

[MS-SVG]:

Internet Explorer Scalable Vector Graphics (SVG) Standards Support Document

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Revision Summary

Date	Revision History	Revision Class	Comments
9/8/2010	0.1	New	Released new document.
10/13/2010	0.2	Minor	Clarified the meaning of the technical content.
2/10/2011	1.0	Minor	Clarified the meaning of the technical content.
2/28/2011	1.1	Major	Significantly changed the technical content.
3/23/2011	1.2	Minor	Clarified the meaning of the technical content.
2/22/2012	2.0	Major	Significantly changed the technical content.
7/25/2012	2.1	Minor	Clarified the meaning of the technical content.
2/16/2013	2.2	Minor	Clarified the meaning of the technical content.
6/26/2013	3.0	Major	Significantly changed the technical content.
3/31/2014	3.0	None	No changes to the meaning, language, or formatting of the technical content.
1/22/2015	4.0	Major	Updated for new product version.
7/7/2015	4.1	Minor	Clarified the meaning of the technical content.
11/2/2015	4.2	Minor	Clarified the meaning of the technical content.
1/20/2016	4.3	Minor	Clarified the meaning of the technical content.
3/22/2016	4.3	None	No changes to the meaning, language, or formatting of the technical content.
11/2/2016	4.3	None	No changes to the meaning, language, or formatting of the technical content.
3/14/2017	4.3	None	No changes to the meaning, language, or formatting of the technical content.

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1 Introduction

This document describes the level of support provided by Microsoft web browsers for the *Scalable Graphics (SVG) 1.1 Specification (Second Edition)* [[W3C-SVG1.1/2](#)], W3C Recommendation published August 16, 2011.

The [[W3C-SVG1.1/2](#)] specification may contain guidance for authors of webpages and browser users, in addition to user agents (browser applications). Statements found in this document apply only to normative requirements in the specification targeted to user agents, not those targeted to authors.

1.1 Glossary

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as defined in [[RFC2119](#)]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

[W3C-SVG1.1/2] Andersson, O., et al., "Scalable Vector Graphics (SVG) 1.1 (Second Edition)", W3C Working Draft 22 June 2010, <http://www.w3.org/TR/SVG11/>

[W3C-SVG1.1] W3C, "Scalable Vector Graphics (SVG) 1.1 Specification", W3C Recommendation 14 January 2003, edited in place 30 April 2009, <http://www.w3.org/TR/2003/REC-SVG11-20030114/>

1.2.2 Informative References

None.

1.3 Microsoft Implementations

The following Microsoft web browser versions implement some portion of the SVG specification:

- Windows Internet Explorer 9
- Windows Internet Explorer 10
- Internet Explorer 11
- Internet Explorer 11 for Windows 10
- Microsoft Edge

Each browser version may implement multiple document rendering modes. The modes vary from one another in support of the standard. The following table lists the document modes in each browser version that support the SVG specification.

Browser Version	Document Modes Supported
Internet Explorer 9	IE9 Mode
Internet Explorer 10	IE9 Mode IE10 Mode
Internet Explorer 11	Quirks Mode IE7 Mode IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Internet Explorer 11 for Windows 10	Quirks Mode IE7 Mode IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Microsoft Edge	EdgeHTML Mode

For each variation presented in this document there is a list of the document modes and browser versions that exhibit the behavior described by the variation. All combinations of modes and versions that are not listed conform to the specification. For example, the following list for a variation indicates that the variation exists in three document modes in all browser versions that support these modes:

IE9 Mode, IE10 Mode, and IE11 Mode (All Versions)

1.4 Standards Support Requirements

To conform to [\[W3C-SVG1.1/2\]](#), a user agent must implement all required portions of the specification. Any optional portions that have been implemented must also be implemented as described by the specification. Normative language is usually used to define both required and optional portions. (For more information, see [\[RFC2119\]](#).)

The following table lists the sections of [\[W3C-SVG1.1/2\]](#) and whether they are considered normative or informative.

Sections	Normative/Informative
1-3	Informative
4-23	Normative
Appendices A-C	Normative
Appendices D, E	Informative
Appendices F, G, O	Normative
Appendices H-N, P	Informative

1.5 Notation

The following notations are used in this document to differentiate between notes of clarification, variation from the specification, and extension points.

Notation	Explanation
C####	Identifies a clarification of ambiguity in the target specification. This includes imprecise statements, omitted information, discrepancies, and errata. This does not include data formatting clarifications.
V####	Identifies an intended point of variability in the target specification such as the use of MAY, SHOULD, or RECOMMENDED. (See RFC2119 .) This does not include extensibility points.
E####	Identifies extensibility points (such as optional implementation-specific data) in the target specification, which can impair interoperability.

For document mode and browser version notation, see section [1.3](#).

2 Standards Support Statements

This section contains a full list of variations, clarifications, and extension points in the Microsoft implementation of [\[W3C-SVG1.1/2\]](#).

- Section [2.1](#) includes only those variations that violate a MUST requirement in the target specification.
- Section [2.2](#) describes further variations from MAY and SHOULD requirements.
- Section [2.3](#) identifies variations in error handling.
- Section [2.4](#) identifies variations that impact security.

2.1 Normative Variations

The following subsections detail the normative variations from MUST requirements in [\[W3C-SVG1.1/2\]](#).

2.1.1 [SVG11] Section 5.10.2, The `xml:lang` and `xml:space` attributes

V0030:

The specification states:

```
xml:space = "{default | preserve}"  
Standard XML attribute to specify whether white space is preserved in character data. The  
only possible values are 'default' and 'preserve'.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **xml:space** attribute is not supported in SVG.

2.1.2 [SVG11] Section 7.7, The `viewBox` attribute

V0032:

The specification states:

```
All elements that establish a new viewport (see elements that establish viewports), plus the  
'marker', 'pattern' and 'view' elements have attribute viewBox. The value of the viewBox  
attribute is a list of four numbers <min-x>, <min-y>, <width> and <height>, separated by  
whitespace and/or a comma, which specify a rectangle in user space which should be mapped to  
the bounds of the viewport established by the given element, taking into account attribute  
preserveAspectRatio. If specified, an additional transformation is applied to all descendants  
of the given element to achieve the specified effect.
```

```
A negative value for <width> or <height> is an error (see Error processing). A value of  
zero disables rendering of the element.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

A value of 0 on the **viewBox** height or width does not disable rendering of the element.

2.1.3 [SVG11] Section 7.11, Object bounding box units

V0003:

The specification states:

Element: 'filter'

Attribute: 'filterUnits'

Effect: Indicates that the attributes which define the filter effects region (x, y, width, height) represent fractions or percentages of the bounding box of the element to which the filter is applied.

IE9 Mode (All Versions)

The **filter** element and the **filterUnits** attribute are not supported.

V0006:

The specification states:

Element: 'mask'

Attribute: primitiveUnits="objectBoundingBox"

Effect: Indicates that the various length values within the filter primitives represent fractions or percentages of the bounding box of the element to which the filter is applied.

IE9 Mode (All Versions)

The **filter** element and the **primitiveUnits** attribute are not supported.

2.1.4 [SVG11] Section 8.5, DOM interfaces

V0035:

The specification states:

DOM attribute `normalizedPathSegList` provides normalized access to the static/base contents of the `d` attribute where all path data commands are expressed in terms of the following subset of `SVGPathSeg` types: `SVG_PATHSEG_MOVETO_ABS` (M), `SVG_PATHSEG_LINETO_ABS` (L), `SVG_PATHSEG_CURVETO_CUBIC_ABS` (C) and `SVG_PATHSEG_CLOSEPATH` (z).and two lists to access the current animated values of the `d` attribute:

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **normalizedPathSegList** attribute is not supported.

C0025:

The specification defines the **pathLength** attribute of the **SVGPathElement** interface as follows:

```
readonly attribute SVGAnimatedNumber pathLength;
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **pathLength** attribute is not supported.

2.1.5 [SVG11] Section 10.6, The 'tref' element

V0008:

The specification states:

The textual content for a 'text' can be either character data directly embedded within the 'text' element or the character data content of a referenced element, where the referencing is specified with a 'tref' element.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **tref** element and its attributes are not supported.

2.1.6 [SVG11] Section 10.7.3, Glyph orientation within a text run

V0036:

The specification states:

In some cases, it is required to alter the orientation of a sequence of characters relative to the inline-progression-direction. The requirement is particularly applicable to vertical layouts of East Asian documents, where sometimes narrow-cell Latin text is to be displayed horizontally and other times vertically.

Two properties control the glyph orientation relative to the reference orientation for each of the two possible inline-progression-directions. 'glyph-orientation-vertical' controls glyph orientation when the inline-progression-direction is vertical. 'glyph-orientation-horizontal' controls glyph orientation when the inline-progression-direction is horizontal.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **glyph-orientation-horizontal** and **glyph-orientation-vertical** attributes are not supported.

2.1.7 [SVG11] Section 10.9.2, Baseline alignment properties

V0037:

The specification states:

```
'dominant-baseline'  
Value: auto | use-script | no-change | reset-size | ideographic | alphabetic |  
hanging | | mathematical | central | middle | text-after-edge | text-before-edge |  
inherit  
Initial: auto  
Applies to: text content elements  
Inherited: no  
Percentages: N/A  
Media: visual  
Animatable: yes
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **dominant-baseline** attribute is not supported.

C0023:

The specification states:

`'alignment-baseline'`
Value: auto | baseline | before-edge | text-before-edge | middle | central | after-edge | text-after-edge | ideographic | alphabetic | hanging | mathematical | inherit
Initial: auto
Applies to: 'tspan', 'tref', 'altGlyph', 'textPath' elements
Inherited: no
Percentages: N/A
Media: visual
Animatable: yes

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **alignment-baseline** property is not supported.

V0038:

The specification states:

```
'baseline-shift'  
Value: baseline | sub | super | <percentage> | <length> | inherit  
Initial: baseline  
Applies to: 'tspan', 'tref', 'altGlyph', 'textPath' elements  
Inherited: no  
Percentages: refers to the "line-height" of the 'text' element, which in the case of SVG is  
defined to be equal to the 'font-size'  
Media: visual  
Animatable:
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **baseline-shift** attribute is not supported.

2.1.8 [SVG11] Section 10.11, Spacing properties

V0039:

The specification states:

```
'kerning'  
Value: auto | <length> | inherit  
Initial: auto  
Applies to: text content elements  
Inherited: yes  
Percentages: N/A  
Media: visual  
Animatable: yes
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **kerning** attribute is not supported.

2.1.9 [SVG11] Section 10.14.1, The 'altGlyph' element

V0040:

The specification states:

The 'altGlyph' element provides control over the glyphs used to render particular character data.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **altGlyph** element is not supported.

2.1.10 [SVG11] Section 10.15, White space handling

V0007:

The specification states (see also [SVG11] Section 5.10., The xml:lang and xml:space attributes):

SVG supports the standard XML attribute xml:space to specify the handling of white space characters within a given 'text' element's character data. The SVG user agent has special processing rules associated with this attribute as described below. These are behaviors that occur subsequent to XML parsing and any construction of a Document Object Model.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **xml:space** attribute is not supported.

2.1.11 [SVG11] Section 11.6.2, The 'marker' element

V0010:

The specification states:

Properties inherit into the 'marker' element from its ancestors; properties do not inherit from the element referencing the 'marker' element.

'marker' elements are never rendered directly; their only usage is as something that can be referenced using the 'marker', 'marker-start', 'marker-end' and 'marker-mid' properties. The 'display' property does not apply to the 'marker' element; thus, 'marker' elements are not directly rendered even if the 'display' property is set to a value other than none, and 'marker' elements are available for referencing even when the 'display' property on the 'marker' element or any of its ancestors is set to none.

Event attributes and event listeners attached to the contents of a 'marker' element are not processed; only the rendering aspects of 'marker' elements are processed.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

Properties of a **marker** element inherit at the point of reference, not from the ancestors of the **marker** element.

2.1.12 [SVG11] Section 11.7.1, Color interpolation properties: 'color-interpolation' and 'color-interpolation-filters'

V0011:

The specification defines the **color-interpolation** and **color-interpolation-filters** properties.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **color-interpolation** and **color-interpolation-filters** properties are not supported.

2.1.13 [SVG11] Section 11.7.2, The 'color-rendering' property

V0013:

The specification defines the **color-rendering** property.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **color-rendering** property is not supported.

2.1.14 [SVG11] Section 11.7.4, The 'text-rendering' property

V0014:

The specification defines the **text-rendering** property.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **text-rendering** property is not supported.

2.1.15 [SVG11] Section 11.7.5, The 'image-rendering' property

V0015:

The specification defines the **image-rendering** property.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **image-rendering** property is not supported.

2.1.16 [SVG11] Section 13.3, Patterns

V0049:

The specification states:

```
'pattern' elements are never rendered directly; their only usage is as something that can be
referenced using the 'fill' and 'stroke' properties. The 'display' property does not apply to
the 'pattern' element; thus, 'pattern' elements are not directly rendered even if the
'display' property is set to a value other than none, and 'pattern' elements are available
for referencing even when the 'display' property on the 'pattern' element or any of its
ancestors is set to none.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **display** property affects **pattern** elements and references to those **pattern** elements.

2.1.17 [SVG11] Section 14.3.3, The 'overflow' and 'clip' properties

V0018:

The specification states:

```
'clip'
Value: <shape> | auto | inherit
Initial: auto
Applies to: elements which establish a new viewport, 'pattern' elements and 'marker'
elements
Inherited: no
```

Percentages: N/A
Media: visual
Animatable: yes

The 'clip' property has the same parameter values [as defined in CSS2](#) ([CSS2], section 11.1.2). Unitless values, which indicate current user coordinates, are permitted on the coordinate values on the <shape>. The value of auto defines a clipping path along the bounds of the viewport created by the given element.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **clip** property is not supported.

2.1.18 [SVG11] Section 14.3.5, Establishing a new clipping path

V0019:

The specification states:

A 'clipPath' element can contain 'path' elements, 'text' elements, basic shapes (such as 'circle') or a 'use' element. If a 'use' element is a child of a 'clipPath' element, it must directly reference 'path', 'text' or basic shape elements. Indirect references are an error (see Error processing).

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **clipPath** element allows indirect references. Indirect references are not an error.

2.1.19 [SVG11] Section 16.7, Magnification and panning

V0021:

The specification states:

The outermost 'svg' element in an SVG document fragment has attribute zoomAndPan, which takes the possible values of disable and magnify, with the default being magnify.

If disable, the user agent shall disable any magnification and panning controls and not allow the user to magnify or pan on the given document fragment.

If magnify, in environments that support user interactivity, the user agent shall provide controls to allow the user to perform a "magnify" operation on the document fragment.

If a zoomAndPan attribute is assigned to an inner 'svg' element, the zoomAndPan setting on the inner 'svg' element will have no effect on the SVG user agent.

Animatable: no.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **zoomAndPan** attribute is not supported, except for the default magnify operation.

2.1.20 [SVG11] Section 16.12, Cursor Module

V0022:

The specification states:

'cursor'

Categories:

None

Content model:

Any number of the following elements, in any order:

[descriptive elements](#) – 'desc', 'metadata', 'title'

Attributes:

[core attributes](#) – 'id', 'xml:base', 'xml:lang', 'xml:space'

[conditional processing attributes](#) – 'requiredFeatures', 'requiredExtensions', 'systemLanguage'

[xlink attributes](#) – 'xlink:href', 'xlink:show', 'xlink:actuate', 'xlink:type', 'xlink:role', 'xlink:arcrole', 'xlink:title'

'externalResourcesRequired'

'x'

'y'

'xlink:href'

DOM Interfaces:

[SVGCursorElement](#)

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **cursor** element and its attributes are not supported.

2.1.21 [SVG11] Section 17.2.2, SVG fragment identifiers

V0055:

The specification states:

If the SVG fragment identifier addresses specific SVG view (e.g., `MyDrawing.svg#svgView(viewBox(0,200,1000,1000))`), then the document fragment defined by the closest ancestor 'svg' element is displayed in the viewport using the SVG view specification provided by the SVG fragment identifier.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

Parameters for **viewBox** elements in fragment specifications may be delimited by single spaces in addition to commas.

2.1.22 [SVG11] Section 17.5, ExternalResourcesRequired Attribute Module

V0024:

The specification states:

Collection Name: External.attrib

Attributes in Collection: externalResourcesRequired

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **externalResourcesRequired** attribute is not supported.

2.1.23 [SVG11] Section 19, Animation

V0025:

The specification describes Synchronized Multimedia Integration Language (SMIL) Animation.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

SMIL animation is not supported. In addition, no references to animation elements, properties, attributes, interfaces, or data types in other chapters of [\[W3C-SVG1.1\]](#) are supported.

For data types that can be animated, the default setting for the **animVal** attribute is **animVal = baseVal**.

2.1.24 [SVG11] Section 23.3, The 'foreignObject' element

V0026:

The specification states:

Categories:
None

Content model:
Any elements or character data.

Attributes:
[core attributes](#) – `'id'`, `'xml:base'`, `'xml:lang'`, `'xml:space'`
[conditional processing attributes](#) – `'requiredFeatures'`, `'requiredExtensions'`, `'systemLanguage'`
[graphical event attributes](#) – `'onfocusin'`, `'onfocusout'`, `'onactivate'`, `'onclick'`, `'onmousedown'`, `'onmouseup'`, `'onmouseover'`, `'onmousemove'`, `'onmouseout'`, `'onload'`
[presentation attributes](#) – `'alignment-baseline'`, `'baseline-shift'`, `'clip'`, `'clip-path'`, `'clip-rule'`, `'color'`, `'color-interpolation'`, `'color-interpolation-filters'`, `'color-profile'`, `'color-rendering'`, `'cursor'`, `'direction'`, `'display'`, `'dominant-baseline'`, `'enable-background'`, `'fill'`, `'fill-opacity'`, `'fill-rule'`, `'filter'`, `'flood-color'`, `'flood-opacity'`, `'font-family'`, `'font-size'`, `'font-size-adjust'`, `'font-stretch'`, `'font-style'`, `'font-variant'`, `'font-weight'`, `'glyph-orientation-horizontal'`, `'glyph-orientation-vertical'`, `'image-rendering'`, `'kerning'`, `'letter-spacing'`, `'lighting-color'`, `'marker-end'`, `'marker-mid'`, `'marker-start'`, `'mask'`, `'opacity'`, `'overflow'`, `'pointer-events'`, `'shape-rendering'`, `'stop-color'`, `'stop-opacity'`, `'stroke'`, `'stroke-dasharray'`, `'stroke-dashoffset'`, `'stroke-linecap'`, `'stroke-linejoin'`, `'stroke-miterlimit'`, `'stroke-opacity'`, `'stroke-width'`, `'text-anchor'`, `'text-decoration'`, `'text-rendering'`, `'unicode-bidi'`, `'visibility'`, `'word-spacing'`, `'writing-mode'`
`'class'`
`'style'`
`'externalResourcesRequired'`
`'transform'`
`'x'`
`'y'`
`'width'`
`'height'`

DOM Interfaces:
[SVGForeignObjectElement](#)

IE9 Mode, IE10 Mode, and IE11 Mode (All Versions)

The **foreignObject** element is not supported.

2.1.25 [SVG11] Section B.5, Relationship with DOM2 events

V0060:

The specification states:

```
The SVG DOM supports the following mouse event types [ DOM2-MOUSEEVENTS]:
click
mousedown
mouseup
mouseover
mousemove
mouseout
clientX and clientY parameters for mouse events represent the mouse coordinates at which the
event occurred relative to the DOM Implementation's client area. relatedTarget is used to
identify a secondary EventTarget related to a UI event. Currently this attribute is used with
the mouseover event to indicate the EventTarget which the pointing device exited and with the
mouseout event to indicate the EventTarget which the pointing device entered.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **title** attribute supports the **click** event even though it should not be supported.

2.1.26 [SVG11] Section C., IDL Definitions

C0024:

The specification defines the **currentView** attribute of the **SVGSVGElement** as follows:

```
readonly attribute SVGViewSpec currentView;
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **currentView** attribute is not supported.

2.2 Clarifications

The following subsections identify clarifications to recommendations made by [\[W3C-SVG1.1\]](#).

2.2.1 [SVG11] Section 6.18, Aural style sheets

C0004:

The specification defines aural style sheets, which are optional.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

Aural style sheets are not supported.

2.2.2 [SVG11] Section 16.6. The 'pointer-events' property

C0012:

The specification states:

```
The 'pointer-events' property specifies under what circumstances a given graphics
element can be the target element for a pointer event.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The `pointer-events` CSS property can be set to `auto`. This has the same effect as if it was set to `visiblePainted`.

IE11 Mode, and EdgeHTML Mode (All Versions)

The `pointer-events` CSS property now applies to HTML elements. The value of `none` indicates that the element will not receive pointer events. For `visiblePainted`, `visibleFill`, `visibleStroke`, `visible`, `painted`, `fill`, `stroke`, `all`, and `auto`, the element receives pointer events normally.

2.2.3 [SVG11] Section 7.12, Geographic Coordinate Systems

C0005:

The specification defines geographic coordinate systems, which are optional.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

Geographic coordinate systems are not supported.

2.2.4 [SVG11] Section 8.3.9, The grammar for path data

V0027:

The specification states:

The following is the BNF for SVG paths.

```
svg-path:
  wsp* moveto-drawto-command-groups? wsp*
moveto-drawto-command-groups:
  moveto-drawto-command-group
  | moveto-drawto-command-group wsp* moveto-drawto-command-groups
moveto-drawto-command-group:
  moveto wsp* drawto-commands?
drawto-commands:
  drawto-command
  | drawto-command wsp* drawto-commands
drawto-command:
  closepath
  | lineto
  | horizontal-lineto
  | vertical-lineto
  | curveto
  | smooth-curveto
  | quadratic-bezier-curveto
  | smooth-quadratic-bezier-curveto
  | elliptical-arc
moveto:
  ( "M" | "m" ) wsp* moveto-argument-sequence
moveto-argument-sequence:
  coordinate-pair
  | coordinate-pair comma-wsp? lineto-argument-sequence
closepath:
  ( "Z" | "z" )
lineto:
  ( "L" | "l" ) wsp* lineto-argument-sequence
lineto-argument-sequence:
  coordinate-pair
  | coordinate-pair comma-wsp? lineto-argument-sequence
horizontal-lineto:
  ( "H" | "h" ) wsp* horizontal-lineto-argument-sequence
horizontal-lineto-argument-sequence:
  coordinate
  | coordinate comma-wsp? horizontal-lineto-argument-sequence
```

```
vertical-lineto:
  ( "v" | "v" ) wsp* vertical-lineto-argument-sequence
vertical-lineto-argument-sequence:
  coordinate
  | coordinate comma-wsp? vertical-lineto-argument-sequence
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

White spaces and commas in the Backus-Naur Form (BNF) grammar are interchangeable. White spaces and commas can both delimit command groups.

2.2.5 [SVG11] Section 11.7.3, The 'shape-rendering' property

V0028:

The specification defines the **shape-rendering** property.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **shape-rendering** property is not supported.

2.2.6 [SVG11] Section 13.3, Patterns

C0022:

The specification states:

```
SVG's user agent style sheet sets the 'overflow' property for 'pattern' elements to hidden,
which causes a rectangular clipping path to be created at the bounds of the pattern tile.
Unless the 'overflow' property is overridden, any graphics within the pattern which goes
outside of the pattern rectangle will be clipped. Example pattern01 below shows the effect of
clipping to the pattern tile.
```

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

The **overflow** property on **pattern** elements is always treated as if the value `hidden` is assigned to it; it cannot be overridden.

2.2.7 [SVG11] Section 14.3.3, The 'overflow' and 'clip' properties

C0011:

The specification describes the **overflow** property as follows:

- The initial value for 'overflow' as defined in [CSS2-overflow] is 'visible'; however, SVG's user agent style sheet overrides this initial value and set the 'overflow' property on elements that establish new viewports (e.g., 'svg' elements), 'pattern' elements and 'marker' elements to the value 'hidden'.

IE9 Mode, IE10 Mode, IE11 Mode, and EdgeHTML Mode (All Versions)

On the outermost **svg** element that is inline in HTML5, the initial value for the **overflow** property is `visible`.

2.3 Error Handling

There are no additional considerations for error handling.

2.4 Security

There are no additional security considerations.

3 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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