in fixed format placing ‘fractionDigits’ digits after the decimal point. Missing digits to the right of the decimal point are zero filled. Rounding accuracy is not guaranteed beyond 14 decimal digits total.</p> <p>If fractionDigits is not specified, 0 (zero) is assumed</p>
Return Value Type:	string value
Errors or Exceptions:	<p>If the input number is NaN then “NaN” is returned</p> <p>A fractionDigits value outside of the supported range (0-13 as a minimum) will generate a RangeError exception.</p> <p>Only 14 digits of output string accuracy are guaranteed across implementations.</p>
Example(s):	<pre>var aNum = 6789912; dispNum=aNum.toFixed(2); //dispNum=6789912.00 var bNum = 67899.12; dispNum=bNum.toFixed(2); //dispNum=67899.10 (possible loss of 7th digit of precision) var cNum=987.44 dispNum=cNum.toFixed(10); //dispNum=987.4400000000</pre>
Reference	ECMA-262 Section 15.7.4.5

6.8.4.3. toLocaleString()

Reference: ECMA-262 Section 15.7.4.3

Implementations are encouraged to implement I18N locale specific conversions for numbers. In the absence of a true locale specific implementation, **toFixed(2)** and **toLocaleString()** shall be considered synonyms.

6.8.4.4. toString()

This is a description of the number object specific instantiation of the `toString()` method. Note: Every native object has an instantiation of the `toString()` method.

Syntax:	<code>aNumberObj.toString([radix])</code>
Argument List:	radix – optional radix for conversion. If radix is “undefined” it is assumed to be 10.
Description:	Convert a number into a printable string.
Return Value Type:	string value
Errors or Exceptions:	If number is NaN then “NaN” is returned. Only 14 digits of decimal accuracy can be guaranteed.
Example(s):	
Reference	ECMA-262 Section 15.7.4.2

6.8.4.5. valueOf()

Syntax:	<code>aNumberObj.valueOf()</code>
Argument List:	
Description:	returns a number value from a number object. The method target is a number object (aNumberObj).
Return Value Type:	number value
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.7.4.4

6.8.4.6. toPrecision()

Note: The precision value in [ECMA262] is defined as being between 1 and 21 inclusive. In this implementation, the language is only required to support a precision value between 1 and 14 inclusive.

Syntax:	<code>aNumberObj.toPrecision(precision)</code>
Argument List:	precision – a number (integer) [range is implementation dependant]
Description:	returns a string containing the number represented either in exponential notation with one digit before the significand's decimal point and 'precision' total digits, or in fixed notation with 'precision' total digits. The displayed value is rounded with respect to undisplayed digits.
Return Value Type:	String value
Errors or Exceptions:	if "precision" is "undefined" then the function simply calls the toString method for numbers. A precision value outside of the supported range (1-14 as a minimum) will generate a RangeError exception. Only 14 digits of accuracy are guaranteed across implementations.
Example(s):	<pre>var aNum= 123.4567 dispNum = aNum.toPrecision(2); //dispNum=1.2E2 dispNum = aNum.toPrecision(3); //dispNum=123 dispNum = aNum.toPrecision(4); //dispNum=123.5 Note rounding dispNum = aNum.toPrecision(5); //dispNum=123.46 dispNum = aNum.toPrecision(6); //dispNum=123.457 dispNum = aNum.toPrecision(7); //dispNum=123.456x where the values of x could vary from implementation to implementation</pre>
Reference	ECMA-262 Section 15.7.4.7

6.9. Math Object

Reference: ECMA-262 Section 15.8

The Math object is a single object, owned by the global object, which is the container for some useful constants and mathematical functions. This object cannot be instantiated (has no constructor). If an attempt is made to call the math object as a constructor or a function, ECMA-262 states a **ReferenceError** should be raised. However Internet Explorer and Netscape will return a **TypeError** in such a case. It is recommended that both types of errors are handled.

6.9.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.9.2. Properties and Constants

Useful constants are contained in the Math object as properties. All constants are guaranteed to support at least 14 total digits of accuracy. The following constants are supported:

Constant	Value
Math.E	2.7182818284590...
Math.LN2	0.6931471805599...
Math.LN10	2.3025850929940...
Math.LOG10E	0.4342944819035...
Math.LOG2E	1.4426950408890...
Math.PI	3.1415926535897...
Math.SQRT1_2	0.7071067811865...
Math.SQRT2	1.4142135623731...

6.9.3. Methods

6.9.3.1. Integerizing Methods

Any of the following methods, if applied to numbers that are already integers, simply returns the number itself.

Method	Description	Examples	Reference
Math.round(x)	Returns the number value that is closest to the given value and is an integer	a= Math.round(3.5); //a=4 b= Math.round(-3.5); //b= -3	ECMA-262 Section 15.8.2.15
Math.ceil(x)	Returns the smallest number value that is not less than x and is an integer.	a= Math.ceil (3.4); //a=4 b= Math.ceil(-3.4); //b= -3	ECMA-262 Section 15.8.2.6
Math.floor(x)	Returns the greatest number value that is not greater than x and is an integer.	a= Math.floor(3.4); //a=3 b= Math.floor(-3.4); //b= -4	ECMA-262 Section 15.8.2.9

6.9.3.2. General Mathematical Methods

Method	Description	Reference
Math.abs(x)	Returns the absolute value of 'x'.	ECMA-262 Section 15.8.2.2
Math.exp(x)	Returns an implementation dependent approximation of the exponential function of 'x' ('e' raised to the power of 'x', where 'e' is the base of the natural logarithms).	ECMA-262 Section 15.8.2.8
Math.log(x)	Returns an implementation dependent approximation of the natural logarithm of 'x'	ECMA-262 Section 15.8.2.10
Math.pow(x,y)	Returns an implementation dependent approximation of the result of raising 'x' to the 'y' power.	ECMA-262 Section 15.8.2.13
Math.sqrt(x)	Returns an implementation dependent approximation of the square root of 'x'	ECMA-262 Section 15.8.2.17

6.9.3.3. Trigonometric Methods

Method	Description	Reference
Math.acos(x)	Generates the arc-cosine of number x Range: +0 to $+\pi$	ECMA-262 Section 15.8.2.2
Math.asin(x)	Generates the arc-sine of number x Range: $-\pi/2$ to $+\pi/2$	ECMA-262 Section 15.8.2.3
Math.atan(x)	Generates the arc-tangent of number x Range: $-\pi/2$ to $+\pi/2$	ECMA-262 Section 15.8.2.4
Math.atan2(y,x)	Generates the arc-tangent of the quotient y,x Range: $-\pi$ to $+\pi$	ECMA-262 Section 15.8.2.5
Math.cos(x)	Generates the cosine, in radians, of number x	ECMA-262 Section 15.8.2.7
Math.sin(x)	Generates the sine, in radians, of number x	ECMA-262 Section 15.8.2.16
Math.tan(x)	Generates the tangent, in radians, of number x	ECMA-262 Section 15.8.2.18

6.9.3.4. max()

Reference: ECMA-262 Section 15.8.2.11

Syntax:	Math.max([value1[,value2 [,...]])
Argument List:	value1 – any value, which is then converted with toNumber() value2 – any value, which is then converted with toNumber()
Description:	return the largest of the resulting values
Return Value Type:	number
Errors or Exceptions:	If any of the values is NaN the result is NaN
Example(s):	Math.max("3.12E12",36); //returns the number 3.12E12
Reference	ECMA-262 Section 15.8.2.11

WMLScript Note: ECMAScript allows zero or more arguments, returning the maximum. WMLScript specified exactly two arguments. [WMLSCRIPT]

6.9.3.5. min()

Reference: ECMA-262 Section 15.8.2.12

Syntax:	Math.min([value1 [,value2 [,...]])
Argument List:	value1 – any value, which is then converted with toNumber() value2 – any value, which is then converted with toNumber()
Description:	returns the smallest of the resulting values
Return Value Type:	number
Errors or Exceptions:	If any of the values is NaN the result is NaN
Example(s):	Math.min("3.12E12",36); //returns the number 36
Reference	ECMA-262 Section 15.8.2.11

WMLScript Note: ECMAScript allows zero or more arguments, returning the minimum. WMLScript specified exactly two arguments. [WMLSCRIPT]

6.9.3.6. random()

Syntax:	<code>Math.random([intMaxVal])</code>
Argument List:	intMaxVal – number(integer), optional
Description:	returns a random (or pseudorandom) number. If the input parameter is “undefined” (not specified) then the function returns a floating point value between 0 and 1. If the input parameter is specified, then the method returns an integer value ≥ 0 and $<$ to the input value.
Return Value Type:	a Number
Errors or Exceptions:	if no input parameter is specified, and the implementation supports only integers then NaN is returned. It is an error to specify a negative argument.
Example(s):	<code>aVal = Math.random(); //returns .789032 (example floating val 0<aVal<1.0)</code> <code>bVal= Math.random(100); //returns 89 (integer val 0<=bVal<100)</code>
Reference	ECMA-262 Section 15.8.2.14

Note: This function is an enhancement to the the ECMAScript 3rd Edition method, to support integers as well as floating point values. Effort should be made to use a random number algorithm that generates truly randomly distributed numbers.

6.10.Date Object

Reference: ECMA-262 Section 15.9

The date object provides support for date and time handling within ECMAScript Mobile Profile.

6.10.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.10.2. Time Range

Reference: ECMA-262 Section 15.9.1.1

Time range is as specified in [ECMA262], approximately $\pm 285,616$ years from January 1st 1970 (the epoch).

6.10.3. Day Number and Time within Day

A given time value ‘t’ belongs to day number

$$\text{Day}(t) = \text{floor}(t/\text{secPerDay})$$

where the number of milliseconds per day is

$$1000 * 60 * 60 * 24 = 86400000$$

The remainder is called the time within the day:

$$\text{TimeWithinDay}(t) = t \text{ modulo } \text{secPerDay}$$

Reference: ECMA-262 Sections 15.9.1

Implementations are encouraged to support the persistent storage of local timezone, and to provide a mechanism for the user to access the timezone as well as other date and time settings. If there is no support for timezone in a particular implementation, then the UTC version of a method MUST return the same value as the local version of the method.

Actual implementations may not be accurate to the millisecond, and may be rounded.

6.10.4. Properties

No special properties are specified for the Date object.

6.10.5. Methods

6.10.5.1. getTime()

Syntax:	<code>aDateObj.getTime()</code>
Argument List:	
Description:	returns the current time value of the referenced object, in milliseconds from January 1, 1970 (the epoch)
Return Value Type:	sets the time of the target object
Errors or Exceptions:	if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>var now= new Date; now.getTime(); // now holds the current time; (right now)</pre>
Reference	ECMA-262 Section 15.9.5.9

6.10.5.2. getFullYear(), getUTCFullYear()

Syntax:	<code>aDateObj.getFullYear()</code> – local timezone based <code>aDateObj.getUTCFullYear()</code> – UTC timezone based
Argument List:	
Description:	returns the year contained in the date object
Return Value Type:	a number(integer) in the range 1970 ±~238,000
Errors or Exceptions:	if the date is NaN then NaN is returned if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current year is " + now.getFullYear());</pre>
Reference	ECMA-262 Section 15.9.5.10, 15.9.5.11

6.10.5.3. getMonth(), getUTCMonth()

Syntax:	<code>aDateObj.getMonth()</code> – local timezone based <code>aDateObj.getUTCMonth()</code> – UTC timezone based
Argument List:	
Description:	returns the month contained in the date object
Return Value Type:	a number(integer) in the range [0-11]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current month is " + now.getMonth());</pre>
Reference	ECMA-262 Section 15.9.5.12, 15.9.5.13

6.10.5.4. getDate(), getUTCDate()

Syntax:	<code>aDateObj.getDate()</code> – local timezone based <code>aDateObj.getUTCDate()</code> – UTC timezone based
Argument List:	
Description:	returns the date of the month contained in the date object
Return Value Type:	a number(integer) in the range [1-31]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current date is " + now.getUTCDate());</pre>
Reference	ECMA-262 Section 15.9.5.14, 15.9.5.15

6.10.5.5. getDay(), getUTCDay()

Syntax:	<code>aDateObj.getDay()</code> – local timezone based <code>aDateObj.getUTCDay()</code> – UTC timezone based
Argument List:	
Description:	returns the day of the week contained in the date object
Return Value Type:	a number(integer) in the range [0-6] where 0 is Sunday and 6 is Saturday
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current day is " + now.getUTCDay());</pre>
Reference	ECMA-262 Section 15.9.5.16, 15.9.5.17

6.10.5.6. `getHours()`, `getUTCHours()`

Syntax:	<code>aDateObj.getHours()</code> – local timezone based <code>aDateObj.getUTCHours()</code> – UTC timezone based
Argument List:	
Description:	returns the hour of the day contained in the date object
Return Value Type:	a number(integer) in the range [0-23]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current hour is " + now.getHours());</pre>
Reference	ECMA-262 Section 15.9.5.18, 15.9.5.19

6.10.5.7. `getMinutes()`, `getUTCMinutes()`

Syntax:	<code>aDateObj.getMinutes()</code> – local timezone based <code>aDateObj.getUTCMinutes()</code> – UTC timezone based
Argument List:	
Description:	returns the minute within the hour contained in the date object
Return Value Type:	a number(integer) in the range [0-59]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current minute is " + now.getUTCMinutes());</pre>
Reference	ECMA-262 Section 15.9.5.20, 15.9.5.21

6.10.5.8. getSeconds(), getUTCSeconds()

Syntax:	<code>aDateObj.getSeconds()</code> – local timezone based <code>aDateObj.getUTCSeconds()</code> – UTC timezone based
Argument List:	
Description:	returns the second within the minute contained in the date object
Return Value Type:	a number(integer) in the range [0-59]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>now = new Date; document.write("Current second is " + now.getUTCSeconds());</pre>
Reference	ECMA-262 Section 15.9.5.22, 15.9.5.23

6.10.5.9. getMilliseconds(), getUTCMilliseconds()

Syntax:	<code>aDateObj.getMilliseconds()</code> – local timezone based <code>aDateObj.getUTCMilliseconds()</code> – UTC timezone based
Argument List:	
Description:	returns the millisecond within the second contained in the date object
Return Value Type:	a number(integer) in the range [0-999]
Errors or Exceptions:	if the date is NaN then NaN is returned. if the target is not a Date object a TypeError exception is generated. If milliseconds are not supported for a given device then 0 (zero) is returned
Example(s):	<pre>now = new Date; document.write("Current millisecond is " + now.getUTCMilliseconds());</pre>
Reference	ECMA-262 Section 15.9.5.24, 15.9.5.25

6.10.5.10.getTimezoneOffset()

Syntax:	<code>aDateObj.getTimezoneOffset()</code>
Argument List:	
Description:	returns the value in minutes which is the difference between the current timezone and UTC
Return Value Type:	a number(integer) Note: ECMA-262 does not specify the range of the return value.
Errors or Exceptions:	If timezone is not supported on a particular device this method MUST return zero (0). if the target is not a Date object a TypeError exception is generated.
Example(s):	<pre>var someDate = new Date; val = someDate.getTimezoneOffset(); //In the Eastern U.S, at certain times, val would = 300 // Note: the values are positive for "GMT-NNNN" and minus // for "GMT+NNNN"</pre>
Reference	ECMA-262 Section 15.9.5.26

6.10.5.11.parse()

The `parse()` method is not supported for the **Date** object, because textual dates are not specified in a standard way, and the cost of parsing freeform date syntax is deemed too expensive for small devices.

6.10.5.12.UTC()

Syntax:	<code>Date.UTC(year,month[,date[,hours[,minutes[,seconds[,ms]]]])</code>
Argument List:	<p>year - number – a full year value</p> <p>month – number (0-11)</p> <p>date – number (1-31)</p> <p>hours – number (0-23)</p> <p>minutes – number (0-59)</p> <p>seconds – number (0-59)</p> <p>ms – number (0-999)</p>
Description:	Returns a number(integer) which corresponds to the date described in milliseconds from the epoch
Return Value Type:	number
Errors or Exceptions:	If an argument is not within the valid ranges given above, the result is implementation-dependent.
Example(s):	<code>aVal = Date.UTC(1954,3,4,0,0,0,0);</code> <code>// aVal = -496886400000</code>
Reference	ECMA-262 Section 15.9.4.3

6.10.5.13.setTime()

Syntax:	<code>aDateObj.setTime(time)</code>
Argument List:	time – number(signed integer)
Description:	assigns the input value ‘time’ as the time for the target date object
Return Value Type:	integer ‘time’
Errors or Exceptions:	if the target is not a Date object a TypeError exception is generated.
Example(s):	<code>var newTime = new Date;</code> <code>newTime.setTime(990807301); //newTime = May 25th 12:15:01 PM 2001</code>
Reference	ECMA-262 Section 15.9.5.27

6.10.5.14.setFullYear(), setUTCFullYear()

Syntax:	<code>aDateObj.setFullYear(year [,month [, date]])</code> <code>aDateObj.setUTCFullYear(year [,month [, date]])</code>
Argument List:	year – number(integer) month – number(integer) date – number(integer)
Description:	sets the year (and optionally the month and date) of the target date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setFullYear(2003); // would change the year but no other part of the date</code>
Reference	ECMA-262 Section 15.9.5.40, 15.9.5.41

6.10.5.15.setMonth(), setUTCMonth()

Syntax:	<code>aDateObj.setMonth(month [, date])</code> <code>aDateObj.setUTCMonth(month [, date])</code>
Argument List:	month – number(integer) date – number(integer)
Description:	sets the month (and optionally the date) of the target date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setMonth(-22); // would set the date back to the 2nd month (modulo 12)</code>
Reference	ECMA-262 Section 15.9.5.38, 15.9.5.39

6.10.5.16.setDate(), setUTCDate()

Syntax:	<code>aDateObj.setDate(date)</code> <code>aDateObj.setUTCDate(date)</code>
Argument List:	date – number(integer)
Description:	sets the date of the target date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setDate(5); // would set the date to be the 5th of the month</code>
Reference	ECMA-262 Section 15.9.5.36, 15.9.5.37

6.10.5.17.setHours(), setUTCHours()

Syntax:	<code>aDateObj.setHours(hour [,min [,sec]])</code> <code>aDateObj.setUTCHours(hour [,min [,sec]])</code>
Argument List:	hour – number(integer) min – number(integer) sec – number(integer)
Description:	sets the hour (and optionally the minutes and seconds) of the target date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setHours(24); // would set the hour to be 0 and increment the day count</code>
Reference	ECMA-262 Section 15.9.5.34, 15.9.5.35

6.10.5.18.setMinutes(), setUTCMinutes()

Syntax:	<code>aDateObj.setMinutes(min [,sec])</code> <code>aDateObj.setUTCMinutes(min [,sec])</code>
Argument List:	aDateObj – a Date Object min – number(integer) sec – number(integer)
Description:	sets the minutes (and optionally seconds) of the target date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setMinutes(-1); // would set the minutes to 59 and decrement the hour</code>
Reference	ECMA-262 Section 15.9.5.32, 15.9.5.33

6.10.5.19.setSeconds(), setUTCSeconds()

Syntax:	<code>aDateObj.setSeconds(sec)</code> <code>aDateObj.setUTCSeconds(sec)</code>
Argument List:	sec – number(integer)
Description:	sets the seconds of the target Date object
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setSeconds(3602); // would set the seconds to 2 and the hours to 1</code>
Reference	ECMA-262 Section 15.9.5.30, 15.9.5.31

6.10.5.20.setMilliseconds(), setUTCMilliseconds

Syntax:	<code>aDateObj.setMilliseconds(msec)</code> <code>aDateObj.setUTCMilliseconds(msec)</code>
Argument List:	msec – number(integer)
Description:	sets the milliseconds of the target Date object.
Return Value Type:	returns the value of the newly calculated date
Errors or Exceptions:	if any of the input numbers is out of range of a signed 64 bit integer, or the resultant date cannot be expressed within a signed 64 bit integer, the date is set to NaN
Example(s):	<code>aDateObj.setMilliseconds (10002); // would set the seconds to 1 and the milliseconds to 2</code>
Reference	ECMA-262 Section 15.9.5.28, 15.9.5.29

6.10.5.21.toString(), toLocaleString(), toUTCString()

This `toString()` method is specific for **Date** objects.

Syntax:	<code>aDateObj.toString()</code> <code>aDateObj.toLocaleString()</code> <code>aDateObj.toUTCString()</code>
Argument List:	
Description:	creates an implementation dependant string, that is a human readable full date
Return Value Type:	a string value
Errors or Exceptions:	if the Date object is NaN then “NaN” is returned
Example(s):	<code>document.write("Date String = " + now.toString());</code> <code>//Date String = Wed May 30 00:36:34 EDT 2001</code> <code>document.write("Date String is " + now.toUTCString());</code> <code>//Date String is Wed, 30 May 2001 04:36:34 UTC</code>
Reference	ECMA-262 Section 15.9.5.2, 15.9.5.42

Note: `toLocaleString` may return a specially localized date string, otherwise it is a synonym for `toString` when applied to date. The exact format of the human readable string is implementation dependant, and cannot be used for standard string comparisons.

6.10.5.22.toDateString(), toLocaleDateString()

Syntax:	<code>aDateObj.toDateString()</code> <code>aDateObj.toLocaleDateString()</code>
Argument List:	
Description:	creates an implementation dependant string, that is the human readable date part of the target date object. <code>toLocaleDateString()</code> optionally expresses the date in a manner that represents an I18N localized version. If <code>toLocaleDateString()</code> is not explicitly implemented, it should be a synonym for <code>toDateString()</code> .
Return Value Type:	a string value
Errors or Exceptions:	if the date object is NaN then "NaN" is returned
Example(s):	<pre>document.write("Date String = " + now.toDateString()); // Date String = Wed May 30 2001 document.write("Date String is " + now.toLocaleDateString()); //Date String is Wednesday,May 30,2001</pre>
Reference	ECMA-262 Section 15.9.5.3, 15.9.5.6 Note: This is not compatible with IE or Netscape.

6.10.5.23.toTimeString(), toLocaleTimeString()

Syntax:	<code>aDateObj.toTimeString()</code> <code>aDateObj.toLocaleTimeString()</code>
Argument List:	
Description:	creates an implementation dependant string, that is the human readable time part of the target date object. <code>toLocaleTimeString()</code> optionally expresses the time in a manner that represents an I18N localized version. If <code>toLocaleTimeString()</code> is not explicitly implemented, it should be a synonym for <code>toTimeString()</code>
Return Value Type:	a string value
Errors or Exceptions:	if the date object is NaN then "NaN" is returned
Example(s):	<pre>document.write("Time String = " + now.toTimeString()); //Time String = 00:57:31 EDT document.write("Date String is " + now.toLocaleTimeString()); //Time String is 12:57:31 AM</pre>
Reference	ECMA-262 Section 15.9.5.4, 15.9.5.7

6.10.5.24.valueOf()

Syntax:	<code>aDateObj.valueOf ()</code>
Argument List:	
Description:	returns a number(signed integer) which represents the date contained in the date object.
Return Value Type:	number(signed integer)
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.9.5.8

6.11.Error (Exception) Object

Reference: ECMA 262 Section 15.11

Error Objects can be used to capture and report errors that are either part of the native implementation (native errors) or are generated explicitly by the application.

6.11.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.11.2. Constructor

Syntax:	<code>myError = new Error([aMessage]);</code>
Argument List:	aMessage – the optional message string that is to be associated with the message property of this Error object
Description:	Constructs an instance of an Error object, and optionally sets the message property with the supplied parameter.
Return Value Type:	returns an Error object instance
Errors or Exceptions:	none
Example(s):	<pre>//setting up a user defined error killerError = new Error("You should not have done that!"); killerError.name = "KillerError"; // force this error try { throw killerError; } catch(killerError) { document.write(killerError.message); } finally { alert("Done with this thing."); } </pre>
Reference	ECMA-262 Section 15.11.1

6.11.3. Properties

6.11.3.1. name

Syntax:	<code>myError.name</code>
Type:	string
Description:	A property containing a one word error title (i.e. "TypeError"). The initial value of a newly constructed Error object name is "Error".
Errors or Exceptions:	none
Example(s):	
Reference	This is an extension to ECMA262 Section 15.11.7

6.11.3.2. message

Syntax:	<code>myError.message</code>
Type:	string
Description:	A property containing an implementation dependant description of the error captured in the Error object.
Errors or Exceptions:	none
Example(s):	<pre>var myError = new Error; document.write("Error message is " + myError.message);</pre>
Reference	ECMA262 Section 15.11.7.2

6.11.3.3. code

Syntax:	<code>myError.code</code>
Type:	number(integer)
Description:	A property that contains the value of the exception thrown. The initial value of a newly constructed Error object code is NaN.
Errors or Exceptions:	none
Example(s):	
Reference	This is an extension to ECMA262 Section 15.11.7

Note: Assignment of fixed error code constants is an extension to ECMA262.

6.12. Native Error Objects

When an ECMAScript implementation detects a runtime error, it throws an instance of one of the *NativeError* objects defined in 6.12.2. Each of these objects has the structure described below, differing only in the name used as the constructor name instead of `<NativeError>`, in the **name** property of the prototype object, and in the implementation-defined **message** property of the prototype object.

For each error object, references to `<NativeError>` in the definition should be replaced with the appropriate error object name from 6.12.2.

6.12.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

6.12.2. Native Error Types (Constants)

Reference: ECMA-262 Section 15.11.7

The following native error types MUST be supported:

Name	Code Constant	Description	Reference
RangeError	101	A numeric value has exceeded its range.	ECMA-262 Section 15.11.6.2
ReferenceError	102	An invalid reference has been detected.	ECMA-262 Section 15.11.6.3
SyntaxError	103	A parsing error has occurred.	ECMA-262 Section 15.11.6.4
TypeError	104	The actual type of an operand is different than the expected type.	ECMA-262 Section 15.11.6.5
URIError	105	A global URI handling function was used in an inconsistent or incompatible way.	ECMA-262 Section 15.11.6.6
EvalError	106	The global eval() function was used in a way that is incompatible with its definition, or attempts were made to use eval() when it isn't present. This error value is required whether or not an implementation supports eval() .	ECMA-262 Section 15.11.6.1 ECMA-327 Section 5.1
MemoryError	99	The method was unable to obtain the memory resources required to complete the request.	

This means that the implementation MUST be able to throw instantiations of any of the above **Error** objects, as defined by their name. To catch and process any of the native errors a `try / catch {}` clause must be used. The catch parameter will be set

to reference the instantiation of the native error. The instantiated **Error** object MUST set the 'name' and the 'code' properties to the proper value.

```
function myException()
{
    myErr = new Error;
    var anInt;
    var aVal = 4.3;
    document.write("Entering routine.");
    try {

        anInt = aVal.Garbage(); //will generate an exception
        document.write("Shouldn't get here");
    }
    catch(myErr)
    {
        document.write("<br/>An error was thrown. <br/>");
        document.write("<br/> myErrName=" + myErr.name + "<br/>message=" +
myErr.message);
    } //myErr.name = "TypeError"
}
```

6.12.3. Constructor

Syntax:	<code>myError = new <NativeError>([aMessage]);</code>
Argument List:	aMessage – the optional message string that is to be associated with the message property of this Error object
Description:	Constructs an instance of a <NativeError> object, and optionally sets the message property with the supplied parameter.
Return:	returns a <NativeError> object instance
Errors or Exceptions:	none
Example(s):	<pre>badUri = new URIError("Invalid Uri"); try{ throw badUri; } catch(err){ document.writeln(err.name); // This should print "URIError" document.writeln(err.message); //This should print "Invalid Uri" document.writeln(err.code); //This should print 105 }</pre>
Reference:	ECMA-262 Secs. 15.11.7.2, 15.11.7.3, 15.11.7.4

6.12.4. Properties

6.12.4.1. name

Syntax:	<code>myError.name</code>
Type:	string
Description:	A property containing a one word error title (i.e. "TypeError"). The initial value of the property for a given <NativeError> constructor is the name of the constructor (the name used instead of <NativeError>). The various possible values are defined in 6.11.4 under Name column.
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.11.7.9

6.12.4.2. message

Syntax:	MyError.message
Type:	string
Description:	A property containing an implementation dependant description of the error captured in the <i><NativeError></i> object.
Errors or Exceptions:	none
Example(s):	
Reference	ECMA-262 Section 15.11.7.10

6.12.4.3. code

Syntax:	MyError.code
Type:	Number(integer)
Description:	A property that contains the value of the exception thrown. The initial value of a newly constructed <i><NativeError></i> object code is the corresponding value in 6.11.4 under Code Constant column.
Errors or Exceptions:	none
Example(s):	
Reference	This is an extension to ECMA262 Section 15.11.7

6.13. Unsupported Native Objects

Because of the separation between compilation and execution support for the dynamic creation of new object and function prototypes is not required for language conformance. [ECMA327]

6.13.1. Object object

Reference: ECMA-262 Section 15.2

Dynamic creation of new Object objects SHOULD NOT be supported in ECMAScript – Mobile Profile.

Creation of dynamic objects is a large memory burden upon a client.

6.13.2. Function object

Reference: ECMA-262 Section 15.3

Because support for the `eval()` function (runtime compilation) is not required, the **Function** object is not required to support a constructor supporting dynamic creation of runtime functions. [ECMA327]. See Section 5.4.2.

The Function constructor SHOULD NOT support the ability to construct dynamic functions requiring runtime compilation.

When `eval()` is not supported, attempts to compile a dynamically created function MUST throw an **EvalError**.

7. The Language Environment

7.1. Reference Programming Model

The reference programming model described here is concerned only with the entry to and exit from script. When inside script the reference programming model is as described in [ECMA262].

7.1.1. Script Context

Script context is inherited at the time of script invocation. It is an aggregation of the current browser context and the document context (including, but not limited to, current location, form variable state, event state, history stack, etc.) from which the script was called. Event state is defined as the set of events (0 or more) and their associated attribute values, which are pending at the time the script is invoked.

7.1.2. Generic Browser Context

The generic browser context is composed of the history, location and event state associated with the currently executing document [XHTMLMP]. These data are accessible from within script through the **history** and **location** host objects (See sections 9.3 and 0). **history** and **location** objects are instantiated at the time of script invocation, and go out of scope upon script exit.

7.1.3. Document Context

Document context is as defined by [DOM2CORE] and is accessed via the Browser **Document** Object (See Section 9.5). Document context is instantiated at the time a markup document is entered. Document-level state (such as form variable values and document mutations via the DOM) remains in scope until another document is established as the current document. This occurs as the result of navigation, either by interacting with the current document (hyperlink navigation or form submission) or through other mechanisms independent of the current document (such as bookmarks or URL input dialog). Note that when the user navigates away from the current document, an entry for that document may be retained in the browser's navigation history. Hence when invoking script multiple times from within a single markup document, document form variables remain in scope.

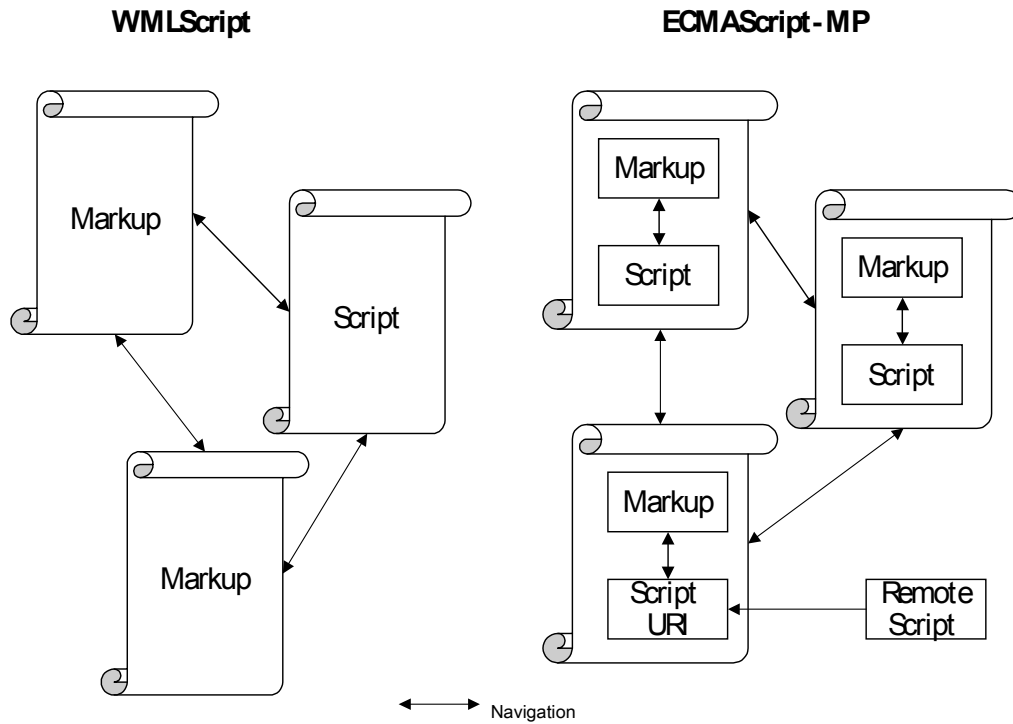
7.2. Script Invocation Mechanisms

7.2.1. Invocation via Navigation

All script invocations in WMLScript [WMLSCRIPT] are via navigation to a script document. This method is not supported in ECMAScript Mobile Profile, where scripts are contained within an XHTML Mobile Profile document and script invocation occurs during the loading of the document or as a result of events.

7.2.2. <script> Element Definition

When invoking script directly from a markup document, the script is considered to be part of the invoking document. This is the markup/script relationship that exists between Javascript and markup in the “wired web”. This method of invocation is supported by ECMAScript Mobile Profile. This method of invocation is also referred to as child invocation. The context of the invoking markup document is available to the script. Script may be defined in three ways as defined in sections 7.2.2.1, 7.2.2.2, 7.2.2.3.



7.2.2.1. Inline Execution

Script segments may be defined directly inline as embedded script text. This occurs when the inline script is not enclosed in a function body.

```
<script type="text/ecmascript">
    document.write("I will be invoked.<br/>");
</script>
```

Multiple direct embedded script segments MUST be supported. Scripts defined in this way are said to be directly invoked.

Directly invoked script segments MUST be executed in the order in which they appear.

Directly invoked script segments MUST be executed prior to any event invoked script segments.

7.2.2.2. Event-based (Deferred) Execution

The most common way to define a script is as a response to an event. (See section 8). Scripts written to be executed as a result of an event are said to have event-based, or deferred invocation. Event-based invocation requires the use of event assignment attributes in XHTML [XHTMLMP] markup.

```

<html>
...
    <script type="text/ecmascript">
        someFunc() {
            //do something
        }
    </script>
...
<body>
...
    <form onsubmit="someFunc()">
    ...
    </form>
...
</body>
</html>

```

Deferred execution MUST be supported.

The script engine MUST allow deferred execution scripts to be located in either the **<body>** or the **<head>** of a document.

7.2.2.3. File-based Execution

Script may be defined by referencing a URL that contains the source for the script to execute.

Script files defined by reference SHOULD contain only script statements and SHOULD be text only.

Failure to meet these criteria may lead to rejection of the file by the implementation. Remotely referenced script files are processed by replacing the contents of the script element with the contents of the file.

The script engine MUST allow script elements representing references to remote scripts to be located in either the **<body>** or the **<head>** of a document.

After loading, remote scripts are subject to the invocation rules described in 7.2.2.1 and 7.2.2.2.

```
<script type="text/ecmascript" src="aFileofESMP.es"/>
```

Remotely referenced script files MUST be supported.

The **type** attribute on the **<script>** element SHOULD be supported.

7.2.2.4. Scheme-based execution

Scheme-based invocation, (using a scheme syntax such as **href="ecmascript:<immediate statements>"**) which is a syntactic shortcut, is not supported.

7.3. Script Completion Mechanisms

7.3.1. Normal Completion

Unlike WMLScript, ECMAScript completion follows a very simple model. Irrespective of the state in which a script execution completes, control is returned to the context of the parent document. This is true for abnormal and successful completions as well as completions following explicit navigation to a new document via the **history** or **location** objects (See section 9.3 and 9.4). This means that successive calls to a script segment may be initiated by the parent context if so directed. The script invocation mechanism is considered to be stateless. All script completions return to the parent document as if the execution was successful. It is implementation dependent what, if any errors, from abnormal termination are reported to the user.

The user agent MAY report to the user, errors from the abnormal termination of scripts.

In the case of completion following an explicit navigation to a new document, the navigation request is to be considered asynchronous and cancellable like any other document navigation. Should the script request a navigation, complete and return to the parent document context and the user immediately selects another navigation object or invokes the navigation cancel command, the script's navigation request will be cancelled. In the case of the user selecting the cancel command, the user is of course free to re-invoke the script.

7.3.2. Aborted Completion

The script engine MUST provide an abort event to allow the initiation of abnormal script execution.

There MUST be a user input mechanism, such as a key or button, available to provide access to the abort functionality to the end user.

Completion of the abort processing MUST guarantee that the browser is capable of continuing, or returning to a known state.

8. Events

Events are the primary method of invoking scripts. The event language bindings, management and flow mechanisms specified in ECMAScript Mobile Profile are based on the attributes defined in section 5.14 (Intrinsic Events Module) of [XHTMLMOD] plus the Events attributes defined in section 5.1 (Attribute Collections) of [XHTMLMOD]. The semantics for the event types are defined in [XHTMLMP]

In ESMP event bindings are only supported through the markup interface, although they should be considered compatible with the procedural interface as defined in DOM2 events[DOM2EVENTS]. Certain events may support a return value and be cancellable (See Sec. 8.4)

8.1. XHTML Event Types

XHTML Mobile Profile 1.1 [XHTMLMP] defines events and a mechanism for binding event handlers to those events.

The XHTML – Mobile Profile user agent MUST support XHTML Events as a prerequisite for script support.

Note: These events are also referred to “DOM0” events in [DOM2EVENTS] chapter 1.6.5. For a list of XHTML Event attributes, their targets, and semantics see [XHTMLMP].

To guarantee interoperability between legacy events and any future DOM2 event semantics, implementers SHOULD guarantee that legacy events operate as a special case of the broader DOM2 event model.

The user agent MUST ignore event handlers registered for event types that are not supported.

8.2. Event Binding

An event handler is bound to an event by assigning the value of an event handler attribute. The event handler attribute specifies the type of the event and its value specifies the handler. The target element is the element to which the event handler attribute is attached.

The user agent MUST operate as if the value of the event handler attribute is the body of an anonymous function that is registered as an event handler.

The prototype of the function contains a single argument, an **Event** object (See Section 8.3)

```
function <anonymous>(Event event)
{
  ...
}
```

The binding is equivalent to the W3C DOM Level 2 Events registration method `addEventListener()` invoked on the element to which the attribute is attached, with `useCapture` specified as `false`.

Any attempt to modify the value of an event handler attribute via the DOM interfaces MUST result in a deregistration of any existing event handler. Only a single event handler is supported for a given event type on a given target element.

8.3. Event Object

When the user agent handles an event, it makes available to the event listener an **Event** object. The **Event** object defined in ECMAScript Mobile Profile is a small intersecting subset of the W3C DOM Level 2 Events **Event** object and the Netscape Navigator **Event** object. The static **Event** object, as defined in the IE implementation, is not available in this implementation.

8.3.1. Event Properties

All events are considered to be “non-bubbling”, since the full W3C DOM event binding interface is not supported.

All events are considered to “non-capturing”, since the full W3C DOM event binding interface is not supported.

Because all events are considered non-bubbling and non-capturing, events fired without a specified handler are ignored.

8.3.2. Properties

8.3.2.1. keyCode

Syntax:	anEvent . keyCode
Type:	number (integer), read-only
Description:	<p>For keyboard events only (onkeyup, onkeydown, onkeypress) this property is an integer corresponding to the following:</p> <p style="padding-left: 40px;">For KeyPress – the Unicode [UNICODE] value of the character pressed by the user</p> <p style="padding-left: 40px;">For KeyDown, KeyUp – the Unicode [UNICODE] value of the keyboard key pressed</p>
Errors or Exceptions:	<p>Keys which do not have a Unicode equivalent mapping are ignored.</p> <p>Note: keyCode semantics are not an exact match for either IE or Netscape. Netscape uses two properties keyCode and charCode to represent the same thing. IE uses a different property name.</p>
Example(s):	
Reference	

8.3.2.2. target

Syntax:	anEvent.target
Type:	Node reference, read-only
Description:	This property is a reference to the original markup element that is the target of the event. It can be used to reference nodes (See section 11.2) and attributes relative to the event originator.
Errors or Exceptions:	none
Example(s):	
Reference	DOM2EVENTS Section 1.4

8.3.2.3. timeStamp

Syntax:	anEvent.timeStamp
Type:	number(integer), read-only
Description:	A property which represents the time the event was created. The format of the timestamp is defined by DOM2 Events. It is in a form that is compatible with the Date object (See section 6.10)
Errors or Exceptions:	none
Example(s):	
Reference	DOM2EVENTS Section 1.4

8.3.2.4. type

Syntax:	anEvent.type																																								
Type:	string, read-only																																								
Description:	A property that describes the kind of event that generated this object. Strings are lower case and are the same as XHTML event attribute, with the “on” removed.																																								
	Valid strings are:																																								
	<table border="1"> <thead> <tr> <th>Source XHTML Event Attribute</th> <th>Type String</th> </tr> </thead> <tbody> <tr><td>onclick</td><td>click</td></tr> <tr><td>ondblclick</td><td>dblclick</td></tr> <tr><td>onload</td><td>load</td></tr> <tr><td>onunload</td><td>unload</td></tr> <tr><td>onreset</td><td>reset</td></tr> <tr><td>onsubmit</td><td>submit</td></tr> <tr><td>onkeypress</td><td>keypress</td></tr> <tr><td>onkeydown</td><td>keydown</td></tr> <tr><td>onkeyup</td><td>keyup</td></tr> <tr><td>onblur</td><td>blur</td></tr> <tr><td>onfocus</td><td>focus</td></tr> <tr><td>onchange</td><td>change</td></tr> <tr><td>onselect</td><td>select</td></tr> <tr><td>onwap-<evt>-event</td><td>wap-<evt>-event</td></tr> <tr><td>onmouseup</td><td>mouseup</td></tr> <tr><td>onmousedown</td><td>mousedown</td></tr> <tr><td>onmouseover</td><td>mouseover</td></tr> <tr><td>onmousemove</td><td>mousemove</td></tr> <tr><td>onmouseout</td><td>mouseout</td></tr> </tbody> </table>	Source XHTML Event Attribute	Type String	onclick	click	ondblclick	dblclick	onload	load	onunload	unload	onreset	reset	onsubmit	submit	onkeypress	keypress	onkeydown	keydown	onkeyup	keyup	onblur	blur	onfocus	focus	onchange	change	onselect	select	onwap-<evt>-event	wap-<evt>-event	onmouseup	mouseup	onmousedown	mousedown	onmouseover	mouseover	onmousemove	mousemove	onmouseout	mouseout
Source XHTML Event Attribute	Type String																																								
onclick	click																																								
ondblclick	dblclick																																								
onload	load																																								
onunload	unload																																								
onreset	reset																																								
onsubmit	submit																																								
onkeypress	keypress																																								
onkeydown	keydown																																								
onkeyup	keyup																																								
onblur	blur																																								
onfocus	focus																																								
onchange	change																																								
onselect	select																																								
onwap-<evt>-event	wap-<evt>-event																																								
onmouseup	mouseup																																								
onmousedown	mousedown																																								
onmouseover	mouseover																																								
onmousemove	mousemove																																								
onmouseout	mouseout																																								
Errors or Exceptions:	Unrecognized event types will set type to null .																																								

Example(s):

Reference DOM2EVENTS Section 1.4

8.4. Reference Processing Model

The event model for EcmaScript Mobile Profile is the same model as that of W3C DOM Level 2 Events.

When an event supported by a user agent occurs, the user agent **MUST** create a read-only instance of an **Event** object, as specified in section 8.3. It must then invoke the event handler associated with that event, passing the **Event** object instance to the handler as described in section 8.2.

The user agent **MUST ignore any event bindings for event types that are not supported.**

8.4.1. Event Capture and Bubbling

The event binding mechanism specified for ECMAScript Mobile Profile does not permit an event handler (event listener) to specify whether it gets invoked in the capture or bubbling phase. Because of this, all events are considered "non-bubbling" and "non-capturing". All event handlers registered on the event's target element are triggered when the event reaches the target.

8.4.2. Event Cancellation

The event model for ECMAScript Mobile Profile provides a mechanism for cancelling an event. Cancelling an event means to prevent the default action for the event. The default action is the action taken by the user agent to handle that event in the case that no script event handler is bound to the event. For example, the default action for the click event on a hyperlink is to activate the hyperlink. Cancelling an event means that the script will completely determine the handling of the event.

A script event handler cancels an event by returning the value **false** from the anonymous event handler function. If the value **true** is returned, or no value is returned, the event is not cancelled and the default action occurs.

Only certain events are cancellable. For the list of cancellable events, see [XHTMLMP]. If a handler for a non-cancellable event returns a value, it is ignored.

For a cancellable event, if an event handler cancels the event, the user agent **MUST NOT** execute the default action for that event. For a non-cancellable event, the user agent **MUST** ignore any return value by the event handler.

The W3C DOM Level 2 Events model provides a mechanism for cancelling the default action for an event – the method **preventDefault()** on the Event object. Returning **false** from an event handler in ECMAScript Mobile Profile is equivalent to invoking the **preventDefault()** method on the DOM Level 2 Event object. Also, designating an event as cancellable in ECMAScript Mobile Profile is equivalent to setting to true the '**cancellable**' property on the DOM Level 2 Event object instantiated for that event occurrence.

8.5. Sample Code

This subsection is informative. For the definition of event binding in markup see [XHTMLMP].

The following is an example of handling simple events, using a single script function to support multiple event triggers:

```
<html>
<head>
```

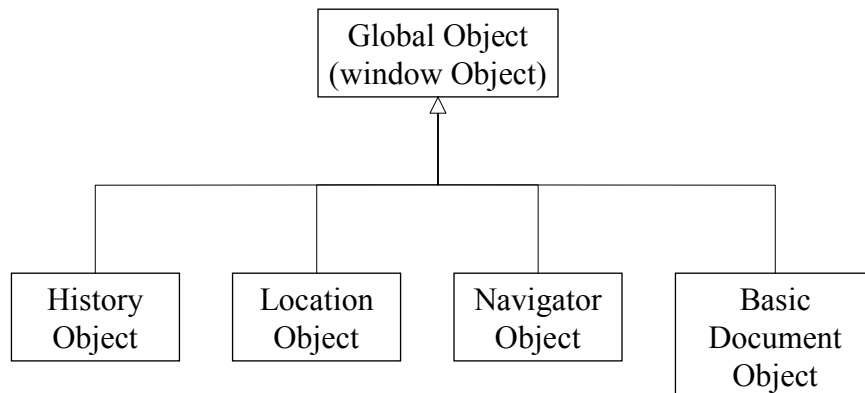


```
<script type="text/ecmascript">
function doEvtThing(evt){
    document.write("In handler<br/>");
    if (evt.type == "click")
        document.write("Click received<br/>");
    if (evt.type == "submit")
        document.write("Submit received<br/>");
    if (evt.type == "keydown")
        document.write("Key pressed =" + evt.keyCode + "<br/>");
    return;
}
</script>
</head>
<body>
<h1>Event Tester</h1>
<form>
    <input type="button" value="OnClickTest" onclick="doEvtThing(event)"/>
</form>
<form method="post" onsubmit="doEvtThing(event)" onreset="doEvtThing()">
    Type a word:
    <input type="text" name="text" value="" onkeydown="doEvtThing(event)"/>
    <input type="submit" name="Submit" value="Submit"/>
    <input type="reset" />
</form>
</body>
</html>
```

Note: In some cases the event parameter is specified in markup, and where the event instance is not explicitly used, it is not required.

9. Browser Host Objects

In addition to the native objects that encapsulate language semantics, a set of host objects are defined to interface to the host environment in which the scripting language resides. This section describes these objects. Section 11 describes the DOM host objects.



9.1. Global Object (window object)

Note: The version history for this object can be found in section 6.3.1. The **global** object may be referred to as “top”, “parent”, “self” or “window” for backwards compatibility with the wired web. (See section 6.3)

9.1.1. Properties

The **history** object, **location** object, **navigator** object and **document** object are contained in the **global** object and are hence properties of the **global** object. There are no pre-defined read-only properties directly attributable to the **global** object.

9.1.1.1. history

Syntax:	[top.]history
Type:	object, read-only, enumerable
Description:	A property which is the history object described in detail in section 9.3.
Errors or Exceptions:	none
Example(s):	
Reference	Common object IE, Netscape

9.1.1.2. navigator

Syntax:	[top.]navigator
Type:	object, read-only, enumerable
Description:	A property which is the navigator object described in detail in section 9.2.
Errors or Exceptions:	none
Example(s):	
Reference	Common object IE, Netscape

9.1.1.3. location

Syntax:	[top.]location
Type:	object, read-only, enumerable
Description:	A property which is the location object described in detail in section 9.4.
Errors or Exceptions:	none
Example(s):	
Reference	Common object IE, Netscape

9.1.1.4. document

Syntax:	<code>[top.]document</code>
Type:	object, enumerable
Description:	A property which is the document object described in detail in section 9.5 and section 10
Errors or Exceptions:	none
Example(s):	
Reference	Common object IE, Netscape

9.1.2. Methods

9.1.2.1. prompt()

Syntax:	<code>prompt(aMessage [,defaultReply]);</code>
Argument List:	<p>aMessage – string to be used as a prompt</p> <p>defaultReply – string that will be returned if there is no input. If not specified, it is set to “undefined”.</p>
Description:	Displays the given message as a dialog and prompts for user input. If the user does not enter a reply the defaultReply is returned as the user input string. If the user replies, the user reply is returned. This method is modal, and blocks waiting for a response.
Return Value Type:	String or “undefined”
Errors or Exceptions:	none
Example(s):	<code>prompt("What is your sex?","M");</code>
Reference	Common function IE, Netscape

9.1.2.2. confirm()

Syntax:	<code>confirm(aMessage [,OKReply [,CancelReply]])</code>
Argument List:	<p>aMessage – string</p> <p>OKReply – optional string for labeling positive reply</p> <p>CancelReply – optional string for labeling negative reply</p>
Description:	Displays message and waits for user to select positive or negative selection choice. This method is modal, and blocks waiting for a response.
Return Value Type:	<p>true is returned upon selection of positive selection choice.</p> <p>false is returned upon selection of negative selection choice.</p>
Errors or Exceptions:	none
Example(s):	<code>confirm("Do you want to exit?","YES","NO");</code>
Reference	Common function IE, Netscape

9.1.2.3. alert()

Syntax:	<code>alert(aMessage);</code>
Argument List:	aMessage – a string to be displayed
Description:	Displays the given message to the user, and waits for user confirmation of the message. This method is modal, and blocks waiting for a response.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<pre>if (confirm("Time to panic?", "YES","NO")) { alert("PANIC"); } else { alert("No problem."); }</pre>
Reference	Common function IE, Netscape

9.1.2.4. setTimeout()

Syntax:	<code>setTimeout(funcRef,milliSecs [,funcArg₁, ..., funcArg_N]);</code>
Argument List:	<p>funcRef – the name of a script function ie. myTimerFunc</p> <p>milliSecs – number, that represents duration of the timeout as specified in milliseconds</p> <p>funcArg_x – optional arguments which are passed to the function referenced in parameter 1.</p>
Description:	<p>This global function specifies the duration to wait before calling the requested function. It acts as if a delay function were inserted at the end of the currently executing function. Execution of the current script does not stop. Rather, the requested function is called as soon as possible after the duration requested has passed.</p> <p>For greatest compatibility, the function reference SHOULD be specified as <funcname>, without quotes, and without parentheses. This is so that the function reference is not interpreted as a string or expression. Inclusion of the parentheses after the function reference will cause the function to be treated as a function call, and will cause immediate evaluation of the function. Evaluation of the first parameter as an expression (such as a quoted string) may throw an EvalError if <code>eval()</code> is not supported (See section 5.4.2).</p> <p>An implementation MUST support a minimum of a single timeout.</p> <p>The user agent is not required to implement a timer with resolution of 1 millisecond. Authors should note that a user agent may not honor the exact value of a timeout expressed in milliseconds.</p> <p>Note: The support of <funcname> without quotes and without parentheses has been chosen as the common syntax that works with both IE and Netscape. Other combinations will generate interoperability issues between ESMP, IE and Netscape.</p> <p>Note: This method of passing parameters to a referenced function (while avoiding an <code>eval()</code>) is taken from Netscape and will not correctly pass these arguments in IE. To assure compatibility with all web implementations, do not try to pass arguments to the referenced function. The equivalent syntax for passing function arguments in IE would be</p> <pre> setTimeout("funcRef(funcArg)",milliSecs); if the funcArg is a value or setTimeout("funcRef(" + funcArg + ")",milliSecs); if the funcArg is a variable. </pre>
Return Value Type:	<p>returns an opaque handle (a number) representing the timer. This ID can be used with the <code>clearTimeout()</code> method to stop a timer.</p> <p>Note: A return of zero denotes an error.</p>
Errors or Exceptions:	<p>If a request for a timeout is made, when there are no more timeout slots available, the function returns 0.</p> <p>If the number of function arguments do not match the number of parameters specified by the requested function, unspecified arguments are set to "undefined", extra arguments are ignored.</p> <p>If a function reference is specified that cannot be found a ReferenceError exception is</p>

	thrown.
Example(s):	<pre> function loopMe(sflg) { var tID; var index; var specialflg = "false"; if(sflg){ // do something special } if(index < 10) { index++; if (index == 6) specialflg = "true"; //do something tID = setTimeout(loopMe, 5*1000, specialflg); //wait 5 secs // wait for awhile } else { clearTimeout(tID); } } </pre>
Reference	Common function IE, Netscape

Note: This function is a change from the Javascript standard, in that only the function name (without parameters) may be used as the function input. This is because the use of parameters could require the invocation of an `eval()` operation, which is not a mandatory requirement of ESMP.

9.1.2.5. `clearTimeout()`

Syntax:	<code>clearTimeout(timeoutID);</code>
Argument List:	timeoutID – a number representing an opaque handle to a timeout. timeoutID is obtained as the return of the <code>setTimeout()</code> method.
Description:	unsets and clears an existing timeout
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	See above
Reference	Common function IE, Netscape

9.2. Navigator Object

The **navigator** object is a read-only object that contains a set of properties that help to identify the browser and user agent that reside in a particular device.

9.2.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

9.2.2. Properties

9.2.2.1. appName

Syntax:	<code>navigator.appName</code>
Type:	string, read-only
Description:	<p>A property that contains a descriptor of the browser application and device.</p> <p>Manufacturers are free to insert any string here, but the following guidelines should be followed:</p> <p>A string identifying the browser application manufacturer SHOULD appear first.</p> <p>A string identifying the browser application name SHOULD appear next.</p> <p>Optionally, any qualifiers SHOULD be inside parentheses.</p>
Errors or Exceptions:	none
Example(s):	<pre>document.write("Appname = " + navigator.appName + "
");//displays Appname = MobileCompany Ubrowser (test version)</pre>
Reference	Common IE and Netscape object property

9.2.2.2. appVersion

Syntax:	<code>navigator.appVersion</code>
Type:	string, read-only
Description:	<p>A property that contains a version number for the browser application and device.</p> <p>Manufacturers are free to insert any string here, but the following guidelines should be followed:</p> <p>A string identifying the manufacturers application version number SHOULD appear first.</p> <p>Optionally, any qualifiers SHOULD be inside parentheses.</p>
Errors or Exceptions:	none
Example(s):	<pre>document.write("App Version = " + navigator.appVersion + "
"); //displays App Version = 3.4 (Build 6 Dynamo 080902)</pre>
Reference	Common IE and Netscape object property

9.2.2.3. userAgent

Syntax:	<code>navigator.userAgent</code>
Type:	string, read-only
Description:	<p>A property that contains a string that uniquely describes the running user agent.</p> <p>Manufacturers are free to insert any string here, but the following guidelines should be followed:</p> <p>A string identifying the user agent name SHOULD appear first.</p> <p>Optionally, any qualifiers SHOULD be inside parentheses.</p>
Errors or Exceptions:	none
Example(s):	<pre>document.write("User Agent = " + navigator.userAgent + "
"); //displays User Agent = Mozilla/5.0 (Windows; U; Windows NT 5.0; en-US; rv:0.9.4) Gecko/20011128 Netscape6/6.2.1</pre>
Reference	Common IE and Netscape object property

9.3. History Object

The **history** object maintains a list of the URLs most recently visited by the browser. These URLs are available to scripts for controlling navigation.

Direct access to the list of URL strings is a security concern and MUST NOT be supported.

9.3.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

9.3.2. Properties

9.3.2.1. length

Syntax:	history.length
Type:	number(integer) , read-only
Description:	The number of history entries currently in the history list is 'length'.
Errors or Exceptions:	none
Example(s):	
Reference	Common IE and Netscape object property

9.3.3. Methods

9.3.3.1. back()

Syntax:	history.back()
Argument List:	
Description:	This method executes a browser "navigate to history entry" to the previous entry in the history list (if there is one).
Return Value Type:	none

Errors or Exceptions:	If there are no entries in the history list, then the method does nothing. Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.
Example(s):	history.back(); // reloads the previous URL on the history list
Reference	Common IE and Netscape object property

9.3.3.2. forward()

Syntax:	history.forward()
Argument List:	
Description:	This method executes a browser “navigate to history entry” action with next URL entry in the history list.
Return Value Type:	none
Errors or Exceptions:	If there are no subsequent entries in the history list, then the method does nothing. Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.
Example(s):	history.forward(); // reloads the next URL on the history list
Reference	Common IE and Netscape object property

9.3.3.3. go()

Syntax:	history.go(index)
Argument List:	index – a number(integer) which is the index to an ordered list of history entries. 0 (zero) is the index to the current entry.
Description:	Requests the browser to navigate to a URL using the indexed entry in the history list. <div style="border: 1px solid black; padding: 5px;"> <p>Form variable state SHOULD be preserved when loading a document requested by the history.go() method. Preservation of variable state is dependent upon cache availability.</p> </div> <p>Note: A history.go(0) is NOT the same as a location.reload(). history.go(0) is more “gentle”, preserving the state of all form variables whenever possible.</p> <p>history.go(X) loads the ‘X’ entry in the history list and navigates there if available. There is no notion of navigation to any intervening entries on the history list. Negative numbers represent previous entries in the history list, positive numbers represent subsequent entries (i.e. when one has already navigated backwards)</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.</p>
Return Value Type:	none
Errors or Exceptions:	If there are no entries at the requested index in the history list, then the method does nothing.
Example(s):	<pre>history.go(0); // reloads the current URL on the history list, preserving all form variable and context state - beware a loop! history.go(-1); //same as history.back() history.go(1); //same as history.forward()</pre>
Reference	Common IE and Netscape object property

9.4. Location Object

The **location** object allows a script to query and manipulate the URL of the current document. When the **location** object is assigned to (used as a left-hand value), the script engine silently applies the **location.assign(URL)** (See section 9.4.3.1) method to the current context. URL is the complete constructed resource locator of the **location** object.

9.4.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

9.4.2. Properties

9.4.2.1. hash

Syntax:	<code>location.hash</code>
Type:	string
Description:	<p>A property that is the fragment (anchor) part of the current URL (including the # [hash]) if it exists.</p> <p>Setting the hash property (using <code>location.hash</code> as an lvalue) navigates to the named anchor without reloading the document. The hash symbol may be included, or not, in an lvalue assignment.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>An HTTP error may be generated if attempts to navigate to the anchor specified in an assignment cannot be found.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262.</p>
Example(s):	<code>location.hash = "#nextanchor"; //will navigate to the nextanchor tag in the document</code>
Reference	Common IE and Netscape object property, RFC2396

9.4.2.2. host

Syntax:	location.host
Type:	string
Description:	<p>The host property specifies a portion of the current URL. The host property is the concatenation of the hostname (See section 9.4.2.4) and port (see section 9.4.2.6) properties, separated by a colon. When the port property is null, the host property is the same as the hostname property. Assignment to the location.host property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>Attempts to navigate to non-existent URLs will generate standard HTTP errors.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262.</p>
Example(s):	document.write("Host = " + location.host + "
"); //returns Host = www.mysite.com:8080
Reference	Common IE and Netscape object property, RFC2396

9.4.2.3. href

Syntax:	location.href
Type:	string
Description:	<p>The href specifies the entire URL currently pointed to by the location object. Assignment to the location.href property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>Attempts to navigate to non-existent URLs will generate standard HTTP errors.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262.</p>
Example(s):	Location.href = "http://www.wapforum.org"; //will navigate to the WAP Forum website
Reference	Common IE and Netscape object property, RFC2396

9.4.2.4. hostname

Syntax:	<code>location.hostname</code>
Type:	string
Description:	<p>A property that contains a string, which is the hostname part of the current URL. Assignment to the <code>location.hostname</code> property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>Attempts to navigate to non-existent URLs will generate standard HTTP errors.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262</p>
Example(s):	
Reference	Common IE and Netscape object property, RFC2396

9.4.2.5. pathname

Syntax:	<code>location.pathname</code>
Type:	string
Description:	<p>A property which is the pathname component of the current URL. This includes the document name, but not the server name. Assignment to the <code>location.pathname</code> property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>Attempts to navigate to non-existent URLs will generate standard HTTP errors.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262.</p>
Example(s):	
Reference	Common IE and Netscape object property, RFC2396

9.4.2.6. port

Syntax:	location.port
Type:	string
Description:	<p>A property which is the specified port number of the current URL. The colon that separates the hostname from the port is not included. . Assignment to the location.port property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>
Errors or Exceptions:	<p>Attempts to navigate to non-existent URLs will generate standard HTTP errors.</p> <p>Attempts to construct an illegal URI will throw a URIError. This is an extension to ECMA262.</p>
Example(s):	
Reference	Common IE and Netscape object property, RFC2396

9.4.2.7. protocol

Syntax:	location.protocol
Type:	string, read-only
Description:	<p>A property that contains a string, which is the first component of a URL, and specifies the protocol used for retrieving the document. Typically this would be “http:”, or “file:”, or “ftp:” etc. The colon is returned as part of the string.</p>
Errors or Exceptions:	none
Example(s):	
Reference	Common IE and Netscape object property, RFC2396

9.4.2.8. search

Syntax:	location.search
Type:	string
Description:	<p>A property which is the search component of the current URL. The search component is defined as that substring of the URL that comes after the first question mark URI delimiter. The string returned includes the question mark. Assignment to the location.search property may be used to initiate navigation.</p> <p>Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of property assignment, as with all methods that cause URL navigation, should be tied to script exit.</p>

Errors or Exceptions:	Attempts to navigate to URLs that cannot process the appended search string may generate standard HTTP errors. Attempts to construct an illegal URI will throw a URIError . This is an extension to ECMA262.
Example(s):	
Reference	Common IE and Netscape object property, RFC2396

9.4.3. Methods

9.4.3.1. assign()

Syntax:	<code>location.assign(URL)</code>
Argument List:	URL – a string
Description:	Loads the document pointed to by the parameter URL into the current context. The history stack is pushed with the requested URL. Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.
Return Value Type:	none
Errors or Exceptions:	Attempts to navigate to non-existent URLs will generate standard HTTP errors. Attempts to use an illegally formed URI will throw a URIError . This is an extension to ECMA262.
Example(s):	<pre>//location.href = http://somewhere/somedoc location.assign("http://somewhere/somedoc"); //loads the document somedoc</pre>
Reference	Common IE and Netscape object property, RFC2396

9.4.3.2. reload()

Syntax: `location.reload(fromServer)`

Argument List: fromServer – Boolean, which if **true** forces a reload of the current URL from the origin server, bypassing the client cache. If ‘fromServer’ is **false**, reload will attempt to use local client cache before making a network request.

Description: This method reloads the current document. Normally the current document is reloaded from cache when available. When the ‘fromServer’ Boolean is set to **true**, cache is ignored, and the document is always reloaded from the server. A new presentation document is generated.

Form variable data MUST be reinitialised when navigating to a document using this method.

Note: This causes all form variable data to be re-initialised (as opposed to `history.go(0)` which maintains current variable state).

Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.

Return Value Type: none

Errors or Exceptions: none

Example(s):

```
//location.href = http://somewhere/somedoc  
location.reload(true); //forces a reload from the origin  
//server. Form variables are reinitialised.
```

Reference: Common IE and Netscape object property, RFC2396

9.4.3.3. replace()

Syntax: `location.replace(URLString)`

Argument List: URLString – a string

Description: This method loads the document pointed to by the specified URL, while at the same time replacing the current entry in the history list with the specified URL. The over-written URL history reference is no longer available for backwards navigation.

Note: Actual navigation to the requested URL is not guaranteed until script exit. Use of this method, as with all methods that cause URL navigation, should be tied to script exit.

Return Value Type: none

Errors or Exceptions: none

Attempts to use an illegally formed URI will throw a **URIError**. This is an extension to ECMA262.

Example(s): `location.replace("http://www.wapforum.org");`
//would navigate to and display the WAPF home page while
//replacing the top of the history stack with the current URL,
//rather than stacking a new location onto the stack

Reference: Common IE and Netscape object property, RFC2396

9.5. Basic Document Object

9.5.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

9.5.2. Properties

9.5.2.1. cookie

Syntax:	<code>document.cookie</code>										
Type:	string										
Description:	<p>The cookie property provides access to the cookies associated with the current document domain, as specified by [RFC2109]. Operations performed with the 'cookie' property SHOULD use the client's cookie store.</p> <p>A cookie is read by reading the value of the cookie property, then parsing it for the particular cookie. When read, the cookie property value MUST be a semi-colon-separated list of the cookies for the domain of the document containing the script. For each cookie list, the format is</p> $\text{NAME}=\text{VALUE}[";\text{NAME}_2=\text{VALUE}_2[";\text{NAME}_N=\text{VALUE}_N]]$ <p>where NAME and VALUE are as defined in [RFC2109]. Cookie attributes are not provided.</p> <p>A cookie is written by setting the value of the property equal to a string representing the name-value pair. The string must match the "cookie" production rule from [RFC2109]. If the string does not match, the cookie must be ignored. Only single name/value pairs, along with acceptable attributes may be written.</p> <p>Cookies may have attributes associated with them. The legal attribute values are defined by the "cookie" production rule. Any other values result in the value string not matching the production rule; such a cookie must be ignored.</p> <p>Legal attributes that MUST be supported are:</p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Domain</td> <td>Defaults to the request-host. Note that there is no dot (".") at the beginning of request-host.</td> </tr> <tr> <td>Max-Age</td> <td>Defines the lifetime of the cookie in seconds. A value of zero means the cookie SHOULD be discarded immediately. The default behavior is to discard the cookie when the user agent exits.</td> </tr> <tr> <td>Path</td> <td>Defaults to the path of the request URL that generated the Set-Cookie response, up to, but not including, the right-most slash ("/").</td> </tr> <tr> <td>Secure</td> <td>If absent, the user agent may send the cookie over an insecure channel. The definition of whether a channel is secure or not is left to the implementation, but MAY include use of HTTPS, WTLS or other end-to-end encryption schemes.</td> </tr> </tbody> </table> <p>Note: The Expires attribute, which is a "Netscape Cookie" feature, is not supported, as it requires date synchronization between client and server.</p> <p>Attributes are included in a cookie by appending them to the name/value cookie pair, separated by semicolons.</p> <p>The rules for rejecting cookies from [RFC2109 Section 4.3.2] apply for cookies created by setting the value of the 'cookie' property. For example, it MUST NOT be possible to set a cookie for another domain.</p> <p>Note: This property is only able to access cookies which are local to the terminal on which the script interpreter resides. Cookie storage may be delegated to network proxies (as defined in [HTTPSM]). Cookies stored in network proxies are not visible to the document object.</p>	Attribute	Description	Domain	Defaults to the request-host. Note that there is no dot (".") at the beginning of request-host.	Max-Age	Defines the lifetime of the cookie in seconds. A value of zero means the cookie SHOULD be discarded immediately. The default behavior is to discard the cookie when the user agent exits.	Path	Defaults to the path of the request URL that generated the Set-Cookie response, up to, but not including, the right-most slash ("/").	Secure	If absent, the user agent may send the cookie over an insecure channel. The definition of whether a channel is secure or not is left to the implementation, but MAY include use of HTTPS, WTLS or other end-to-end encryption schemes.
Attribute	Description										
Domain	Defaults to the request-host. Note that there is no dot (".") at the beginning of request-host.										
Max-Age	Defines the lifetime of the cookie in seconds. A value of zero means the cookie SHOULD be discarded immediately. The default behavior is to discard the cookie when the user agent exits.										
Path	Defaults to the path of the request URL that generated the Set-Cookie response, up to, but not including, the right-most slash ("/").										
Secure	If absent, the user agent may send the cookie over an insecure channel. The definition of whether a channel is secure or not is left to the implementation, but MAY include use of HTTPS, WTLS or other end-to-end encryption schemes.										

Errors or Exceptions: Creation of cookies using property assignment is subject to all domain security and syntax checks defined in RFC2109 and will not create a new cookie entry if these rules are broken.

Example(s):

```
function getCookie(NameOfCookie){
  var begin;
  var end;
  if (document.cookie.length > 0) {
    begin = document.cookie.indexOf(NameOfCookie+"=");
    if (begin != -1) {
      begin += NameOfCookie.length+1;
      end = document.cookie.indexOf(";", begin);
      if (end == -1) end = document.cookie.length;
      return decodeURIComponent(document.cookie.substring(begin,
end));
    }
  }
  return null;
}

function setCookie(NameOfCookie, value, expirehours) {
  var seclength = expirehours * 3600;
  document.cookie = NameOfCookie + "=" + encodeURIComponent(value)
+ ((expirehours == null) ? "" : "; Max-Age=" + seclength);
}

function delCookie (NameOfCookie) {
  if (getCookie(NameOfCookie)) {
    document.cookie = NameOfCookie + "=" + "; Max-Age=0";
  }
}
```

Reference Common IE and Netscape object property, RFC2109

9.5.2.2. domain

Syntax:	<code>document.domain</code>
Type:	string
Description:	<p>A property that contains the current document domain. Writing to this property (using it as a left side assignment) will attempt to change the document domain, according to specified security rules in RFC2396.</p> <p>A script may not change the origin domain of a document. Two domains are considered to have the same origin if the protocol, port (if given), and host (as defined in RFC2396) are the same for both pages.</p>
Errors or Exceptions:	Attempts to change the origin domain will generate an exception.
Example(s):	<p>Example: If documents are needed from both www.wapforum.org and www1.wapforum.org, we may broaden the domain from the initial "www.wapforum.org" to "wapforum.org". Changing the major domain root is illegal.</p> <p>Example:</p> <pre>//if current connected domain = www1.wapforum.org document.domain="www.wapforum.org"; //legal document.domain="wapforum.org"; //legal document.domain="ebay.com"; //illegal-will generate an exception</pre>
Reference	Common IE and Netscape object property, RFC2396

9.5.2.3. referrer

Syntax:	<code>document.referrer</code>
Type:	string, read-only
Description:	<p>A property that is the URL of the document that linked to the current document. The referrer property only contains a value when the user reaches the current document via a link. In all other cases the property is set to the empty string ("").</p> <p>If referrer is not supported by the browser, or is turned off for security reasons, this property will be an empty string.</p>
Errors or Exceptions:	none
Example(s):	<pre>if (document.referrer && document.referrer != "") document.write("You came in from " + document.referrer + "
");</pre>
Reference	Common IE and Netscape object property

9.5.2.4. title

Syntax:	<code>document.title</code>
Type:	string, read-only
Description:	The property that is set to the text in a <code><title></code> element, if present.
Errors or Exceptions:	none
Example(s):	<code>var myTitle = document.title;</code>
Reference	Common IE and Netscape object property

9.5.3. Methods

9.5.3.1. clear()

Syntax:	<code>document.clear()</code>
Argument List:	none
Description:	The current document is cleared from the browser window. It is identical to <code>document.write("")</code> . Note: Neither the cached version of the document, nor the history is affected.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<code>document.clear();</code>
Reference	Common IE and Netscape object property

9.5.3.2. open()

Syntax:	<code>document.open([MIMEType])</code>
Argument List:	<p>optional MIMEType – a hint to the browser that the content that will be written into a document by a subsequent <code>document.write()</code> statement will be of a MIME type other than text/html. (An XHTML-MP document is assumed if the parameter is missing). This is for compatibility only, and SHOULD be ignored by ECMAScript Mobile Profile implementations, as there is no way to modify the MIME type of the existing document.</p> <p>This parameter MAY be used as input to document validation if a validating parser is directly supported.</p> <p>This parameter MAY also be used as input to the implementation to direct the document to be interpreted as another supported MIME type.</p>
Description:	<p>Logically opens a path to the current document for writing. The document DOM tree is cleared.</p> <p>Note: It is often not necessary to specify a <code>document.open()</code> as <code>document.write()</code> automatically opens the current document for writing.</p>
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	(see section 9.5.3.3)
Reference	Common IE and Netscape object property

9.5.3.3. close()

Syntax:	<code>document.close()</code>
Argument List:	none
Description:	Closes the write path to the current document, and flushes all output to the document.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<pre>var now = new Date; document.open(); document.write("
The current time is " + now.getTime()); document.close();</pre>
Reference	Common IE and Netscape object property

9.5.3.4. write(), writeln()

Syntax:	<code>document.write(outputString)</code> <code>document.writeln(outputString)</code>
Argument List:	outputString – an expression, converted to a string
Description:	<p>writes the outputString, as part of a stream to the current document. If the document is closed, the write issues an automatic <code>document.open()</code> and whatever was previously written is discarded and replaced with the new outputString.</p> <p><code>document.writeln()</code> is the same as <code>document.write()</code> except that it appends a newline to the end of the written string.</p> <p><code>document.write()</code> statements in inline script segments are interpreted such that they replace the DOM nodes of the <code>document.write()</code> statements with the results of the <code>document.write()</code>.</p> <p>Note: <code>document.write()</code> or equivalent statements in intrinsic event handlers create and write to a reset document rather than modifying the current one. This is reflected in the DOM tree, which is reset. (In future releases of W3C DOM this will be changing. Rather than a new DOM tree being created, a sibling branch will be created in the existing tree.)</p>
Return Value Type:	none
Errors or Exceptions:	<p>none</p> <p>Note: Subsequent interpretation of documents created using this method are subject to the same constraints and restrictions as any other markup document.</p>
Example(s):	<code>document.write("
 Protocol= " + myURL.protocol);</code>
Reference	Common IE and Netscape object property

9.6. Host Object Extension Mechanism

Other objects besides those defined in this section may be a part of the host object set specified for a particular device. Objects such as an EFI object, a crypto object etc. may be included in the **global** object property set. The definition of these extended objects is out of scope for this specification.

For details regarding the process associated with the creation and addition of new objects see [WAESPEC].

The addition of new host objects may follow two paths:

- The addition of new standard host objects – MUST follow standard OMA processes as independent specifications.

New standard built-in object names MUST be registered with WINA [WINA] according to the WINA process.

- The addition of new private host objects – no process is defined.

New object names SHOULD be registered with WINA [WINA] to guarantee that there will not be any name conflicts.

In all cases new objects MUST support the read-only version property, and MUST be enumerable as properties of the “parent” object. See section 6.2.2.

10. Browser XHTML DOM Objects

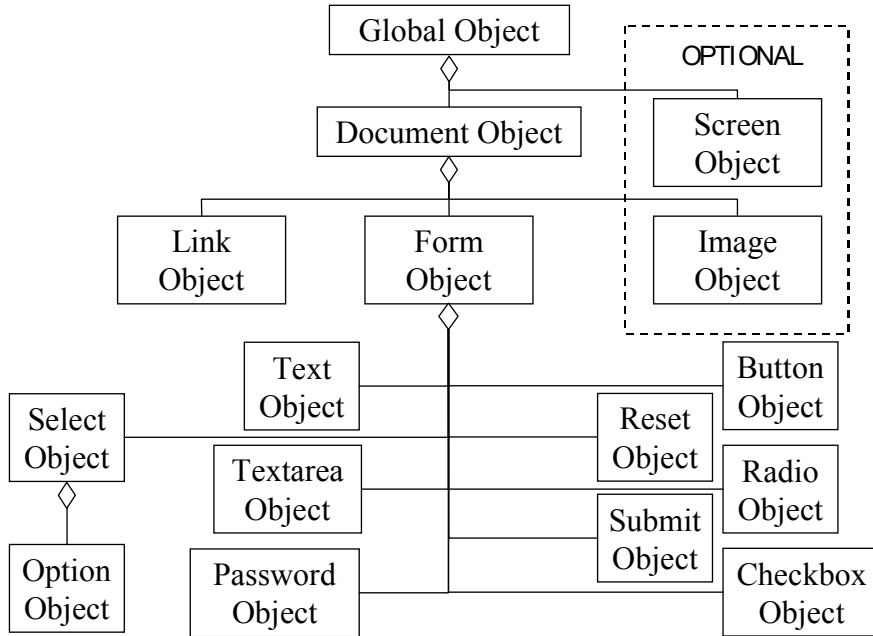
The inclusion of a subset of XHTML DOM objects as part of ESMP creates a bridge to existing content and content development methods. It also provides a number of ease of use facilities that have become part of the HTML DOM method set. Creation of a subset of HTML DOM for inclusion into ESMP is based in the following rules:

- The object and methods were present in Javascript 1.2
- The object and methods are present in W3C – DOM Level 2 HTML [DOM2HTML]
- The object provides key communications paths between XHTML and script
- The object provides unique, critical semantics not found in XML DOM
- The total set of XHTML objects and methods should tend toward a minimal set.

Explicitly excluded are:

- Objects whose sole purpose is define a document construct (i.e. div, span etc.)
- Objects that are tightly tied to particular presentation models
- Objects that do not present consistent, standardizable syntax across implementations

Object containment tends to mimic the older Javascript 1.2 rules. For example, each of the various input objects (**text**, **textarea**, **password**, etc.) are identified as separate objects, whereas in [DOM2HTML] they are all derived from a common **textInput** object. This does not affect the code syntax, and the documentation of separate objects is somewhat clearer.



XHTML Containment Hierarchy

10.1.XHTML Document Object

In addition to the properties and methods listed for the document object in Section 9.5, these properties extend the document object and allow access to the XHTML semantics of parts of the document.

10.1.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.1.2. Properties

10.1.2.1. forms

Syntax:	<code>document.forms[index]</code>
Type:	Array (HtmlCollection)
Description:	This property is an array of all of the form objects contained in the current document. The index indexes into the forms array to reference a particular form object. The array is ordered from top to bottom of the document.
Errors or Exceptions:	none
Example(s):	<code>var azipcode = document.forms[3].myzipcode.value;</code>
Reference	DOM2HTML Section 1.5, Common IE and Netscape object property, Javascript 1.2

10.1.2.2. length

Syntax:	<code>document.forms.length</code>
Type:	integer
Description:	The length property defines the number of forms objects referenced in the forms array. If there are 3 forms defined in a document then there will be 3 forms referenced in the array, and hence length will equal 3.
Errors or Exceptions:	none
Example(s):	<code>var nformsInDoc = document.forms.length ;</code>
Reference	Javascript 1.0

10.1.2.3. links

Syntax:	<code>document.links[index]</code>
Type:	Array (HtmlCollection)
Description:	This property is an array of all of the link objects contained in the current document. The index indexes into the links array to reference a particular link object. The array is ordered from top to bottom of the document.
Errors or Exceptions:	none
Example(s):	<code>document.links[0].href = "http://newref.somewhere.com";</code>
Reference	DOM2HTML Section 1.5, Common IE and Netscape object property, Javascript 1.2

10.1.2.4. images (OPTIONAL)

If an implementation supports the image object, it MUST support the images array.

Syntax:	<code>document.images[index]</code>
Type:	Array (HtmlCollection)
Description:	This property is an array of all of the image objects contained in the current document. The index indexes into the images array to reference a particular image object. The array is ordered from top to bottom of the document.
Errors or Exceptions:	If the images array does not exist, it MUST return a NULL.
Example(s):	<code>document.images[1].src = "http://newref.somewhere.com/myimage.gif";</code>
Reference	DOM2HTML Section 1.5, Common IE and Netscape object property, Javascript 1.2

Support for the image object may be tested by the following code example:

```
if (document.images)
{
    //the image object is supported
}
```

10.1.3. Methods

none

10.2.Link Element Object

A **link** element object is created for each **<a>** element in a document that has an **href** attribute associated with it. The **link** elements are accessible through the **links** array (See section 10.1.2.3) property of the document.

10.2.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.2.2. Properties

10.2.2.1. hash

Syntax:	<code>document.links[index].hash</code>
Type:	string
Description:	A property that is the fragment (anchor) part of the current URL (including the # [hash]) of the href property of the referenced link, if it exists.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var hash = document.links[0].hash;</code>
Reference	Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.2. host

Syntax:	<code>document.links[index].host</code>
Type:	string
Description:	The host property specifies a portion of the current URL referenced by the . The host property is the concatenation of the hostname (See section 9.4.2.4) and port (see section 9.4.2.6) properties, separated by a colon. When the port property is null, the host property is the same as the hostname property.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var host = document.links[1].host;</code>
Reference	Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.3. href

Syntax:	<code>document.links[index].href</code>
Type:	string
Description:	The href references the entire URL currently pointed to by the href property in the referenced link.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var href = document.links[2].href;</code>
Reference	DOM2HTML Section 1.6.5, Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.4. hostname

Syntax:	<code>document.links[index].hostname</code>
Type:	string
Description:	A property that contains a string, which is the hostname part of the href property in the referenced link.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent URLs will generate standard HTTP errors.
Example(s):	<code>var hostname = document.links[3].hostname;</code>
Reference	Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.5. pathname

Syntax:	<code>document.links[index].pathname</code>
Type:	string
Description:	A property that is the pathname component of the of the href property in the referenced link. This includes the document name, but not the server name.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent URLs will generate standard HTTP errors.
Example(s):	<code>var pathname = document.links[4].pathname;</code>
Reference	Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.6. port

Syntax:	<code>document.links[index].port</code>
Type:	string
Description:	A property that is the specified port number of the href property in the referenced link. The colon that separates the hostname from the port is not included. .
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var port = document.links[5].port;</code>
Reference	Common IE and Netscape object property, Javascript 1.1, RFC2396

10.2.2.7. protocol

Syntax:	<code>document.links[index].protocol</code>
Type:	string
Description:	A property that contains a string, which is the first component of the referenced URL, and specifies the protocol used for retrieving the document. Typically this would be "http:", or "file:", or "ftp:" etc. The colon is returned as part of the string.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var protocol = document.links[6].protocol;</code>
Reference	Common IE, Netscape object property, Javascript 1.1

10.2.2.8. search

Syntax:	<code>document.links[index].search</code>
Type:	string
Description:	A property which is the search component of the current URL referenced by the href property of the current link. The search component is defined as that substring of the URL that comes after the first question mark URI delimiter. The string returned includes the question mark.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>var search = document.links[7].search;</code>

Reference	Common IE and Netscape object property, RFC2396
-----------	---

10.2.3. Methods

None

10.3. Image Element Object (OPTIONAL)

Support for the **Image** Element object is optional. If supported, an **Image** Element object is created for every image in a form. The **Image** Element object is a property of the **Document** object. It SHOULD be included in those implementations that wish to support the manipulation, download and dynamic replacement of document images. If an implementation does include support for the **Image** Element object, it MUST support all of the properties listed in the section.

10.3.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.3.2. Properties

10.3.2.1. border

Syntax:	<code><imgReference>.border</code>
Type:	Integer, read-only
Description:	This property provides the width of the border around the image in pixels.
Errors or Exceptions:	none
Example(s):	<pre>function hasBorder(theImg) { if (theImg.border==0) { window.alert('The image has no border!'); } else window.alert('The image's border is ' + theImg.border); }</pre>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.2. height

Syntax:	<code><imgReference>.height</code>
Type:	Integer, read-only
Description:	This property provides the read only height of the image in pixels
Errors or Exceptions:	None
Example(s):	<code>var height = document.images[0].height;</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.3. hspace

Syntax:	<code><imgReference>.hspace</code>
Type:	Integer, read-only
Description:	This property provides the read only amount of horizontal space to the left and right sides of the image.
Errors or Exceptions:	none
Example(s):	<code>var hspace = document.img1.hspace;</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.4. name

Syntax:	<code><imgReference>.name</code>
Type:	String, read-only
Description:	This property provides the assigned name of an image.
Errors or Exceptions:	none
Example(s):	<code>var name = document.images[2].name;</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.5. src

Syntax:	<code><imgReference>.src</code>
Type:	String
Description:	This property value is a URL of the image to be displayed. It is a read/write string.
Errors or Exceptions:	Attempts to retrieve an image from non-existent URLs will generate standard HTTP errors.
Example(s):	<code>myImage.src = "image.gif";</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.6. vspace

Syntax:	<code><imgReference>.vspace</code>
Type:	Integer, read-only
Description:	This property provides the read-only vertical space above and below the image.
Errors or Exceptions:	none
Example(s):	<code>var vspace = document.img1.vspace;</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.2.7. width

Syntax:	<code><imgReference>.width</code>
Type:	Integer, read-only
Description:	This property provides the read-only width of the image in pixels.
Errors or Exceptions:	none
Example(s):	<code>var width = document.img1.width;</code>
Reference	HTMLImage DOM2HTML Section 1.6.5, Javascript 1.1

10.3.3. Methods

None

10.4. Form Object

The majority of ESMP objects defined in the XHTML DOM subset are contained by the **form** object. The following BNF describes the syntactical hierarchy that is used as a shortcut for defining syntax.

```
<inputElementName> := STRING
<formName> := STRING
<elemID> := STRING
<index> := INTEGER
```

```
<documentReference> := document
```

```
<formReference> :=
  <documentReference>.forms[ index]           ||
  <documentReference>.formName                ||
  <documentReference>.forms["formName"]
```

```
<elementReference> :=
  <formReference>.elements[ index]           ||
  <formReference>.<inputElementName>        ||
  <documentReference>.getElementByID("elemID")
```

(only if XMLDOM is supported)

```
<radioRef> := <elementReference>[ index]
  (where the <inputElementName> points to a radio input object array)
```

```
<optionRef> := <elementReference>.options[ index]
  (where the <inputElementName> points to a select object)
```

10.4.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.4.2. Properties

10.4.2.1. action

Syntax:	<code><formReference>.action</code>
Type:	String
Description:	This property allows access to the action property of a form. It is used to read or modify the URL referenced as the action to take in response to a form.submit() . Note that any reload of a page will NOT retain any changes to the action property, thus forcing the use of the script form.submit() to insure the new action target.
Errors or Exceptions:	While any string may be inserted, subsequent attempts to navigate to non-existent or illegal URLs will generate standard HTTP errors.
Example(s):	<code>document.forms[0].action = "mailto://me@here.com"; document.forms[0].submit;</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.4.2.2. elements

Syntax:	<code><formReference>.elements[index]</code>
Type:	Array
Description:	The elements property defines the array of elements inside any particular form. The index to the elements array references a particular element. The order of the elements in the array is the same as the order of the elements in the document. The index is zero based.
Errors or Exceptions:	Selecting an index that is negative or greater than the size of the array returns a NULL.
Example(s):	<code>var value = document.myForm.elements[0].value;</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5

10.4.2.2.1. length

Syntax:	<code><elementReference>.length</code>
Type:	integer, read-only
Description:	This property defines the number of controls in a form. Note: this returns the identical value as 10.4.2.5
Errors or Exceptions:	none
Example(s):	<code>var numCtrls = document.myForm.length;</code>
Reference	Javascript 1.0

10.4.2.3. enctype

Syntax:	<code><formReference>.enctype</code>
Type:	String
Description:	This property reflects the enctype attribute in the form tag. Note: ESMP supports only the enctype property (not the encoding property), as this is position of [DOM2HTML], and is compatible across all implementations.
Errors or Exceptions:	
Example(s):	<code>document.forms[0].enctype = "application/x-www-form-urlencoded";</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5

10.4.2.4. length (of the forms array)

Syntax:	<code>document.forms.length</code>
Type:	integer, read-only
Description:	Provides a count of the number of forms defined in a document.
Errors or Exceptions:	none
Example(s):	<code>var numForms = document.forms.length;</code>
Reference	Common IE, Netscape object property, Javascript 1.0

10.4.2.5. length (of a form object)

Syntax:	<code><formReference>.length</code>
Type:	integer, read-only
Description:	This property defines the number of controls in a form. Note: this returns the identical value as 0
Errors or Exceptions:	
Example(s):	<code>var numCtrls = document.forms[3].length;</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5

10.4.2.6. method

Syntax:	<code><formReference>.method</code>
Type:	String
Description:	This property reflects the method attribute of the referenced form.
Errors or Exceptions:	String must be GET or POST (case insensitive). All other strings will generate errors when trying to submit the form.
Example(s):	<code>document.forms[0].method = "POST";</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.4.2.7. name

Syntax:	<code><formReference>.name</code>
Type:	String
Description:	This property reflects the value of the name attribute of the referenced element. This property allows the assignment of a name to a form.
Errors or Exceptions:	
Example(s):	<code>var fName = document.forms[6].name;</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.4.3. Methods

10.4.3.1. reset()

Syntax:	<code><formReference>.reset()</code>
Argument List:	none
Description:	The reset() method returns all referenced form elements to their default settings. The function is similar to the reset button object except that the onReset event is not triggered.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<code>document.forms[3].reset();</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5, Javascript 1.1

10.4.3.2. submit()

Syntax:	<code><formReference>.submit()</code>
Argument List:	none
Description:	The submit() method initiates form content submission to the server in much the same way clicking a submit button initiates form submission. The difference is that the onSubmit event is not triggered by a call to the submit() function.
Return Value Type:	none
Errors or Exceptions:	Script statements inserted after a form.submit() may cause the cancellation of the submit.
Example(s):	<code>document.forms[2].submit();</code>
Reference	HTMLFormElement DOM2HTML Section 1.6.5, Javascript 1.0

10.5. Text Input Object

10.5.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.5.2. Properties

10.5.2.1. defaultValue

Syntax:	<code><elementReference>.defaultValue</code>
Type:	String, read-only
Description:	This property represents the initial value of the text assigned to the referenced text object.
Errors or Exceptions:	An empty string is returned if there is no default.
Example(s):	<pre>document.forms["Address"].Country.value = document.forms["Address"].Country.defaultValue; //reset country string to default</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.5.2.2. form

Syntax:	<code><elementReference>.form</code>
Type:	form object reference
Description:	This property provides a reference the form element that contains the referenced control.
Errors or Exceptions:	none
Example(s):	<pre>var formRef; formRef = document.forms[2].InputArea1.form; formRef.InputArea2.value = "Follow on";</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.5.2.3. maxLength

Syntax:	<code><elementReference>.maxLength</code>
Type:	Integer
Description:	This property controls the maximum number of characters that are allowed to be typed into an input field. This property initially reflects the maxLength input attribute.
Errors or Exceptions:	maxLength will be ignored if it is set to a negative number.
Example(s):	<code>document.myForm.text2.maxLength = 1024;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.2.4. name

Syntax:	<code><elementReference>.name</code>
Type:	String (identifier)
Description:	This property is the name attribute associated with the referenced input element. It is also the name part of the name/value pair sent to a server when a GET or POST is issued for the referenced form.
Errors or Exceptions:	
Example(s):	<code>document.forms[1].addr.name = "address"; //sets the text name to "address"</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5, Common IE, Netscape object property, Javascript 1.0

10.5.2.5. size

Syntax:	<code><elementReference>.size</code>
Type:	Integer
Description:	This property controls the presentation size of an input field. This property initially reflects the size input attribute. Note: Default size for a text input box will vary from device to device.
Errors or Exceptions:	size will be ignored if it is set to a negative number.
Example(s):	<code>document.myForm.text3.size = 24;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.2.6. type

Syntax:	<code><elementReference>.type</code>
Type:	String, read-only
Description:	This property defines the kind of object element being referenced. It reflects the type attribute of the referenced element. In the case of a text input object the type is set to <code>'text'</code> . Possible values for type are: <code>checkbox</code> <code>hidden</code> <code>password</code> <code>radio</code> <code>reset</code> <code>select-one</code> <code>select-multiple</code> <code>submit</code> <code>text</code> <code>textarea</code> <code>undefined</code>
Errors or Exceptions:	In cases where the type attribute in markup is not a recognized string, the type is set to <code>'text'</code> .
Example(s):	<code>document.write("Input type (D1) = " + document.forms[3].D1.type + "
"); //Input type (D1) = button</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.2.7. value

Syntax:	<code><elementReference>.value</code>
Type:	String
Description:	This property represents the value attribute of the referenced element. For a text input element, this is the content of the text field.
Errors or Exceptions:	
Example(s):	<code>document.forms["Response"].text1.value = "Typing into the form line";</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.3. Methods

10.5.3.1. select()

Syntax:	<code><elementReference>.select()</code>
Argument List:	none
Description:	This method causes the text within the referenced text object to be selected. Selection is most often denoted by highlighting the chosen input area. It does not bring the input focus to the selected item. Note: no onSelect event is triggered.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].entry[1].select();</code> <i>//highlights the second entry</i>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.3.2. blur()

Syntax:	<code><elementReference>.blur()</code>
Argument List:	none
Description:	This method removes the input focus from the referenced input element.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].entry[0].blur();</code> <code>//removes the input focus from the first entry</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.5.3.3. focus()

Syntax:	<code><elementReference>.focus()</code>
Argument List:	none
Description:	This method sets the input focus to the referenced input element.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].entry[1].focus();</code> <code>//sets the input focus to the second entry</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.6. Textarea Input Object

The **textarea** Input object is similar to the **text** Input object except that it defines a multiline input area as part of the enclosing form.

10.6.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.6.2. Properties

10.6.2.1. cols

Syntax:	<code><elementReference>.cols</code>
Type:	Integer
Description:	This property represents the cols attribute of the textarea element, and is the number of characters that can be displayed without causing the input widget to scroll horizontally, or the input line to wrap.
Errors or Exceptions:	Cols will be ignored if it is set to a negative number.
Example(s):	<pre>document.forms[0].textArea1.cols = 30; //set the textarea input widget to 30 chars wide</pre>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.2.2. form

Syntax:	<code><elementReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference the form element that contains the referenced control.
Errors or Exceptions:	none
Example(s):	<pre>var formRef; formRef = document.forms[2].InputArea1.form; formRef.InputArea2.value = "Follow on";</pre>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.2.3. name

Syntax:	<code><elementReference>.name</code>
Type:	String (identifier)
Description:	This property is equal to the name attribute associated with the referenced textarea input element. It is also the name part of the name/value pair sent to a server when a GET or POST is issued for the referenced form.
Errors or Exceptions:	
Example(s):	<code>document.forms[1].addr.name = "address"; //sets the text name to "address"</code>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.2.4. rows

Syntax:	<code><elementReference>.rows</code>
Type:	Integer
Description:	This property represents the rows attribute of the textarea element, and is the number of lines that can be displayed without causing the input widget to scroll vertically.
Errors or Exceptions:	Rows will be ignored if it is set to a negative number.
Example(s):	<code>document.forms[0].textArea2.rows = 5; //sets the textarea input widget height to 5</code>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.2.5. type

Syntax:	<code><elementReference>.type</code>
Type:	String, read-only
Description:	<p>This property defines the kind of object element being referenced.</p> <p>It reflects the <code>type</code> attribute of the referenced element. In the case of a <code>textarea</code> input object the type is set to <code>'textarea'</code>.</p> <p>Possible values for <code>type</code> are:</p> <ul style="list-style-type: none"> <code>checkbox</code> <code>hidden</code> <code>password</code> <code>radio</code> <code>reset</code> <code>select-one</code> <code>select-multiple</code> <code>submit</code> <code>text</code> <code>textarea</code> <code>undefined</code>
Errors or Exceptions:	In cases where the <code>type</code> attribute in markup is not a recognized string, the <code>type</code> is set to <code>'text'</code> .
Example(s):	<pre>document.write("Input type (text area) = " + document.forms[3].textArea1.type + "
"); //Input type (D1) = textarea</pre>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.2.6. value

Syntax:	<code><elementReference>.value</code>
Type:	String
Description:	This property represents the value attribute of the referenced element. For a <code>textarea</code> input element, this is the content of the text area.
Errors or Exceptions:	
Example(s):	<pre>document.forms["comments"].textArea1 = "This is my comment....and that's my rant.";</pre>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.3. Methods

10.6.3.1. blur()

Syntax:	<code><elementReference>.blur()</code>
Argument List:	none
Description:	This method removes the input focus from the referenced input element (in this case the textarea).
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].textArea0.blur();</code> <code>//removes the input focus from the first entry</code>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.3.2. focus()

Syntax:	<code><elementReference>.focus()</code>
Argument List:	none
Description:	This method sets the input focus to the referenced input element. Focus is normally denoted by positioning a cursor or similar mechanism at the new point of focus.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].textArea1.focus();</code> <code>//sets the input focus to the second entry</code>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.6.3.3. select()

Syntax:	<code><elementReference>.select()</code>
Argument List:	none
Description:	This method causes the text within the referenced <code>textarea</code> object to be selected. Selection is most often denoted by highlighting the chosen input area. It does not bring the input focus to the selected item. Note: no <code>onSelect</code> event is triggered.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>document.forms[0].textArea0.select();</code> <code>//highlights the text in the textArea0 text box</code>
Reference	HTMLTextAreaElement DOM2HTML Section 1.6.5

10.7.Password Input Object

10.7.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

A **password** input object is similar to a **text** input object except then when a user types into the text field meaningless characters (usually asterisks) are echoed to the user.

All properties and methods which apply to the **text** input object apply to the **password** input object.

The **type** property for a password object returns the text **password**.

10.8.Radio Input Object

10.8.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

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10.8.2. Properties

10.8.2.1. checked

Syntax:	<code><radioRef>.checked</code>
Type:	Boolean
Description:	This property reflects running state of the checked attribute for an individual radio button in a radio button array. Setting it to true will force all other buttons in the group to be set to false .
Errors or Exceptions:	none
Example(s):	<code>document.forms[0].radio1[2].checked = true;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.2.2. defaultChecked

Syntax:	<code><radioRef>.defaultChecked</code>
Type:	Boolean, read-only
Description:	This property reflects initial document state of the checked attribute for an individual radio button in a radio button array. If the checked attribute is set in markup, then this property will be set to true .
Errors or Exceptions:	none
Example(s):	<code>document.forms[0].radio1[2].checked = document.forms[0].radio1[2].defaultChecked;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.2.3. form

Syntax:	<code><radioRef>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference the form element that contains the referenced radio button array.
Errors or Exceptions:	none
Example(s):	<pre>var radioRef; radioRef = document.forms[0].radiobuts[2].form; radioRef.radiobuts[3] = true;</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.2.4. length

Syntax:	<code><elementReference>.<inputElementName>.length</code>
Type:	Integer, readonly
Description:	This property returns a value that is equal to the number of radio buttons in the referenced radio input object.
Errors or Exceptions:	Note: the length is referenced to the entire array. Attempting to get length of an individual radio button returns a NULL.
Example(s):	<pre>var numBtns; numBtns =document.form["myChoices"].radBtns.length;</pre>
Reference	Javascript 1.0

10.8.2.5. name

Syntax:	<code><radioRef>.name</code>
Type:	String, read-only
Description:	This property returns a string that is the assigned name for the radio button array.
Errors or Exceptions:	This property must be accessed through the individual radio buttons in an array.
Example(s):	<pre>var butNam; butName = document.myChoices.elements[1][1].name;</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.2.6. type

Syntax:	<code><radioRef>.type</code>
Type:	String, read-only
Description:	<p>This property defines the kind of object element being referenced.</p> <p>It reflects the <code>type</code> attribute of the referenced element. In the case of a radio input object the type is set to <code>'radio'</code>.</p> <p>Possible values for <code>type</code> are:</p> <ul style="list-style-type: none"> <code>checkbox</code> <code>hidden</code> <code>password</code> <code>radio</code> <code>reset</code> <code>select-one</code> <code>select-multiple</code> <code>submit</code> <code>text</code> <code>textarea</code> <code>undefined</code>
Errors or Exceptions:	In cases where the <code>type</code> attribute in markup is not a recognized string, the <code>type</code> is set to <code>'text'</code> .
Example(s):	<pre>document.write("Input type (radiol) = " + document.forms[3].radiol.type + "
"); //Input type = radio</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.2.7. value

Syntax:	<code><radioRef>.value</code>
Type:	String
Description:	This property reflects the value attribute in markup. It is the string that is sent to the server during a GET or POST as the value part of the name/value pair.
Errors or Exceptions:	none
Example(s):	<pre>var myCondiment = "Ketchup"; var ptr = document.forms[0].condiment; for (var i = 0 to ptr.length) { if (ptr[i].checked) myCondiment = ptr[i].value; } //myCondiment is set to the chosen one</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.8.3. Methods

10.8.3.1. click()

Syntax:	<code><radioRef>.click()</code>
Argument List:	none
Description:	This method causes the state of the referenced checked property to be set to true , (the same semantics as <code><radioRef>.checked = true;</code>). In addition the onClick event is triggered if there is an onClick clause associated with the referenced radio button.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<pre>var fo = document.forms[1].radio2; fo[4].click();</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9. Checkbox Input Object

10.9.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.9.2. Properties

10.9.2.1. checked

Syntax:	<code><elementReference>.checked</code>
Type:	Boolean
Description:	This property reflects running state of the checked attribute for an individual checkbox. Setting it to true will cause the visual presentation of that checkbox to be marked. Setting it to false will unmark the checkbox. No other checkboxes are affected.
Errors or Exceptions:	none
Example(s):	<code>document.forms[0].myChkbox.checked = true;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.2.2. defaultChecked

Syntax:	<code><elementReference>.defaultChecked</code>
Type:	Boolean, read-only
Description:	This property reflects initial document state of the checked attribute for a checkbox. If the checked attribute is set in markup, then this property will be set to true .
Errors or Exceptions:	none
Example(s):	<pre>var cb2 = document.forms[0].elements ; for (var i = 0 to cb2.length) cb2[i].checked = cb2[i].defaultChecked; //reset all cboxes to initial state</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.2.3. form

Syntax:	<code><elementReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference the form element that contains the referenced checkbox.
Errors or Exceptions:	none
Example(s):	<code>var refForm = document.myForm.myChkBox.form ;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.2.4. name

Syntax:	<code><elementReference>.name</code>
Type:	String, read-only
Description:	This property returns a string that is the assigned name for the referenced checkbox. It is normally used to refer to this object.
Errors or Exceptions:	none
Example(s):	<code>var cbName; cbName = document.forms("questions").elements[1].name;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.2.5. type

Syntax:	<code><elementReference>.type</code>
Type:	String, read-only
Description:	<p>This property defines the kind of object element being referenced.</p> <p>It reflects the type attribute of the referenced element. In the case of a checkbox input object the type is set to <code>'checkbox'</code>.</p> <p>Possible values for type are:</p> <ul style="list-style-type: none"> <code>checkbox</code> <code>hidden</code> <code>password</code> <code>radio</code> <code>reset</code> <code>select-one</code> <code>select-multiple</code> <code>submit</code> <code>text</code> <code>textarea</code> <code>undefined</code>
Errors or Exceptions:	In cases where the type attribute in markup is not a recognized string, the type is set to <code>text</code> .
Example(s):	<pre>document.write("Input type (checkBox1) = " + document.forms[3].checkBox1.type + "
"); //Input type = checkbox</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.2.6. value

Syntax:	<code><elementReference>.value</code>
Type:	String
Description:	This property reflects the value attribute in markup. It is the string that is sent to the server during a GET or POST as the value part of the name/value pair.
Errors or Exceptions:	none
Example(s):	<code>var chkValue = document.myForm.myChkBox.value;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.9.3. Methods

10.9.3.1. click()

Syntax:	<code><elementReference>.click()</code>
Argument List:	none
Description:	The onClick event is triggered if there is an onClick clause associated with the referenced checkbox.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<code>var cbo = document.forms[0].elements[2]; cbo.click();</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.10. Submit Object

10.10.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.10.2. Properties

10.10.2.1.form

Syntax:	<code><elementReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference the form element that contains the referenced submit object.
Errors or Exceptions:	none
Example(s):	<code>var refForm = document.forms[0].submitButton.form ;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.10.2.2.name

Syntax:	<code><elementReference>.name</code>
Type:	String, read-only
Description:	This property returns a string that is the assigned name for the referenced submit object. It is normally used to refer to this object.
Errors or Exceptions:	none
Example(s):	<code>var submName = document.forms("questions").elements[4].name;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.10.2.3.type

Syntax:	<code><elementReference>.type</code>
Type:	String, read-only
Description:	<p>This property defines the kind of object element being referenced.</p> <p>It reflects the <code>type</code> attribute of the referenced element. In the case of a submit button object the type is set to <code>'submit'</code>.</p> <p>Possible values for <code>type</code> are:</p> <ul style="list-style-type: none"> <code>checkbox</code> <code>hidden</code> <code>password</code> <code>radio</code> <code>reset</code> <code>select-one</code> <code>select-multiple</code> <code>submit</code> <code>text</code> <code>textarea</code> <code>undefined</code>
Errors or Exceptions:	In cases where the <code>type</code> attribute in markup is not a recognized string, the <code>type</code> is set to <code>text</code> .
Example(s):	<code>var buttonType = document.forms[0].submitButton.type;</code>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.10.2.4.value

Syntax:	<code><elementReference>.value</code>
Type:	String
Description:	This property reflects the value attribute of the referenced input object. In the case of the input object being of type submit , the value is used as the label for the submit button.
Errors or Exceptions:	none
Example(s):	<pre>var buttonValue = document.forms[0].submitButton.value;</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.10.3. Methods

10.10.3.1.click()

Syntax:	<code><elementReference>.click()</code>
Argument List:	none
Description:	The onClick event is triggered if there is an onClick clause associated with the referenced checkbox. An onClick event on a submit input object will generate a subsequent onSubmit event.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<pre>var sub = document.forms[0].elements[2]; sub.click(); // will generate two events</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.11. Reset Object

10.11.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.11.2. Properties

See **submit** properties.

10.11.3. Methods

10.11.3.1.click()

Syntax:	<code><elementReference>.click()</code>
Argument List:	none
Description:	The onClick event is triggered if there is an onClick clause associated with the referenced checkbox. An onClick event on a reset input object will generate a subsequent onReset event.
Return Value Type:	none
Errors or Exceptions:	
Example(s):	<pre>var res1 = document.forms[0].elements[2]; res1.click(); // will generate two events</pre>
Reference	HTMLInputElement DOM2HTML Section 1.6.5

10.12. Select Element Object

The **select** object represents a selection list in a **form** object. An **elements** array is created if there are multiple selections lists in a form. A particular select object can be accessed either by index number or by its name attribute. The select object is a property of the form object.

10.12.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.12.2. Properties

10.12.2.1.form

Syntax:	<code><selectReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference to the form element that contains the referenced select object
Errors or Exceptions:	none
Example(s):	<code>var formRef = document.form[1].mySelect.form;</code>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.2.length

Syntax:	<code><selectReference>.length</code>
Type:	Integer, read-only
Description:	This property provides the number of options in the selection list.
Errors or Exceptions:	none
Example(s):	<code>var numSelect = document.forms[0].mySelect.length;</code>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.3.name

Syntax:	<code><selectReference>.name</code>
Type:	String
Description:	This property consists of a string that is defined by the name of the selection.
Errors or Exceptions:	none
Example(s):	<code>var selectName = document.forms[0].elements[0].name</code>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.4.options

Syntax:	<code><selectReference>.options</code>
Type:	Option Array, read-only
Description:	This property is an array of all the options in a particular select object. There is one element (numbered in ascending order from zero) for each option.
Errors or Exceptions:	none
Example(s):	<pre>for (var i = 0; i < mySelect.options.length; i++) { if (mySelect.options[i].selected) document.write(" mySelect.options[i].text\n"); }</pre>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

See Option Element Object

10.12.2.5.selectedIndex

Syntax:	<code><selectReference>.selectedIndex</code>
Type:	Integer
Description:	This property is an integer relating to the currently selected option of a select object. If the select object allows for multiple selections, the selectedIndex property will only return the index of the first option selected
Errors or Exceptions:	none
Example(s):	<pre>var selectedIndex = document.myForm.mySelect.selectedIndex;</pre>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.6.size

Syntax:	<code><selectReference>.size</code>
Type:	Integer
Description:	If a select element is presented as a scrolled list box, this attribute specifies the number of rows in the list that should be visible at the same time
Errors or Exceptions:	none
Example(s):	<pre>var selectSize = document.myForm.mySelect.size;</pre>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.7.type

Syntax:	<code><selectReference>.type</code>
Type:	String, read-only
Description:	This property holds the type of the select object, having the value " select-one " where only one option can be selected and " select-multiple " where multiple selections are possible. The following code could be used to determine the type of the first select object of the first form of the current document
Errors or Exceptions:	none
Example(s):	<code>document.writeln("Select Type is " + document.form1.mySelect.type) ;</code>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.2.8.value

Syntax:	<code><selectReference>.value</code>
Type:	String
Description:	This property provides the value of the currently selected option. If multiple options are selected, this is the value of the first selected option.
Errors or Exceptions:	none
Example(s):	<code>var selectValue = document.myForm.mySelect.value;</code>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.3. Methods

10.12.3.1.add()

Syntax:	<code><selectReference>.add(element, before)</code>
Argument List:	<p>element – element of type XHTMLElement</p> <p>before – element of type XHTMLElement</p>
Description:	<p>Adds a new element to the collection of option elements for this select. The new element will be added before the element referred by the before parameter</p> <p>Note: if the second parameter is NULL or omitted (implied NULL) new options are appended at the end of the list.</p>
Return Value Type:	none
Errors or Exceptions:	NOT_FOUND_ERR exception is raised if the before element is not a descendent of the select element in the hierarchy
Example(s):	<pre>var selRef = document.myForm.mySelect; if (selRef.length > 0) { selRef.add(elem, selRef.options[0]); }</pre>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.12.3.2.remove()

Syntax:	<code><selectReference>.remove(index)</code>
Argument List:	index – Integer representing the index of the item to be removed
Description:	Removes an element from the collection of option elements for this select element. The method does nothing if no element has the given index.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<pre>var selRef = document.myForm.mySelect; if (selRef.length > 0) { selRef.remove(0); }</pre>
Reference	HTMLSelectElement DOM2HTML Section 1.6.5

10.13. Option Element Object

An **Option** Element object is created for every option in a selection list. An **Option** Element object is a property of the **Select** object.

10.13.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.13.2. Properties

10.13.2.1.defaultSelected

Syntax:	<code><selectReference>.<optionReference>.defaultSelected</code>
Type:	Boolean, read-only
Description:	The defaultSelected is a boolean value determining whether the option is selected by default. If the option is selected, the property returns true, else it returns false.
Errors or Exceptions:	none
Example(s):	<code>var optSelected = mySelect.myOption.defaultSelected;</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.2.2.form

Syntax:	<code><optionReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference to the form object that contains the referenced option object.
Errors or Exceptions:	None
Example(s):	<code>var formRef = document.mySelect.myOption.form;</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.2.3.label

Syntax:	<code><optionReference>.label</code>
Type:	String
Description:	This attribute allows authors to specify a shorter label for an option than the content of the option object. When specified, user agents should use the value of this attribute rather than the content of the option object as the option label.
Errors or Exceptions:	none
Example(s):	<code>document.mySelect.myOption.label= "Option Label";</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.2.4.selected

Syntax:	<code><optionReference>.selected</code>
Type:	Boolean
Description:	Determines whether the option is currently selected. This boolean value is read/write. The selected property can be set at any time, immediately updating the display of the Select object.
Errors or Exceptions:	none
Example(s):	<code>document.mySelect.myOption.selected = true;</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.2.5.text

Syntax:	<code><optionReference>.text</code>
Type:	String
Description:	The text property is used to describe the option. This is a read/write property.
Errors or Exceptions:	none
Example(s):	<code>document.mySelect.myOption.text = "NewText";</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.2.6.value

Syntax:	<code><optionReference>.value</code>
Type:	String
Description:	During submission of a form, this property value is sent to the server if the option is selected. If there is no VALUE attribute for the option element, then the value property is an empty string.
Errors or Exceptions:	none
Example(s):	<code>document.mySelect.myOption.text = "NewValue";</code>
Reference	HTMLOptionElement DOM2HTML Section 1.6.5

10.13.3. Methods

none

10.14. Button Element Object

Editors Note: The inclusion of the Button Element Object must be dependant upon whether or not the BUTTON element is included in XHTML-MP. The expectation is that it won't be in XHTML-MP 1.1 but will be included in XHTML-MP 1.2 (when the complete FORMS module is incorporated into the markup).

A **Button** object is created for every instance of an **input** element with a **type** value set as **button** on a form. The **Button** object is a property of the **Form** object. These objects are then stored in the **elements** array of the parent form and accessed using either the name property value of the element or an array index

10.14.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.14.2. Properties

10.14.2.1.form

Syntax:	<code><buttonReference>.form</code>
Type:	form object reference, read-only
Description:	This property provides a reference to the form object that contains the referenced button object.
Errors or Exceptions:	none
Example(s):	<code>var formRef = document.myForm.myButton.form;</code>
Reference	HTMLButtonElement DOM2HTML Section 1.6.5

10.14.2.2.name

Syntax:	<code><buttonReference>.name</code>
Type:	String
Description:	This property sets or returns the value of the button's name attribute
Errors or Exceptions:	none
Example(s):	<code>var name = document.myForm.myButton.name; document.myForm.myButton.name = "NewName";</code>
Reference	HTMLButtonElement DOM2HTML Section 1.6.5

10.14.2.3.type

Syntax:	<code><buttonReference>.type</code>
Type:	String, read-only
Description:	The type property of a button object identifies the type of the button. The values for the type of a button are <code>'button'</code> , <code>'submit'</code> or <code>'reset'</code> .
Errors or Exceptions:	none
Example(s):	<code>var buttonType = document.myForm.myButton.type;</code>
Reference	HTMLButtonElement DOM2HTML Section 1.6.5

10.14.2.4.value

Syntax:	<code><buttonReference>.value</code>
Type:	String
Description:	This property sets or returns the button's value attribute. This is the text that is actually displayed on the button face.
Errors or Exceptions:	none
Example(s):	<code>var buttonValue = document.myForm.myButton.value;</code>
Reference	HTMLButtonElement DOM2HTML Section 1.6.5

10.14.3. Methods

10.14.3.1.blur()

Syntax:	<code><buttonReference>.blur()</code>
Argument List:	none
Description:	This method removes the input focus from the referenced button element.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<code>document.myForm.myButton.blur();</code>
Reference	Javascript 1.0

10.14.3.2.click ()

Syntax:	<code><buttonReference>.click()</code>
Argument List:	none
Description:	This method simulates a mouse-click on the referenced button.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<code>document.myForm.myButton.click();</code>
Reference	Javascript 1.0

10.14.3.3.focus ()

Syntax:	<code><buttonReference>.focus()</code>
Argument List:	none
Description:	This method gives focus to the referenced Button element.
Return Value Type:	none
Errors or Exceptions:	none
Example(s):	<code>document.myForm.myButton.focus();</code>
Reference	Javascript 1.0

10.15. Screen Object (OPTIONAL)

Support for the screen object is optional. This object is a read-only object that, when present, provides properties that describe the available screen resources. If an implementation decides to implement the **screen** object, then all of the described properties MUST be implemented.

To determine whether or not this object is implemented, use the following code:

```
if(window.screen)
{
    //the object is implemented
}
```

As with all references to unknown objects, the screen object reference MUST return undefined if the object is not implemented.

10.15.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

10.15.2. Properties

10.15.2.1.availHeight

Syntax:	screen.availHeight
Type:	Integer, read-only
Description:	This property is the size in pixels of the visible vertical writable screen area for the window. This is usually less than the total height of the screen, as there are often other decorations on the screen
Errors or Exceptions:	none
Example(s):	<pre>if(window.screen) { hsize = screen.availHeight; }</pre>
Reference	Common IE and Netscape Object

10.15.2.2.availWidth

Syntax:	screen.availWidth
Type:	Integer, read-only
Description:	<p>This property is the size in pixels of the horizontal writable screen area for the window. This value will often be less than the total screen width, as there are often other decorations on the screen.</p> <p>This value does not reflect any horizontal scrolling capability that may be implemented on a particular device.</p>
Return Value Type:	none
Example(s):	<pre>if(window.screen) { hsize = screen.availWidth; }</pre>
Reference	Common IE and Netscape Object

10.15.2.3.colorDepth

Syntax:	screen.colorDepth
Type:	Integer, read-only
Description:	<p>This property describes the number of bits assigned to the management of color for the screen. The number of supported colors = $2^{\log \text{screen.colorDepth}}$</p> <p>1 = "black and white"</p> <p>4 = 16 colors</p> <p>8 = 256 colors</p> <p>16 = 65535 colors</p> <p>24 = 16 million colors</p>
Errors or Exceptions:	none
Example(s):	var NumColBits = screen.colorDepth;
Reference	Common IE and Netscape Object

10.15.2.4.height

Syntax:	<code>screen.height</code>
Type:	Integer, read-only
Description:	This property describes the physical height of the screen in pixels. It is always equal to or greater than <code>screen.availHeight</code> .
Errors or Exceptions:	none
Example(s):	<code>var myHeight = screen.height;</code>
Reference	Common IE and Netscape Object

10.15.2.5.width

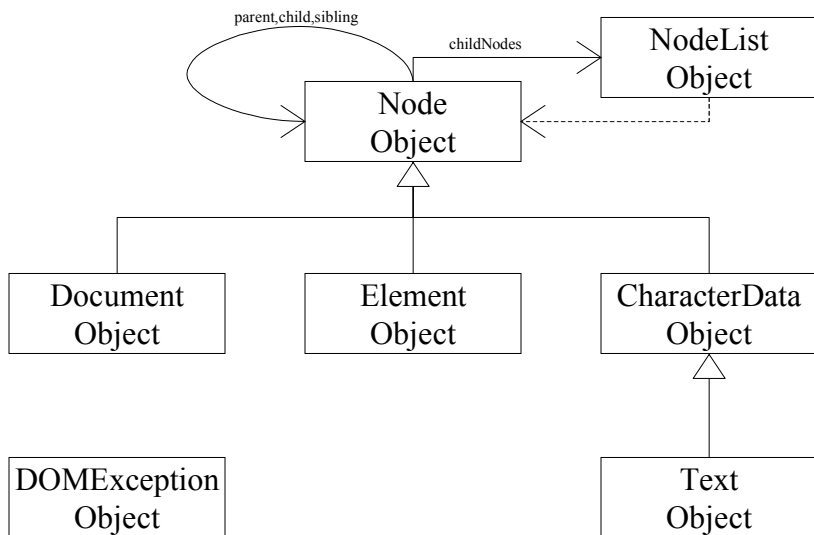
Syntax:	<code>screen.width</code>
Type:	Integer, read-only
Description:	This property describes the physical width of the screen in pixels. It is always equal to or greater than <code>screen.availWidth</code> .
Errors or Exceptions:	none
Example(s):	<code>var myWidth = screen.width;</code>
Reference	Common IE and Netscape Object

10.15.3. Methods

None.

11. Browser DOM2 Core Objects

The **document** object set specified for ECMAScript Mobile Profile is a subset of the **document** object interface ECMAScript language bindings and definitions of the Document Object Model (DOM) found in [DOM2CORE]



Namespace aware versions of the object functions are not supported.

The API described in this section is partitioned into mandatory and optional functions and properties. Any methods that cause the document to change are labelled Mutation methods. Mutation is further sub-categorized into methods and properties that are oriented toward changing document data (data mutation) vs. methods and properties that are specifically oriented toward modifying the structure of the document (structural mutation). Methods and properties that are listed as causing structural mutation are optional.

Note: There are cases where methods that are primarily data mutation methods will cause structural changes to the document, i.e., a call to **setAttribute()** when there is no existing attribute.

Function and Property Grouping	Status	Requirement
Document Interrogation (DI)	Mandatory	
Data Mutation (DM)	Mandatory	DI
Structural Mutation (SM)	Optional	DI and DM

Methods are labelled as [DI],[DM],[SM] as appropriate.

11.1.DOMException Object

The **DOMException** object is an extended definition of the ECMAScript **Error** object to include another **NativeError** object. (Section 6.11).

11.1.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.1.2. Properties

The properties of the **DOMException** Object are the same as the ECMAScript **Error** Object (Section 6.11).

The setting of the **name** and **message** properties of the **exception** object SHOULD be done when throwing a **DOMException**.

If the **name** property is set, it SHOULD be set to the error name listed in the table in section 11.1.3.

If an instance of **DOMException** object is created using constructor, the **name** and **code** properties SHOULD be initialized to “**DOMException**” and **NaN** respectively.

11.1.3. Constants

The DOM exception, when thrown may return one of the following constant number values for the **code** property:

Code	Error Name
1	INDEX_SIZE_ERR
2	DOMSTRING_SIZE_ERR
3	HIERARCHY_REQUEST_ERR
4	WRONG_DOCUMENT_ERR
5	INVALID_CHARACTER_ERR
6	NO_DATA_ALLOWED_ERR
7	NO_MODIFICATION_ALLOWED_ERR
8	NOT_FOUND_ERR
9	NOT_SUPPORTED_ERR

10	INUSE_ATTRIBUTE_ERR
11	INVALID_STATE_ERR
12	SYNTAX_ERR
13	INVALID_MODIFICATION_ERR
14	NAMESPACE_ERR
15	INVALID_ACCESS_ERR

Note: To maintain compatibility between DOM Exceptions and ECMAScript exceptions the naming of the errors appears inconsistent, with DOM exceptions using only upper case and ECMAScript using mixed case. This is intentional.

11.2. Node Object

The **Node** object is the base DOM object from which the **Document**, **Element** and **CharacterData** objects are derived.

11.2.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.2.2. Properties

11.2.2.1. nodeName

`nodeName` is not supported. The value of the `nodeName` property is accessible through the element's `tagName` property.

11.2.2.2. nodeValue

`nodeValue` is not supported. The content of a **Text Node** is available through the **Text** object's `data` property.

11.2.2.3..nodeType

Syntax:	<code>someNode.nodeType</code>								
Type:	number(integer), read-only								
Description:	<p>A property that describes the type of node being referenced.</p> <p>Values for <code>nodeType</code> are specified in [DOM2CORE], and valid values for supporting the DOM subset are summarized in the following table:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>NodeType</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Element Node</td> </tr> <tr> <td>3</td> <td>Text Node</td> </tr> <tr> <td>9</td> <td>Document Node</td> </tr> </tbody> </table> <p>Other values (described in DOM2CORE) are not supported</p>	Value	NodeType	1	Element Node	3	Text Node	9	Document Node
Value	NodeType								
1	Element Node								
3	Text Node								
9	Document Node								
Errors or Exceptions:	Unsupported Node types return 0.								
Example(s):									
Reference	DOM2CORE Section 1.2, Appendix E.								

11.2.2.4. parentNode

Syntax:	<code>someNode.parentNode</code>
Type:	Node , read-only
Description:	A property which points the the parent of the target node.
Errors or Exceptions:	If this is an unconnected Node , or there is no parent Node the property is set to null.
Example(s):	<code>parentnode=myNode.parent;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

11.2.2.5. childNodes

Syntax:	<code>someNode.childNodes</code>
Type:	NodeList , read-only
Description:	A property that points to an array of one or more child nodes.
Errors or Exceptions:	If this is an unconnected Node , or there is are no child nodes the property is set to null.
Example(s):	<code>children=myNode.childNodes;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

11.2.2.6. firstChild

Syntax:	<code>someNode.firstChild</code>
Type:	Node , read-only
Description:	–A property that points to the first child of the target Node .
Errors or Exceptions:	If this is an unconnected Node , or there is no child Node the property is set to null.
Example(s):	<code>Kid1=myNode.firstChild;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

This read-only property is a **Node** object.

11.2.2.7. lastChild

Syntax:	<code>someNode.lastChild</code>
Type:	Node , read-only
Description:	–A property that points to the last child of the target Node .
Errors or Exceptions:	If this is an unconnected Node , or there is no child Node the property is set to null.
Example(s):	<code>Kidlast=myNode.lastChild;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

11.2.2.8. previousSibling

Syntax:	<code>someNode.previousSibling</code>
Type:	Node , read-only
Description:	–A property that points the Node immediately preceding this Node .
Errors or Exceptions:	If this is an unconnected Node , or there is no preceding Node the property is set to null.
Example(s):	<code>aBrother=myNode.previousSibling;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

11.2.2.9. nextSibling

Syntax:	<code>someNode.nextSibling</code>
Type:	Node , read-only
Description:	–A property that points the Node immediately following this Node .
Errors or Exceptions:	If this is an unconnected Node , or there is no following Node the property is set to null.
Example(s):	<code>anotherBrother=myNode.nextSibling;</code>
Reference	DOM2CORE Section 1.2, Appendix E.

11.2.2.10. attributes

The **attributes** property is not supported. To view and manipulate attributes use the **Element** functions `getAttribute()`, `setAttribute()`, and `hasAttribute()`.

11.2.2.11.ownerDocument

ownerDocument is not supported.

11.2.2.12.namespaceURI

namespaceURI is not supported.

11.2.2.13.prefix

prefix is not supported.

11.2.2.14.localName

localName is not supported.

11.2.3. Methods

11.2.3.1. hasAttributes() [DI]

Syntax:	<code><refNode>.hasAttributes()</code>
Argument List:	
Description:	returns a Boolean describing whether there are any attributes associated with this Node .
Return Value Type:	Boolean true – if there are child attributes under the referenced element false – if the referenced element has no child attributes
	The method target (<refNode>) is a Node object reference.
Errors or Exceptions:	None
Example(s):	<pre>if (document.getElementById("myNode").hasAttributes()) { //handle the attributes }</pre>
Reference	DOM2CORE Appendix E.

11.2.3.2. hasChildNodes() [DI]

Syntax:	<code><refNode>.hasChildNodes()</code>
Argument List:	
Description:	returns a Boolean describing whether there are any child nodes of this element
Return Value Type:	Boolean true – if there are child nodes under the referenced element false – if the referenced element has no child nodes
	The method target (<refNode>) is a Node object reference.
Errors or Exceptions:	None
Example(s):	<pre>if (document.getElementById("myNode").hasChildNodes()) { //process the children } else // no children, so we are done</pre>
Reference	DOM2CORE Appendix E.

11.2.3.3. insertBefore() [SM]

Syntax:	<code><refNode>.insertBefore(newChild [,refChild]);</code>
Argument List:	newChild – a Node object refChild – a Node object
Description:	finds the referenced Node <refNode> and insert the newChild Node as a child of that referenced Node . If refChild is specified the newChild Node is inserted before it. If not specified, the newChild Node is appended as the last child of the referenced element. The method target (<refNode>) is a Node object reference.
Return Value Type:	returns a Node object
Errors or Exceptions:	NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only NOT_FOUND_ERR is raised if the refChild is not a child of this Node .
Example(s):	<pre>myElem = document.createElement(); document.getElementById("anID").insertBefore(myElem);</pre>
Reference	DOM2CORE Appendix E.

11.2.3.4. replaceChild() [SM]

Syntax:	<code><refNode>.replaceChild(newChild, oldChild);</code>
Argument List:	newChild – a Node object oldChild – a Node object
Description:	swaps the existing child (oldChild) of the referenced element with a new child Node (newChild). The method target (<refNode>) is a Node object reference.
Return Value Type:	returns a Node object reference
Errors or Exceptions:	DOMExceptions NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only NOT_FOUND_ERR is raised if oldChild is not a child of this Node
Example(s):	
Reference	DOM2CORE Appendix E.

11.2.3.5. removeChild() [SM]

Syntax:	<code><refNode>.removeChild(aNode);</code>
Argument List:	aNode – a Node Object
Description:	removes the reference to the child Node (aNode) from the referenced parent element The method target (<refNode>) is a Node object reference.
Return Value Type:	a Node object reference to the removed Node
Errors or Exceptions:	NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only. NOT_FOUND_ERR is raised if the refChild is not a child of this Node .
Example(s):	
Reference	DOM2CORE Appendix E.

11.2.3.6. appendChild() [SM]

Syntax:	<code><refNode>.appendChild(newChild);</code>
Argument List:	newChild – a Node object
Description:	finds the referenced Node <refNode> and insert the newChild node as a child of that referenced node. The newChild node is appended as the last child of the referenced element. The method target (<refNode>) is a Node object reference.
Return Value Type:	returns a Node object
Errors or Exceptions:	NO_MODIFICATION_ALLOWED_ERR is raised if the node is read-only
Example(s):	<code>myElem = document.createElement();</code> <code>document.getElementById("anID").appendChild(myElem);</code>
Reference	DOM2CORE Appendix E.

11.2.3.7. cloneNode() [SM]

Syntax:	<code><refNode>.cloneNode(deep);</code>
Argument List:	deep – Boolean
Description:	makes a copy of the node referenced by refElement. This copy is not attached to the document until explicitly connected using appendChild() , replaceChild() or insertBefore() . When the Boolean ‘deep’ is set to true, the element and all of its child nodes are copied. The method target (<refNode>) is a Node object reference.
Return Value Type:	a Node object reference to the just cloned node, or node subtree
Errors or Exceptions:	DOMExceptions
Example(s):	
Reference	DOM2CORE Appendix E.

11.3.DOM2 Document Object

The DOM2 **document** object is an extended definition of the interface of the basic **document** object (Section 9.5) to include a set of DOM2 objects, properties and methods for the traversal, and modification of a document.

Creation of arbitrary new documents, of arbitrary types is not supported.

11.3.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.3.2. Properties

`doctype`, `implementation`, and `documentElement` properties, as specified in [DOM2CORE], are not supported.

11.3.3. Methods

11.3.3.1. createElement() [SM]

Syntax:	<code>document.createElement (aTagName)</code>
Argument List:	<code>aTagName</code> – a case sensitive string which is the element type to instantiate.
Description:	creates an element of the type specified.
Return Value Type:	returns a new Element object.
Errors or Exceptions:	INVALID_CHARACTER_ERR is raised if the specified tag name contains an invalid character.
Example(s):	
Reference	DOM2CORE Appendix E.

11.3.3.2. createTextNode() [SM]

Syntax:	<code>document.createTextNode (textData)</code>
Argument List:	<code>textData</code> – string
Description:	creates a Text node given the specified string.
Return Value Type:	The new Text object is returned.
Errors or Exceptions:	none
Example(s):	
Reference	DOM2CORE Appendix E.

11.3.3.3. getElementByTagName() [DI]

Syntax:	<code>document.getElementsByTagName(aTag);</code>
Argument List:	aTag – a string which specifies an element name
Description:	returns a list of all objects in the document which have the specified element name
Return Value Type:	a NodeList
Errors or Exceptions:	Null is returned if there are no matches.
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.3.3.4. getElementById() [DI]

Syntax:	<code>document.getElementById(anID)</code>
Argument List:	anID – string that specifies the value of an XML id attribute.
Description:	
Return Value Type:	returns the first object with a matching id attribute. If the id is associated with a collection, then the first object in that collection is returned.
Errors or Exceptions:	returns null if there is no match.
Example(s):	<pre><script type="text/ecmascript"> function gettarg() { var targetelement = document.getElementById("targ1"); } </script> <div id="targ1">This is the target. </div></pre>
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.4.NodeList Object

DOM2 specifies the return from certain methods to be objects of type **NodeList**.

11.4.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.4.2. Properties

11.4.2.1. length

Syntax:	<code>ANodeList.length</code>
Type:	number (unsigned integer), read-only
Description:	A property that is the number of nodes in the list.
Errors or Exceptions:	none
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.4.3. Methods

11.4.3.1. item() [DI]

Syntax:	<code><refNodeList>.item(N)</code> or <code><refNodeList>[N]</code>
Argument List:	N – the index of the item in the NodeList
Description:	returns the nth indexed Node from the referenced NodeList . Note: The index is zero based.
Return Value Type:	returns a Node object
Errors or Exceptions:	null is returned if the index is not a valid index into the NodeList .
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.5.Element Object

11.5.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.5.2. Properties

11.5.2.1. tagName

Syntax:	<code>anElement.tagName</code>
Type:	string, read-only
Description:	A property whose value is the name of the referenced Element . Note: Case is preserved in the returned string.
Errors or Exceptions:	none
Example(s):	<pre><table id="bigtable" cellspacing="0" cellpadding="0"> ... </table> elemRef = document.getElementById("bigtable"); myElemName = elemRef.tagName; //myElemName=="table"</pre>
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.5.3. Methods

11.5.3.1. getAttribute() [DI]

Syntax:	<code><refElement>.getAttribute(attrName [,caseSensitive])</code>
Argument List:	attrName – string, which is the name of a child attribute caseSensitive – optional Boolean, if set to true then the search for the attribute is case sensitive
Description:	returns a string which is the current value of the requested attribute. Note: This returns the value that is the running state value, not the initial document value.
Return Value Type:	string
Errors or Exceptions:	returns the empty string if it cannot find the requested attribute
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

Note: The optional parameter specifying case sensitivity is an extension to the W3C DOM 2 Core specification.

11.5.3.2. `setAttribute()` [DM],[SM*]

Syntax:	<code><refElement>.setAttribute(attrName,attrValue [,caseSensitive])</code>
Argument List:	<p><code>attrName</code> – string, which is the name of a child attribute</p> <p><code>attrValue</code> – a string</p> <p><code>caseSensitive</code> – optional Boolean, if set to true then the search for the attribute is case sensitive</p>
Description:	<p>sets the value of the requested attribute to the specified value. If the attribute does not exist, it is created.</p> <p>* Note: using <code>setAttribute()</code> to set an attribute that does not exist will cause structural mutation</p>
Return Value Type:	none
Errors or Exceptions:	<p>INVALID_CHARACTER_ERR is raised if the specified name contains an illegal character.</p> <p>NO_MODIFICATION_ALLOWED_ERR is raised if the attribute is read-only.</p> <p>Note: If <code>setAttribute()</code> is called where an attribute does not exist, and structural mutation is not supported, this error is raised.</p>
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

Note: The optional parameter specifying case sensitivity is an extension to the W3C DOM 2 Core specification.

11.5.3.3. removeAttribute() [DM]

Syntax:	<code><refElement>.removeAttribute(attrName [,caseSensitive])</code>
Argument List:	<p>attrName – string, which is the name of a child attribute</p> <p>caseSensitive – optional Boolean, if set to true then the search for the attribute is case sensitive</p>
Description:	removes the attribute from the referenced element
Return Value Type:	none
Errors or Exceptions:	<p>Removing an attribute which is required by the DTD forces the creation of a new instance of that attribute, whose value is the default set by the DTD.</p> <p>NO_MODIFICATION_ALLOWED_ERR is raised if the attribute is read-only.</p>
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

Note: The optional parameter specifying case sensitivity is an extension to the W3C DOM 2 Core specification.

11.5.3.4. getElementsByTagName() [DI]

Syntax:	<code><refElement>.getElementsByTagName(aTag);</code>
Argument List:	aTag – a string that matches the requested element.
Description:	returns a list of elements which are children of the reference element, whose element tag matches the input parameter.
Return Value Type:	a NodeList
Errors or Exceptions:	Null is returned if there are no matches.
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.5.3.5. hasAttribute() [DI]

Syntax:	<code><refElement>.hasAttribute(attrName)</code>
Argument List:	attrName – string, the name of the attribute to look for
Description:	Determines whether an Element has the named attribute associated with it.
Return Value Type:	Returns true if an attribute with the given name is specified on this element or the attribute has a default value; false otherwise.
Errors or Exceptions:	none
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.Text (CharacterData) Object

Properties of the **Text** object are inherited from the DOM2 **CharacterData** object.

11.6.1. Version History

Version	Affected	Comment
1.1		ECMAScript initial version

11.6.2. Properties

11.6.2.1. data

Syntax:	aTextNode.data [DM]
Type:	string
Description:	A property that is the current value of the text in the Text node. Using this property as a left-side assignment (lvalue) it is possible to reassign the value. Implementations MUST support the ability to deal with 32 character data strings as a minimum.
Errors or Exceptions:	NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only DOMSTRING_SIZE_ERR is raised if the string to be returned is larger the implementation maximum.
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.2.2. length

Syntax:	aTextNode.length
Type:	number(unsigned integer), read-only
Description:	A property that is the count of characters available through the data (see section 11.6.2.1) attribute.
Errors or Exceptions:	none
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.3. Methods

11.6.3.1. appendData() [DM]

Syntax:	<code><nodeRef>.appendData(appendString)</code>
Argument List:	appendString – a string to be appended
Description:	Appends a string to the end of any character data associated with the referenced Node .
Return Value Type:	none
Errors or Exceptions:	A NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.3.2. deleteData() [DM]

Syntax:	<code><nodeRef>.deleteData(offset, count)</code>
Argument List:	offset – the starting offset in the character data for removing characters. Offsets are zero ('0') based. count – the number of character units to remove
Description:	removes a number of characters from the character data associated with a Node
Return Value Type:	None Side effect: Upon success, the 'data' and 'length' properties will reflect the change.
Errors or Exceptions:	INDEX_SIZE_ERR is raised if the offset into the character data is not valid. NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.3.3. insertData() [DM]

Syntax:	<code><nodeRef>.insertData(offset, string)</code>
Argument List:	<p>offset – the starting offset in the character data for adding characters. Offsets are zero ('0') based.</p> <p>string – the string to insert</p>
Description:	adds a number of characters to the character data associated with a Node
Return Value Type:	None
	Side effect: Upon success, the 'data' and 'length' properties will reflect the change.
Errors or Exceptions:	<p>INDEX_SIZE_ERR is raised if the offset into the character data is not valid.</p> <p>NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only</p>
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.3.4. replaceData() [DM]

Syntax:	<code><nodeRef>.replaceData(offset, count, aString)</code>
Argument List:	<p>offset – the starting offset in the character data for removing characters, and for replacement. Offsets are zero ('0') based.</p> <p>count – the number of character units to replace</p> <p>aString – the replacement string</p>
Description:	removes a number of characters from the character data associated with a Node , and replaces them with the supplied string parameter. This function is a combination of removeData() and insertData() .
Return Value Type:	None
	Side effect: Upon success, the 'data' and 'length' properties will reflect the change.
Errors or Exceptions:	<p>INDEX_SIZE_ERR is raised if the offset into the character data is not valid.</p> <p>NO_MODIFICATION_ALLOWED_ERR is raised if the Node is read-only</p>
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

11.6.3.5. substringData() [DI]

Syntax:	<code><nodeRef>.substringData(offset, count)</code>
Argument List:	<p>offset – the starting offset in the character data for extracting characters. Offsets are zero ('0') based.</p> <p>count – the number of character units to extract</p>
Description:	extracts a number of characters from the character data associated with a Node , and returns them. The character data is not effected.
Return Value Type:	A string is returned
Errors or Exceptions:	<p>INDEX_SIZE_ERR is raised if the offset into the character data is not valid.</p> <p>DOMSTRING_SIZE_ERR is raised if the string to be returned is larger the implementation maximum.</p>
Example(s):	
Reference	DOM2CORE Sec. 1.2 ; DOM2CORE Appendix E.

Appendix A. Static Conformance Requirements

This appendix is normative.

The notation used in this appendix is specified in [CREQ].

A.1 Encoder/ Compiler Conformance

Client conformance (“-C-“) vs. Server (“-S-“) conformance may be a misnomer in the context of a script interpreter or compiler. In this case all static conformance is listed as client, even though there may be a physical separation of the encoder/compiler function from the virtual machine execution.

Item	Function	Reference	Status	Requirement
ESMP-Language-C-001	ECMAScript Type Support	5.2	M	
ESMP-Language-C-002	UTF-16 Code point support	5.1.1	M	
ESMP-Language-C-003	UTF-8 Code point support	5.1.1	M	
ESMP-Language-C-004	Character indexing support	5.1.1,6.5	M	
ESMP-Language-C-005	Semicolon support at end of statements	5.1.3	M	
ESMP-Language-C-006	IEEE 754 64 Bit Float Support with accuracy to at least 14 digits	5.2.2	M	
ESMP-Language-C-008	ECMAScript Language Syntax and semantics	5.5	M	
ESMP-Language-C-009	Support for eval() ECMA327	5.4.2	O	
ESMP-Language-C-010	Support for EvalError Exception	5.4.2,6.12.2	M	
ESMP-Language-C-011	Support for dynamic function creation ECMA327	5.4.2,	O	ESMP-Language-c-027
ESMP-Language-C-012	Support for the with statement ECMA327	5.5.3	O	
ESMP-Language-C-013	Support for dynamic modification of built-in objects ECMA327	6	O	
ESMP-Language-C-014	Version properties for all native objects	6.2.1	M	
ESMP-Language-C-015	All non-native, built-in objects are enumerable	6.2.2	M	
ESMP-Language-C-016	All native, built-in objects are enumerable	6.2.2	O	
ESMP-Language-C-017	Native Object Support – Global Object	6.3	M	
ESMP-Language-C-018	Native Object Support – Array Object	6.4	M	
ESMP-Language-C-019	Native Object Support – String Object	6.5	M	

Item	Function	Reference	Status	Requirement
ESMP-Language-C-020	Native Object Support – Regular Expression Object	6.6	M	
ESMP-Language-C-021	Native Object Support – Boolean Object	6.7	M	
ESMP-Language-C-022	Native Object Support – Number Object	6.8	M	
ESMP-Language-C-023	Native Object Support – Math Object	6.9	M	
ESMP-Language-C-024	Native Object Support – Date Object	6.10	M	
ESMP-Language-C-025	Native Object Support – Error Object	6.11	M	
ESMP-Language-C-026	Native Object Support – Object Object Creation ECMA327	6.13.1	O	
ESMP-Language-C-027	Native Object Support – Function Object - dynamic function construction ECMA327	6.13.2	O	
ESMP-Language-C-028	Support for Native Error Types	6.12.2	M	
ESMP-Language-C-029	Support for Inline Script Execution	7.2.2.1	M	
ESMP-Language-C-030	Support for Deferred Script Execution	7.2.2.2	M	
ESMP-Language-C-031	Support for File Based Script Execution	7.2.2.3	M	
ESMP-Language-C-032	Abnormal termination error reporting	7.3.1	O	
ESMP-Language-C-033	Support for Aborted Script completion	7.3.2	M	
ESMP-Language-C-034	Support for XHTML Events	8.1	M	XHTMLMP:MCF
ESMP-Language-C-035	Support for DOM2 compliant event binding	8.2	M	
ESMP-HostObject-C-036	Host Object Support – parent global Object	9.1	M	
ESMP-HostObject-C-037	Host Object Support – navigator Object	0	M	
ESMP-HostObject-C-038	Host Object Support – history Object	9.3	M	
ESMP-HostObject-C-039	Host Object Support – location Object	0	M	
ESMP-HostObject-C-040	Host Object Support – Basic document Object	0	M	
ESMP-XMLDOMObject-C-041	XML DOM Support (Support for XML DOM is optional. However, if it is	11	O	ESMP-XMLDOMObject-C-042 AND

Item	Function	Reference	Status	Requirement
	implemented, all mandatory items MUST be implemented.)			ESMP-XMLDOMObject-C-043 AND ESMP-XMLDOMObject-C-044 AND ESMP-XMLDOMObject-C-047 AND ESMP-XMLDOMObject-C-049 AND ESMP-XMLDOMObject-C-050 AND ESMP-XMLDOMObject-C-051 AND ESMP-XMLDOMObject-C-052 AND ESMP-XMLDOMObject-C-054
ESMP-XMLDOMObject-C-042	DOM Object Support – Exception Object	11.1	M	
ESMP-XMLDOMObject-C-043	DOM Object Support – Node Object – Property Support	11.2	M	
ESMP-XMLDOMObject-C-044	DOM Object Support – Node Object – Data Interrogation Methods	11.2	M	
ESMP-XMLDOMObject-C-045	DOM Object Support – Structural Mutation	11	O	ESMP-XMLDOMObject-C-046 AND ESMP-XMLDOMObject-C-048 AND ESMP-XMLDOMObject-C-053
ESMP-XMLDOMObject-C-046	DOM Object Support – Node Object – Structural Modification Mutation Methods	11.2	M	

Item	Function	Reference	Status	Requirement
ESMP-XMLDOMObject-C-047	DOM Object Support – document Object - Data Interrogation Methods	11.3	M	
ESMP-XMLDOMObject-C-048	DOM Object Support – document Object – Structural Modification Mutation Methods	11.3	M	
ESMP-XMLDOMObject-C-049	DOM Object Support – NodeList Object	11.4	M	
ESMP-XMLDOMObject-C-050	DOM Object Support – Element Object – Property Support	11.5	M	
ESMP-XMLDOMObject-C-051	DOM Object Support – Element Object – Data Interrogation Methods	11.5	M	
ESMP-XMLDOMObject-C-052	DOM Object Support – Element Object – Data Modification Methods	11.5	M	
ESMP-XMLDOMObject-C-053	DOM Object Support – Element Object – Structural Modification Mutation Methods	11.5	M	
ESMP-XMLDOMObject-C-054	DOM Object Support – Text Object	11.6	M	
ESMP-XHTMLDOMObject-C-055	XHTML DOM Support (Support for XHTML DOM is mandatory. All mandatory items MUST be implemented)	10	M	ESMP-XHTMLDOMObject-C-056 AND ESMP-XHTMLDOMObject-C-057 AND ESMP-XHTMLDOMObject-C-059 AND ESMP-XHTMLDOMObject-C-060 AND ESMP-XHTMLDOMObject-C-061 AND ESMP-XHTMLDOMObject-C-062 AND ESMP-XHTMLDOMObject-C-063 AND ESMP-XHTMLDOMObject-C-064 AND

Item	Function	Reference	Status	Requirement
				ESMP-XHTMLDOMObject-C-065 AND ESMP-XHTMLDOMObject-C-066 AND ESMP-XHTMLDOMObject-C-067 AND ESMP-XHTMLDOMObject-C-068
ESMP-XHTMLDOMObject-C-056	XHTML DOM Support – XHTML Document Object	10.1	M	
ESMP-XHTMLDOMObject-C-057	XHTML DOM Support – Link Object	10.2	M	
ESMP-XHTMLDOMObject-C-058	XHTML DOM Support – Image Object	10.3	O	
ESMP-XHTMLDOMObject-C-059	XHTML DOM Support – Form Object	10.4	M	
ESMP-XHTMLDOMObject-C-060	XHTML DOM Support – Text Input Object	10.5	M	
ESMP-XHTMLDOMObject-C-061	XHTML DOM Support – Textarea Input Object	10.6	M	
ESMP-XHTMLDOMObject-C-062	XHTML DOM Support – Password Input Object	10.7	M	
ESMP-XHTMLDOMObject-C-063	XHTML DOM Support – Radio Input Object	10.8	M	
ESMP-XHTMLDOMObject-C-064	XHTML DOM Support – Checkbox Input Object	10.9	M	
ESMP-XHTMLDOMObject-C-065	XHTML DOM Support – Submit Object	10.10	M	
ESMP-XHTMLDOMObject-C-066	XHTML DOM Support – Reset Object	10.11	M	
ESMP-XHTMLDOMObject-C-067	XHTML DOM Support – Select Element Object	10.12	M	
ESMP-XHTMLDOMObject-C-068	XHTML DOM Support – Option Element Object	10.13	M	
ESMP-XHTMLDOMObject-C-069	XHTML DOM Support – Button Object	10.14		Not supported in this release – place holder only
ESMP-XHTMLDOMObject-C-070	XHTML DOM Support – Screen Object	10.15	O	

Appendix B. Change History

(Informative)

This appendix is informative.

B.1 Approved Version History

Reference	Date	Description
OMA-WAP-ESMP-V1_0	20 Oct 2006	Approved by TP OMA Ref# OMA-TP-2006-0369R01-INP_Browsing_V2_1_for_Final_Approval

Appendix C. Mapping WMLScript Libraries to ECMAScript-MP Objects

This appendix is informative.

Library	Call	Object	Method/Constant	Comment
Lang	abs	Math	abs()	ECMA-262 Section 15.8.2.1
Lang	min	Math	min()	ECMA-262 Section 15.8.2.12
Lang	max	Math	max()	ECMA-262 Section 15.8.2.11
Lang	parseInt	Global	parseInt	
Lang	parseFloat	Global	parseFloat	
Lang	isInt			All numbers are 64 bit float and require no explicit conversion.
Lang	isFloat			All numbers are 64 bit float and require no explicit conversion.
Lang	maxInt		MAX_VALUE	These are actually floating point numbers in ECMAScript.
Lang	minInt		MIN_VALUE	These are actually floating point numbers in ECMAScript.
Lang	float			All numbers are 64 bit float and require no explicit conversion.
Lang	exit			
Lang	abort			
Lang	random	Math	random	random
Lang	seed			
Lang	characterSet			

Library	Call	Object	Method	Comment
Float	int			
Float	floor	Math	floor	floating point only ECMA-262 Section 15.8.2.9
Float	ceil	Math	ceil	floating point only ECMA-262 Section 15.8.2.6
Float	pow	Math	pow	floating point only ECMA-262 Section 15.8.2.13
Float	round	Math	round	floating point only ECMA-262 Section 15.8.2.15
Float	sqrt	Math	sqrt	floating point only ECMA-262 Section 15.8.2.17
Float	maxFloat	Number	MAX_VALUE	constant ECMA-262 Section 15.7.3.2
Float	minFloat	Number	MIN_VALUE	constant ECMA-262 Section 15.7.3.3

Library	Call	Object	Method/Property	Comment
String	length	String	.length property	a call in WMLScript vs.a property of the String object in ESMP
String	isEmpty			
String	charAt	String	charAt()	ECMA-262 Section 15.5.4.4
String	substring	String	substring()	Semantics are different
String	find	String	indexOf()	ECMA-262 Section 15.5.4.7 parameters are different
String	replace			See Note 1
String	elements			See Note 1
String	elementAt			See Note 1
String	removeAt			See Note 1
String	replaceAt	String	replace()	Object version works on itself ECMA-262 Section 15.5.4.11
String	insertAt			See Note 1
String	squeeze			
String	trim			
String	compare	String	localeCompare()	ESMP is Unicode sensitive ECMA-262 Section 15.5.4.9
String	toString	Global	toString()	ESMP returns a string value
String	format			

Note 1: these functions can be emulated with a combination of string.split, and array methods

Library	Call	Object	Method/Property	Comment
URL	getScheme	location	protocol property	
URL	getHost	location	host property	
URL	getPort	location	port property	
URL	getPath	location	hostname property	
URL	getParameters	location	href property	
URL	getQuery	location	search property	
URL	getFragment	location	hash property	
URL	getBase			
URL	getReferer	document	referrer property	
URL	resolve			
URL	escapeString	Global	encodeURIComponent() , encodeURIComponent()	
URL	unescapeString	Global	decodeURIComponent() , decodeURIComponent()	
URL	loadString			

Library	Call	Object	Method/Property	Comment
WMLBrowser	getVar			DOM access to the document replaces this function
WMLBrowser	setVar			DOM access to the document replaces this function
WMLBrowser	go	history	go()	
WMLBrowser	prev	history location	back() reload()	history.back retains variable state location.reload reinitialises state
WMLBrowser	newContext			
WMLBrowser	getCurrentCard	location	href property	return is absolute, not relative
WMLBrowser	refresh	location history	reload() go(0)	

Library	Call	Object	Method	Comment
Dialogs	prompt	Global	prompt()	part of the global object
Dialogs	confirm	Global	confirm()	part of the global object
Dialogs	alert	Global	alert()	part of the global object

Appendix D. Differences between WMLScript and ECMAScript Mobile Profile (ESMP)

This appendix is informative.

- WMLScript does not support objects. It supports native libraries. ESMP supports objects.
- ESMP supports 64 IEEE-754 numbers as the sole external numeric type, WMLScript supported integers and optionally 32-bit floats
- All objects in ESMP must be versioned whereas WMLScript libraries are not versioned.
- WMLScript doesn't support HTML commenting.
- WMLScript doesn't support the usage of \$ character in any position of the name whereas ESMP allows it.
- WMLScript requires lower case Boolean literals. Both upper and lower case characters are supported for boolean literals in ESMP.
- WMLScript supports local assignment of global variables with access to WML globals through a library call. There are no global variables in [XHTMLMP] or ESMP.
- WMLScript requires explicit variable declaration. ESMP allows the creation of variables, simply by referencing them.
- Native support for strings in WMLScript is through library calls. In ESMP it is available through the **String** object.
- Arrays are not supported in WMLScript. They are now available through the Array object.
- In ESMP **Typeof()** operators returns a string, not a value, consistent with standard ECMAScript. WMLScript **typeof()** returned a number.
- In ESMP variable length parameter lists are supported, per standard ECMAScript [ECMA262].
- Support for the **throw/catch** and **in** keywords are included in ESMP.
- The 'NULL' literal is supported in ESMP per [ECMA262].
- Unlike WMLScript the *Invalid* literal is not supported in ECMAScript [ECMA262]
- Operators 'delete' and 'void' are supported in ESMP.
- Operator 'isvalid' is not supported in ESMP.
- 'div' is not supported in ESMP.
- WMLScript supports 'extern' and 'pragma' keywords. There is no support for these keywords in ESMP.

Appendix E. Differences between ECMAScript Mobile Profile (ESMP) and ECMA-262

This appendix is informative.

- In ESMP all objects must maintain an enumerated version property. [ECMA262] has no such requirement.
- ECMAScript Mobile Profile support both UTF-8 and UTF-16 as input, where [ECMA262] specifies only UTF-16 encoding support
- As well as escape characters, ESMP supports non-escape characters preceded by a backslash.
- The global method `eval()` is optional in ESMP per [ECMA327].
- In ESMP support for the `with` statement is not required for conformance and is optional per [ECMA327].
- In ESMP the function object is not required to support dynamic function construction per [ECMA327].
- In ESMP dynamic modification of built-in (native and host) object properties (addition, deletion or assignment), other than the global object is not required for conformance per [ECMA327].
- ESMP defines a set of “host” objects to interface to the XHTML browser and documents. [ECMA262] does not.
- There is no automatic insertion of missing semicolons at logical statement end in ESMP. Semicolons are required following ESMP statements. [ECMA262] does not require closing semicolons, they are implied if there is an EOL at the end of a logical statement.
- `toLowerCase()` is a synonym for `toLocaleLowerCase()` in ESMP.
- `toUpperCase()` is a synonym for `toLocaleUpperCase()` in ESMP.