

# [Sustainability of Digital Formats: Planning for Library of Congress Collections](#)

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## Scalable Vector Graphics (SVG) File Format Family

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### Format Description Properties

- ID: fdd000515
- Short name: SVG\_family
- Content categories: still-image
- Format Category: encoding, family
- Other facets: unitary, text, structured, symbolic
- Last significant FDD update: 2024-05-08
- Draft status: Preliminary

### Identification and description

Full name	Scalable Vector Graphics (SVG) File Format Family
Description	<p>The Scalable Vector Graphics (SVG) format family is a family of openly documented XML-based formats for two-dimensional vector graphics for use on the web, developed and maintained under the auspices of the World Wide Web Consortium (W3C) by the <a href="#">SVG Working Group</a>. As stated in <a href="#">An SVG Primer for Today's Browsers</a>, "The <a href="#">PostScript</a> page description language developed by Adobe Systems Inc. during the 1980s had given the print-based community a way of describing images in ways which could be rescaled to adapt to the resolution of the display device, usually a printer. It was natural to seek a similar vector-based approach to web-based presentation." After an <a href="#">initial public draft</a> in February 1999, the first version of SVG was approved as a W3C Recommendation in September 2001. The latest W3C Recommendation can be found at <a href="https://www.w3.org/TR/SVG/">https://www.w3.org/TR/SVG/</a>. As of April 2020, the latest version is a Candidate Recommendation for version 2. <a href="#">SVG 1.1</a> has been a W3C Recommendation since 2003 and is widely supported. For more details on the history of SVG, see <a href="#">Notes</a> below.</p> <p>The XML DTD for SVG (version 1.x) allows for incorporation of three types of graphic objects into a picture for display on the web as a free-standing image file or visual element in a web page: vector graphic shapes (e.g., paths consisting of straight lines and curves or basic shapes like</p>

circles), raster graphics (raster images), and text with visual effects. SVG includes markup for functional features that support the construction and management of the displayed picture. According to [About SVG](#) from Inkscape, "The features of SVG 1.1 include paths, basic shapes (like circles and polygons), text, fill, stroke and markers, color, gradients and patterns, clipping, masking and compositing, filter effects, interactivity, linking, scripting, animation, fonts and metadata." The [Wikipedia entry for Scalable Vector Graphics](#) provides informative annotations for these features. Using these features, graphical objects can be grouped, styled, transformed and composited into previously rendered objects. At this level of generality, the description in the Wikipedia page applies to what is expected in SVG 2. See [latest Recommendation for SVG 2](#) (in Candidate status as of October 2018) and the latest [Editor's Draft](#). The Editor's Draft is updated intermittently and includes comments as to whether proposed changes are "at risk" due to lack of implementation.

An important objective of SVG 2 is to improve compatibility with related standards as they are updated and implemented by browsers, (e.g., [CSS](#), [HTML](#), and the Web Open Font Format ([WOFF](#)), which is a container format or "wrapper" for font data in already-existing formats). As a result, chapters whose normative content in the SVG 1.1 specification has been moved to other specifications have been removed from the SVG 2 draft but the features are still supported in compliant documents. For example, new related specifications cover:

- **Filters:** [Filter Effects Module Level 1](#) from W3C. This specification describes graphics filters in a manner that allows them to be used in any content that can be styled by CSS, including HTML and SVG. For examples of uses of filters, see [Notes](#), below.
- **Animation:** [Web Animations](#) from W3C. The Web Animations model is intended to provide the features necessary for expressing CSS Transitions, CSS Animations, and animations as supported in SVG 1.1.
- **Clipping and masking:** [CSS Masking Module Level 1](#) from W3C. CSS Masking provides two means for partially or fully hiding portions of visual elements: masking and clipping.
- **Color:** [CSS Color Module Level 3](#) from W3C. CSS uses color-related properties and values to color the text, backgrounds, borders, and other parts of elements in a document or graphic. This specification describes color values and properties for foreground color and group opacity. These include properties and values from CSS level 2 and new values.

For many styling features, SVG 1.1 was closely related to [CSS2](#). Since CSS2 was published in 2011, the CSS specification has been divided into modules. SVG 2 relies on more recent specifications for some CSS modules; see [Normative references in SVG 2 \(Editor's Draft\)](#) and see [W3C home page for CSS](#) for development status of various CSS modules.

An annotated example of the SVG markup for a simple static diagram follows. If you copy this markup and paste it into a text editor and save it with a .svg extension, you should be able to open the resulting file in a browser. This example is used in the Wikipedia article on SVG, where it is [displayed over a grid](#).

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!--dimensions for the overall size of the image can be given in the
mandatory root svg element-->
<svg width="391" height="391" viewBox="-70.5 -70.5 391 391"
xmlns="http://www.w3.org/2000/svg">
<!--within the image a rectangular (in this case, square) box is drawn as a
border, stroked in black and filled with a very light gray.-->
```

```

<rect fill="#fff" stroke="#000" x="-70" y="-70" width="390"
height="390"/>
<g opacity="0.8">
<!--in the center, a smaller box is drawn, stroked in pink and filled with
green-->
<rect x="25" y="25" width="200" height="200" fill="green" stroke-
width="4" stroke="pink" />
<!--next comes a circle filled with orange-->
<circle cx="125" cy="125" r="75" fill="orange" />
<!--followed by a red path with three linear segments-->
<polyline points="50,150 50,200 200,200 200,100" stroke="red" stroke-
width="4" fill="none" />
<!--and a blue line defined by its endpoints-->
<line x1="50" y1="50" x2="200" y2="200" stroke="blue" stroke-
width="4" />
</g>
</svg>

```

SVG may be used for animations; see [Notes](#) below.

SVG 1.1 and previous versions were defined using an XML DTD. SVG Tiny 1.2 was defined normatively using RelaxNG. Conformance with SVG 2 is defined in terms of a document object model (DOM), rather than a schema or DTD. The specifications for SVG 1.1 and SVG 2 each identify a number of different conformance criteria: see [SVG 1.1 | Appendix G: Conformance Criteria](#) and [SVG 2 Recommendation | Chapter 2 : Conformance Criteria](#). A document or part of a document is a conforming SVG markup fragment if:

- if it can be parsed without error (other than network errors) by the appropriate parser for the document MIME type (i.e., "image/svg+xml" for an uncompressed SVG file) to form a conforming SVG DOM subtree, and
- any CSS stylesheets included in the document conform to the core grammar of [Cascading Style Sheets, level 2 revision 1](#).

A document is a conforming stand-alone SVG file if:

- it is a well-formed XML document,
- its root element is an 'svg' element,
- the SVG document fragment rooted at the document element is a conforming XML-compatible SVG markup fragment, and
- any other SVG document fragments within the document (such as those within a 'foreignObject') form a conforming XML-compatible SVG markup fragment.

The final clause was added in the SVG 2 specification.

## Production phase

Designed as a final-state (end-user delivery) format for vector graphics on the web. For printing or sharing (e.g., by email), free-standing SVG files are often converted at a fixed scale to [PDF](#) or a raster image format such as [PNG](#) or [JPEG \(JFIF\)](#).

## Relationship to other formats

### Subtype of

[XML](#), XML (EXtensible Markup Language)

### Has subtype

Scalable Vector Graphics (SVG), Version 1.0 (2001), not described at this Web site.

### Has subtype

[SVG 1.1](#), Scalable Vector Graphics (SVG), Version 1.1. Initially published as a W3C Recommendation in 2003 and still the current standard as of early 2020.

### Has subtype

Two reduced profiles of SVG 1.1 for mobile devices: SVG Basic 1.1 and SVG Tiny 1.1, not described separately at this website.

<b>Has subtype</b>	<a href="#">SVG Tiny 1.2</a> , Scalable Vector Graphics (SVG) Tiny, Version 1.2. SVG Profile, released in December 2008, intended for implementation on a range of devices, including cellphones and PDAs as well as laptops and personal computers.
<b>Has subtype</b>	<a href="#">SVG 2</a> , Scalable Vector Graphics (SVG), Version 2.. This update is under development as of April 2020. A W3C Candidate Recommendation, issued October 4, 2018, is available at <a href="http://www.w3.org/TR/SVG2/">http://www.w3.org/TR/SVG2/</a> . The most recent editor's draft can be found at <a href="https://svgwg.org/svg2-draft/">https://svgwg.org/svg2-draft/</a> .
<b>Used by</b>	<a href="#">EPUB 2</a> , EPUB, Electronic Publication, Version 2. EPUB 2 readers are required to recognize and display embedded graphics in SVG 1.1.
<b>Used by</b>	<a href="#">EPUB 3</a> , Electronic Publication, Version 3. EPUB 3 uses a <a href="#">restricted subset of SVG 1.1</a> to represent inline vector graphics in documents based on XHTML and in standalone SVG-based EPUBs.
<b>Used by</b>	<a href="#">ODF family</a> , OpenDocument Format (ODF) Family, OASIS and ISO/IEC 26300. ODF uses the svg: prefix for elements and attributes compatible with SVG 1.1.
<b>Used by</b>	<a href="#">HTML 5</a> , HyperText Markup Language (HTML) 5. SVG 1.1 was supported for embedding within HTML through HTML 5.2. See <a href="#">HTML 5.2: 4.7.18. SVG</a> . As of April 2020, <a href="#">HTML Living Standard: 4.8.17 SVG</a> refers to SVG 2.

## Local use

<b>LC experience or existing holdings</b>	The Library of Congress uses SVG 1.1 for some logos used on its website and the format has been used in some demonstration projects, such as that described in <a href="https://blogs.loc.gov/thesignal/2018/05/building-a-southern-mosaic/">https://blogs.loc.gov/thesignal/2018/05/building-a-southern-mosaic/</a> . The Library of Congress has over 400,000 files with the .svg extension in its digital collection storage.
<b>LC preference</b>	The Library of Congress Recommended Formats Statement (RFS) includes SVG as a preferred vector graphics image format for <a href="#">other graphic images in digital form</a> and <a href="#">2D and 3D Computer Aided Design vector images</a> . The RFS does not specify a version of SVG.

## Sustainability factors

<b>Disclosure</b>	Open standard from <a href="#">W3C</a> .
<b>Documentation</b>	<a href="#">Scalable Vector Graphics (SVG)</a> is a hub for SVG resources at W3C. It provides links to all versions of SVG that have reached Recommendation status and to a number of drafts. As of April 2020, this page is not actively maintained. Other sources of documentation are the <a href="#">W3C SVG Working Group Wiki</a> and <a href="#">SVG Working Group document repository</a> . The latter has several drafts, but as of early 2020, it is not clear to the compilers of this resource which documents other than the <a href="#">SVG2, Editor's Draft</a> are being worked on actively. <a href="#">Comments welcome</a> .
<b>Adoption</b>	<p>Over the years, SVG has generated bursts of enthusiasm for its capabilities, not only for its scalability but also for the ability to create graphics programmatically from data. Several websites with instructional materials and demonstrations of creative uses have been established and later fallen into disuse. In particular, see <a href="#">Useful References</a> below for svg.org and LearnSVG.</p> <p>Examples of uses that take advantage of the ability to convert a structured model with measurements or other data into SVG include:</p>

- [Data-Driven SVG Apps: A Rapid Development Approach \(2002\)](#), by Pramod Jain.
- As illustrated in [Export Stata graphs in SVG format](#), some statistics software can generate graphs in SVG format. See also [High-quality R graphics on the Web with SVG](#).
- In [From Words to Diagrams: Visualization of Historical Bookbinding](#), Alberto Campagnolo shows how he uses structured data about binding structures of old books to generate diagrams that are easier to understand than descriptions based on very specialized controlled vocabulary.
- [D3.js](#) is a Javascript library for generating data-driven documents on the web using HTML, SVG, and CSS. For examples, see [d3-geo](#) and [d3-shape](#).
- More specialized tools like [SVGIS](#) exist to turn a geospatial vector dataset (e.g., in [GeoJSON](#) or [Esri Shapefile](#)) into an SVG map.
- The tutorial [SVG scripting example: an interactive map](#), by Peter Collingridge, maps some simple data onto an outline map of Africa in SVG format.
- [A Web-Based Application for Real-Time GIS](#), which tested integration of real-time weather information into a system delivering weather maps on the web, concluded that the "SVG format is capable for producing and publishing real-time maps on the web."
- [Use SVG Files to Effortlessly Mill Without Learning CAD and CAM](#) and instructions to use numerical control carving devices to make a [Simple Stand](#) provide examples based on SVG for construction projects suitable for small businesses, individuals, classrooms, and public "makerspaces."

Prior to early 2011, browser support for SVG images was variable, with many complaints about lack of support by Internet Explorer. [An infographic from late 2014](#) indicated that, by that time, support was full in Safari, Firefox, Chrome, and Opera; support in IE started with IE 9 and support in Android with version 4. A more [detailed presentation of SVG feature support](#) is available from caniuse.com, which is updated when browsers are updated. In particular, see [CanIUse: SVG \(basic support\)](#), [CanIUse: SVG filters](#), [CanIUse: Inline SVG in HTML5](#), [CanIUse: SVG in HTML img element](#), and [CanIUse: SVG element: foreignObject](#). Using a totally different testing approach, [Testing SVG support across browser engines](#) explored support by the engines used in various browsers on a test SVG file. By the time of the 2019 run of this test, there were very few problems in mainstream browser engines with its test image.

Support for SVG in applications and toolkits is primarily for SVG 1.1. The compilers of this resource would appreciate information about support for features added in SVG 2. [Comments welcome](#). SVG is supported in several Adobe tools current as of early 2020 ([Illustrator](#), [Animate](#), [Character Animator](#)) and also in [Fireworks](#), a product no longer being maintained. SVG is supported in Microsoft Visio for [import](#) and [export](#). Bentley Microstaion can [export](#) design drawings as SVG. Corel Draw will [open](#) and [export](#) SVG files. ESRI ArcGIS supports [import of SVG files](#) as graphics in a map layout or as marker symbol layers and [export](#) for maps. The statistics application Stata can [export graphs in SVG format](#). Bentley's Microstation, a 3D design application can [export 2D visualizations as SVG](#). Among the open source applications and software libraries that can read and write SVG images are: [Inkscape](#), a free, open-source vector graphics editor, aimed at professionals; [librsvg](#), a toolkit for rendering/displaying SVG images; [Snap.svg](#), a JavaScript SVG library, successor to [Raphaël](#); and the [Apache Batik](#) project, which has modules for parsing, viewing, and generating SVG images in client and server applications. The self-reported [status](#) of SVG 1.1 implementation by Apache Batik appears almost complete apart from excluding support for external resources and foreign objects, as well as for some font-related



markup (which may correspond to font-related markup deprecated for SVG 2). The Oxygen XML Editor provides [SVG support](#) using the Apache Batik toolkit. Altova's editor (XML Spy) has supported SVG for many years. See [mention in SVG Unleashed](#) by Andrew Watt, which was published in 2002.

Some design projects can make good use of 2D patterns, for example for [laser cutting](#). Several free or open-source CAD software applications support SVG. [LibreCAD](#) supports import and export of SVG drawings, with a special SVG subtype for [MakerCAM](#) or [EleksCAM](#). [Tinkercad](#) can export an SVG file; on export, 2D vectors are generated where the 3D model intersects the default workplane. [QCAD](#) claims to support export of precise CAD drawings to SVG for inclusion in publications or for further processing in a SVG-capable vector graphics editor. [FreeCAD](#) has a module for opening, importing, and exporting SVG files. [SolveSpace](#) supports SVG, EPS, PDF, DXF and HPGL as export formats. [Blender](#) has an add-on for importing and exporting SVG.

[Guides to Good Practice](#) from the UK Archaeology Data Service lists SVG as "suitable for preservation." SVG is listed in [Recommended Data Formats for Preservation Purposes in the Florida Digital Archive](#) in the column for formats for which the archive has high confidence level for preservation. SVG is listed as a preferred format for vector images in [Born-digital file format standards](#) from the National Archives of Australia.

The October 2011 [EPUB\\_3](#) specification for Electronic Publications uses a restricted subset of SVG\_1\_1 as a content document format for graphics, including use as a top-level format for comics and graphic novels. Not supported in EPUB\_3 are animations and embedding of "foreign objects" in forms other than XHTML.

#### Licensing and patents

No special issues. As of January 2004, the SVG Working Group was not aware of any royalty-bearing patents they believe to be essential to SVG.

#### Transparency

Based on XML, hence inherently transparent. elements and attributes have names that indicate their functions.

#### Self-documentation

Includes <metadata> element designed to hold elements from other XML namespaces. Hence an SVG file can contain rich descriptive or administrative metadata using any other XML schema or DTD.

#### Accessibility Features

SVG files have good support for accessibility features, specifically because SVG is built on top of XML and SVG's file format design. W3C's notes on the [Accessibility Features of SVG](#) highlight many of these accessibility features. Some of these accessibility features include:

- **XML - Plain text**, SVG images are encoded as plain text, which can be used by many Web design tools
- **Alternative equivalents**, SVG allows for inclusion of text description of each image component and a text title to explain the component's role in the image as a whole
- **Extended Styling**, SVG offers a variety of style features that controls how they are rendered, allowing adaptability for users with low vision, color deficiencies, and other disabilities.
- **Structured Image**, SVG files store structural information as a key part of the image which can be used by assistive technologies to increase accessibility.

#### External dependencies

None

#### Technical protection considerations

None

Quality and functionality factors i

Still Image	
Normal rendering	Good support.
Clarity (high image resolution)	<p>The intent of SVG is for images to be inherently scalable. The specification supports optional settings for rendering hints: <i>crispEdges</i> and <i>geometricPrecision</i>.</p> <p>SVG colors are usually specified in the sRGB color space. Color properties in SVG 1.1 and earlier are based on colors in <a href="#">CSS2</a>. For more detail and an extension of the list of named colors in CSS2, see <a href="#">SVG 1.1</a>.</p> <p>Colors in SVG 2 are based on <a href="#">CSS Color Module Level 3</a>.</p>
Color maintenance	<p>According to <a href="#">12.3 Color profile descriptions</a> in the SVG 1.1 specification, an SVG graphic may employ an alternate color specification using a profile as defined by the <a href="#">International Color Consortium (ICC)</a>. If ICC-based colors are provided and the SVG user agent supports ICC color, then the ICC-based color takes precedence over the sRGB color specification. The SVG 1.1 specification lists <a href="#">ICC Profile Format Specification, ICC.1:2004-10</a> as a normative reference. However, this capability has been deprecated by developer.mozilla.org for use on web pages, because it is not supported by browsers. See <a href="#">SVG: Scalable Vector Graphics   SVG element reference   &lt;color-profile&gt;</a> and <a href="#">SVG: Scalable Vector Graphics   SVG Attribute reference   color-profile</a> from MDN Web Docs.</p> <p>Colors in SVG 2 are based on CSS Color Module Level 3; support in CSS for ICC profiles has been deferred to a future <a href="#">CSS Color Module Level 4</a>. The SVG 2 specification provides an informative reference to <a href="#">Specification ICC.1:2010 (Profile version 4.3.0.0)</a>.</p>
Support for vector graphics, including graphic effects and typography	Rich support. See <a href="#">Description</a> above.
Support for multispectral bands	Not applicable.
Functionality beyond normal rendering	Support for animations. Text in alternate languages for labels, etc.

File type signifiers and format identifiers i

Tag	Value	Note
Filename extension	svg	In addition, the extension .svgz is used as an alias for 'svg.gz', i.e. for octet streams of type image/svg+xml, subsequently compressed with gzip.
Internet Media Type	image/svg+xml	Proposed in standards documentation.
Internet Media Type	image/svg+xml	Found in practice, particularly from some files created by tools published prior to 2001, when IETF published <a href="#">RFC 3023: XML Media Types</a> . See <a href="#">Build Flexible, Lightweight XML-Based Images for ASP.NET Using Scalable Vector Graphics</a> from Microsoft's MSDN Magazine, July 2003, which uses this media type in examples.
XML namespace declaration	xmlns="http://www.w3.org/2000/svg"	This namespace declaration occurs in the mandatory <svg> element that serves as the root of a free-standing SVG file. The same namespace is used by

		all versions of SVG. See <a href="https://www.w3.org/2000/svg">https://www.w3.org/2000/svg</a> , which states that "The SVG namespace is mutable; names may be added over time by the W3C SVG Working Group."
<b>Pronom PUID</b>	See note.	As of April 2020, PRONOM has no entry that covers all versions of SVG. See <a href="#">Useful References</a> below for PUIDs for versions of SVG.
<b>Wikidata Title ID</b>	Q2078	No version declared. See <a href="https://www.wikidata.org/wiki/Q2078">https://www.wikidata.org/wiki/Q2078</a> .
<b>Tag</b>	<b>Value</b>	<b>Note</b>
<b>Filename extension</b>	svgz	Used as an alias for 'svg.gz', i.e. for octet streams of type image/svg+xml, subsequently compressed with gzip.
<b>Pronom PUID</b>	x-fmt/109	For compressed SVG file with .svgz extension. See <a href="https://www.nationalarchives.gov.uk/pronom/x-fmt/109">https://www.nationalarchives.gov.uk/pronom/x-fmt/109</a> .

## Notes

<b>General</b>	<p><b>Filters and graphic effects in SVG:</b> SVG markup can be used to add effects to shapes. Andy Woodruff prepared two examples for the 2019 conference of the North American Cartographic Information Society (NACIS). <a href="#">SVG Cartography (NACIS 2019), part one</a> illustrates a typical way to draw some GeoJSON to SVG for rendering on the web as a map, using a <a href="#">D3.js</a> map projection and path generator to translate GeoJSON data into SVG path data. <a href="#">SVG Cartography (NACIS 2019), part two</a> adds fancier design effects to the map. SVG supports many <a href="#">filter effects</a>, such as feDropShadow, feGaussianBlur, feeSpotlight. See <a href="#">SVG Filter Effects: Creating Texture with &lt;feTurbulence&gt;</a> for some examples of the use of one particular effect.</p> <p><b>Animations in SVG:</b> SVG markup can be used to present <a href="#">animations</a> on the web in several ways: including using SVG's animation elements, using CSS, or by scripting. The <a href="#">Wikipedia entry for SVG animation</a> offers a number of examples using different approaches.</p> <p>In 2013, most web sites presented simple animations as <a href="#">GIF_89a</a> files and more complex animations and interactives as Flash <a href="#">SWF_7</a> or <a href="#">SWF_8</a> files (or later versions). Commentators with an interest in animation, including advocates for SVG as a publicly disclosed format, compared SVG and SWF but noted that the powerful authoring software available for Flash gave SWF the edge. Since then, the Flash plugin has been recognized as a persistent security risk and <a href="#">HTML 5</a> has provided other means for embedding video in web pages. See <a href="#">Thoughts on Flash</a> from Wikipedia entry for HTML5. In early 2020, <a href="#">animated GIFs</a> are still very popular on the web, including for advertising. The compilers of this resource have not attempted to determine whether SVG animations are used more widely now that most browsers support them. <a href="#">Comments welcome</a>.</p>
<b>History</b>	<p>SVG was originally developed through a process that began in 1996, with a call for responses to <a href="#">W3C Scalable Graphics Requirements</a>. According to <a href="#">Secret Origin of SVG</a>, there were six proposals submitted by 1998, and SVG was particularly influenced by VML (Vector Markup Language), already deployed in Microsoft products, and PGML, a proposal from a partnership led by Adobe and using the same imaging model as in Postscript and PDF.</p> <p><a href="#">SVG 1.0</a> became a W3C Recommendation in September 2001. <a href="#">SVG 1.1</a> became a W3C Recommendation in January 2003, with a second edition</p>



published in August 2011, sometimes referred to as SVG 1.1 Full.

Work had begun on SVG 1.2 Full, but was not pursued beyond a [Working Draft \(dated 13 April 2005\)](#). Instead, an SVG profile [SVG Tiny 1.2](#) intended for implementation on a range of devices, including cellphones and laptops. SVG Tiny 1.2 includes a subset of the features included in SVG 1.1 Full, along with new features to extend the capabilities of SVG.

Version 2 of SVG has been under development for several years. As of April 2020, a W3C Candidate Recommendation, issued October 4, 2018, is available at <http://www.w3.org/TR/SVG2/>. The most recent editor's draft can be found at <https://svgwg.org/svg2-draft/>. See also [SVG2 Requirements Input](#).

## Format specifications

- [Scalable Vector Graphics \(SVG\) | latest recommendation](#) (<http://www.w3.org/TR/SVG/>). Multi-page HTML presentation. As of April 2020, this was a Candidate Recommendation from October 2018.
- See [SVG 1.1](#).
- See [SVG Tiny 1.2](#).
- [Latest Editor's Draft of SVG 2](#) (<https://svgwg.org/svg2-draft/>). As of April 2020, this was a draft dated February 16, 2020

## Useful references

### URLs

- Resources from W3C related to SVG.
  - [Scalable Vector Graphics \(SVG\)](#) (<http://www.w3.org/Graphics/SVG/>). Hub page for W3C SVG activities
  - [W3C SVG Working Group Wiki](#) ([https://www.w3.org/Graphics/SVG/WG/wiki/Main\\_Page](https://www.w3.org/Graphics/SVG/WG/wiki/Main_Page)).
  - [2005 working draft of Scalable Vector Graphics \(SVG\) 1.2 Specification](#) (<http://www.w3.org/TR/SVG12/>). Work on SVG 1.2 Full appears to have been abandoned soon after this.
  - [Mobile SVG Profiles: SVG Tiny and SVG Basic. W3C Recommendation 14 January 2003](#) (<https://www.w3.org/TR/2003/REC-SVGMobile-20030114/>). Initial profiles of SVG suited to displaying vector graphics on small devices. Edited in place 15 June 2009
  - [Scalable Vector Graphics \(SVG\) Tiny 1.2 Specification, W3C Recommendation 22 December 2008](#) (<http://www.w3.org/TR/SVGMobile12/>). A profile of SVG suited both to small devices and personal computers.
  - [Scalable Vector Graphics \(SVG\) 1.0 Specification. W3C Recommendation 04 September 2001](#) (<https://www.w3.org/TR/SVG10/>).
  - [SVG Tutorial \(2002\) | by David Duce, Ivan Herman, Bob Hopgood](#) (<https://www.w3.org/2002/Talks/www2002-svgtut-ih/hwtut.pdf>).
  - [SVG2 Requirements Input | from W3C](#) ([https://www.w3.org/Graphics/SVG/WG/wiki/SVG2\\_Requirements\\_Input](https://www.w3.org/Graphics/SVG/WG/wiki/SVG2_Requirements_Input)). Includes discussion and records working group decisions, with links to minutes as appropriate. Only one change since July 2012.
  - [Accessibility Features of SVG](#) (<https://www.w3.org/TR/2000/NOTE-SVG-access-20000807/>). W3C Note on Accessibility Features of SVG.
  - [SVG Working Group document repository](#) (<https://svgwg.org/>). First item is the latest Editor's Draft of the specification for SVG 2.
- [Wikipedia article on Scalable Vector Graphics](#) ([https://en.wikipedia.org/wiki/Scalable\\_Vector\\_Graphics](https://en.wikipedia.org/wiki/Scalable_Vector_Graphics)).
- [Wikipedia article on SVG Animation](#) ([https://en.wikipedia.org/wiki/SVG\\_animation](https://en.wikipedia.org/wiki/SVG_animation)).
- Tutorial materials for creating SVG images:
  - [About SVG | from Inkscape](#) (<https://inkscape.org/develop/about-svg/>). Inkscape is a vector graphics editor that uses SVG as its native format
  - [SVG and the Web, Chapter 23 of Inkscape: Guide to a Vector Drawing Program](#) (<http://tavmjong.free.fr/INKSCAPE/MANUAL/html/Web.html>).
  - [SVG Tutorial | from w3schools.com](#) ([https://www.w3schools.com/graphics/svg\\_intro.asp](https://www.w3schools.com/graphics/svg_intro.asp)).
  - [SVG Tutorial | by Matthew Bystedt](#) ([https://apike.ca/prog\\_svg.html](https://apike.ca/prog_svg.html)).

- [Data-Driven SVG Apps: A Rapid Development Approach \(2002\)](https://web.archive.org/web/20020815224103/http://www.onjava.com/pub/a/onjava/2002/02/13/svg.html) | by Pramod Jain (https://web.archive.org/web/20020815224103/http://www.onjava.com/pub/a/onjava/2002/02/13/svg.html).
- [SVG scripting example: an interactive map \(2010\)](https://www.petercollingridge.co.uk/tutorials/svg/interactive/interactive-map/) | by Peter Collingridge (https://www.petercollingridge.co.uk/tutorials/svg/interactive/interactive-map/).
- [SVG on the web: A Practical Guide \(2015\)](https://svgontheweb.com/) | by Jake Giltsoff (https://svgontheweb.com/).
- [The Best Way to Embed SVG on HTML \(2020\)](https://vecta.io/blog/best-way-to-embed-svg) | from Disruptive Diagramming (https://vecta.io/blog/best-way-to-embed-svg).
- Svg.org (offline in early 2020) was launched in February 2003 with a news post saying, "This website will aim, across the coming months, at becoming a central place for the SVG community and for you to share your experience and expertise. Here you will find user journals, an SVG news page, SVG tutorials and articles." By February 8, 2012, the site was inactive. Links below are to selected pages archived by the Internet Archive.
  - [First capture of svg.org home page | as of March 3, 2003](https://web.archive.org/web/20030319180729/http://www.svg.org/) (https://web.archive.org/web/20030319180729/http://www.svg.org/).
  - [svg.org wiki:Front Page | as of May 2003](https://web.archive.org/web/20030503135139/http://www.svg.org/wiki/) (https://web.archive.org/web/20030503135139/http://www.svg.org/wiki/).
  - [Home page of svg.org | as of February 2010](https://web.archive.org/web/20100208221439/http://www.svg.org/) (https://web.archive.org/web/20100208221439/http://www.svg.org/).
- LearnSVG (offline in early 2020) was a site with links to tutorials and other resources related to SVG. The initial site (first archived by the Internet Archive in 2003) was based on the content of the book "Learn SVG – The Web Graphics Standard" by Jon Frost, Stefan Goessner and Michel Hirtzler. The last capture of the site before it went offline was in April 2016.
  - [LearnSVG site as of July 2003](https://web.archive.org/web/20030722112937/http://learnsvg.com/) (https://web.archive.org/web/20030722112937/http://learnsvg.com/). Has outline and extracts of chapters from the LearnSVG book.
  - [LearnSVG site as of March 2016](https://web.archive.org/web/20160324001146/http://www.learnsvg.com/) (https://web.archive.org/web/20160324001146/http://www.learnsvg.com/). The front page was now a rich menu of links to resources related to SVG.
  - [Learn SVG: The Web Graphics Standard - Chapter 7](https://www.codeproject.com/Articles/5485/Learn-SVG-The-Web-Graphics-Standard) (https://www.codeproject.com/Articles/5485/Learn-SVG-The-Web-Graphics-Standard).
- Selected individual posts or resources with examples of creative uses of SVG and analyses of fitness for various purposes.
  - [SVG-WOW \(2011\)](http://svg-wow.org/index.html) | gallery of SVG examples (http://svg-wow.org/index.html).
  - [OLD.carto.net](https://old.carto.net/) (https://old.carto.net/). Website (with content in English and German) devoted to cartography. This section (no longer maintained) focused on the use of SVG for mapping applications and featured student projects.
  - [SVG and the Preservation of Vector Images \(2008\)](https://web.archive.org/web/20130121011523/http://www.svgopen.org/2008/papers/40-SVG_and_the_Preservation_of_Vector_Images/#preservation_format) | by David Duce, Bob Hopgood, and Mike Coyne (https://web.archive.org/web/20130121011523/http://www.svgopen.org/2008/papers/40-SVG\_and\_the\_Preservation\_of\_Vector\_Images/#preservation\_format). Highlights strengths and shortcomings of SVG 1.1 as an archival format.
  - [A Web-Based Application for Real-Time GIS \(2008\)](https://www.researchgate.net/publication/229015920_A_Web-Based_Application_for_Real-Time_GIS) | by Okay Ozdilek and Dursun Zafer Seker (https://www.researchgate.net/publication/229015920\_A\_Web-Based\_Application\_for\_Real-Time\_GIS).
  - [From Words to Diagrams: Visualization of Historical Bookbinding | Presentation by Alberto Campagnolo \(April 20, 2017\)](https://www.loc.gov/item/webcast-7896/) (https://www.loc.gov/item/webcast-7896/). Video with transcript.
  - [Transforming structured descriptions to visual representations. An automated visualization of historical bookbinding structures. \(2015\)](https://ualresearchonline.arts.ac.uk/id/eprint/8749/) | PhD thesis of Alberto Campagnolo (https://ualresearchonline.arts.ac.uk/id/eprint/8749/).
  - [SVG has more potential \(September 2016\)](https://www.madebymike.com.au/writing/svg-has-more-potential/) | from MadeByMike (https://www.madebymike.com.au/writing/svg-has-more-potential/).
  - [How \(& Why\) SVG Is Going to Take Over in 2018 | \(January 2018\)](https://designshack.net/articles/graphics/how-why-svg-is-going-to-take-over-in-2018/) | from Design Shack (https://designshack.net/articles/graphics/how-why-svg-is-going-to-take-over-in-2018/).
  - [10 reasons the image format SVG is rocking the internet \(2018\)](https://bumpsetcreative.com/10-reasons-the-image-format-svg-is-rocking-the-internet/) | from Bump Set Creative (https://bumpsetcreative.com/10-reasons-the-image-format-svg-is-rocking-the-internet/). Post by Matt Lipman
  - [Building Interactive Websites using Scalable Vector Graphics \(SVG\) – \[With Examples\] \(2018\)](https://www.intelegain.com/scalable-vector-graphics/) | from Intelegain Technologies (https://www.intelegain.com/scalable-vector-graphics/).
  - [Instructions for using a carving machine and an SVG template to make a simple stand for a book or photograph](https://www.inventables.com/projects/simple-stand/) (https://www.inventables.com/projects/simple-stand/).
- Between 2002 and 2016 (with the exception of 2006), there was an annual conference focused on SVG. The conference used the name "SVG Open" until 2013, when it changed to "The Graphical Web." Until 2019, the conference websites, with papers and presentations, were online. The links below are to captures by the Internet Archive.
  - <https://web.archive.org/web/20190627162114/https://www.svgopen.org/2002/>
  - <https://web.archive.org/web/20190420164700/https://www.svgopen.org/2003/>

- <https://web.archive.org/web/20190724172128/https://www.svgopen.org/2004/>
  - <https://web.archive.org/web/20190308231756/https://www.svgopen.org/2005/>
  - <https://web.archive.org/web/20131225101852/https://www.svgopen.org/2006/> The 2006 SVG Open conference was canceled.
  - <https://web.archive.org/web/20190404235934/https://www.svgopen.org/2007/>
  - <https://web.archive.org/web/20190405005622/https://www.svgopen.org/2008/>
  - <https://web.archive.org/web/20190414090546/https://www.svgopen.org/2009/>
  - <https://web.archive.org/web/20190322140615/https://www.svgopen.org/2010/>
  - <https://web.archive.org/web/20190428113057/https://www.svgopen.org/2011/>
  - <https://web.archive.org/web/20180620073459/https://www.svgopen.org/2012/>
  - <https://web.archive.org/web/20180705080501/https://www.svgopen.org/2013/> The conference name changed to The Graphical Web in 2013
  - <https://web.archive.org/web/20180423130114/https://www.svgopen.org/2014/>
  - <https://web.archive.org/web/20160208130017/https://www.svgopen.org/2015/>
  - <https://web.archive.org/web/20190202135707/http://2016.graphicalweb.org/> This conference took place but no papers or presentations were captured by the Internet Archive
- Wikipedia and Wikimedia have useful help files about the practical use of SVG on those resources. The normal approach used for SVG images on Wikipedia involves automatic generation of PNG files to use for display. See [SVG files in MediaWiki](#).
  - [Help:SVG on Wikimedia Commons](https://commons.wikimedia.org/wiki/Help:SVG) (<https://commons.wikimedia.org/wiki/Help:SVG>).
  - [Help:SVG on Wikipedia](https://en.wikipedia.org/wiki/Wikipedia:SVG_help) ([https://en.wikipedia.org/wiki/Wikipedia:SVG\\_help](https://en.wikipedia.org/wiki/Wikipedia:SVG_help)).
- Adobe Systems was actively involved in the early development of SVG and has supported SVG in several products.
  - [Export high-quality, optimized SVG | from Help files for Adobe Illustrator](https://helpx.adobe.com/illustrator/how-to/export-svg.html) (<https://helpx.adobe.com/illustrator/how-to/export-svg.html>).
  - [Save in SVG format | from Help files for Adobe Illustrator](https://helpx.adobe.com/illustrator/using/saving-artwork.html#save_in_svg_format) ([https://helpx.adobe.com/illustrator/using/saving-artwork.html#save\\_in\\_svg\\_format](https://helpx.adobe.com/illustrator/using/saving-artwork.html#save_in_svg_format)).
  - [Exporting SVG files | from Help files for Adobe Animate](https://helpx.adobe.com/animate/using/exporting-svg-format.html) (<https://helpx.adobe.com/animate/using/exporting-svg-format.html>).
  - [Supported import file formats | from User Guide for Adobe Character Animator](https://helpx.adobe.com/adobe-character-animator/using/projects.html#Supportedimportfileformats) (<https://helpx.adobe.com/adobe-character-animator/using/projects.html#Supportedimportfileformats>).
  - [Adobe SVG Developer Center | as of November 2012](https://web.archive.org/web/20121130224658/http://www.adobe.com/devnet/svg.html) (<https://web.archive.org/web/20121130224658/http://www.adobe.com/devnet/svg.html>). Link via Internet Archive
  - [Adobe SVG Developer Center](https://web.archive.org/web/20210913094725/https://www.adobe.com/devnet/svg.html) (<https://web.archive.org/web/20210913094725/https://www.adobe.com/devnet/svg.html>). As of April 2020, this page is not part of Adobe's current developer support portal but still exists, with links to some useful content. Link via Internet Archive
  - [Introducing Snap.svg: The Next Generation JavaScript Library for SVG Graphics \(October 2013\) | by Adobe's Web Platform Team](https://web.archive.org/web/20160409211845/https://blogs.adobe.com/webplatform/2013/10/23/snap-the-javascript-svg-library-for-the-modern-web/) (<https://web.archive.org/web/20160409211845/https://blogs.adobe.com/webplatform/2013/10/23/snap-the-javascript-svg-library-for-the-modern-web/>). Snap was written entirely from scratch by the author of Raphaël (Dmitry Baranovskiy). Page available via Internet Archive.
- Resources related to support for SVG in browsers and browser engines.
  - [Can I Use. Analysis of browser support for a variety of SVG features](https://caniuse.com/#cats=SVG) (<https://caniuse.com/#cats=SVG>).
  - [Testing SVG Support Across Web Browser Engines \[Case Study\]](https://www.hongkiat.com/blog/test-svg-format-browser-engines/) (<https://www.hongkiat.com/blog/test-svg-format-browser-engines/>).
  - [Scalable Vector Graphics Infographic \(late 2014\)](https://psdtowp.net/svg.html) (<https://psdtowp.net/svg.html>). Includes information on support in browsers, on mobile devices, etc.
- Resources related to the International Color Consortium (ICC) and its standard for profiles that support color management.
  - [International Color Consortium](https://www.color.org/index.xalter) (<https://www.color.org/index.xalter>).
  - [Specification ICC.1:2004-10, File Format for Color Profiles, Profile Version 4.2.0.0](https://www.color.org/ICC1v42_2006-05.pdf) ([https://www.color.org/ICC1v42\\_2006-05.pdf](https://www.color.org/ICC1v42_2006-05.pdf)). Normative reference for SVG 1.1 (Second edition). First edition cited the 1998 ICC Spec. with a 1999 amendment.
  - [Specification: ICC.1:2010, File Format for Color Profiles, Profile Version 4.3.0.0](https://www.color.org/specification/ICC1v43_2010-12.pdf) ([https://www.color.org/specification/ICC1v43\\_2010-12.pdf](https://www.color.org/specification/ICC1v43_2010-12.pdf)). Informative reference for Editor's Draft of SVG 2 in April 2020.
- Resources related to the early history of SVG.
  - [W3C Scalable Graphics Requirements](http://www.w3.org/Graphics/ScalableReq) (<http://www.w3.org/Graphics/ScalableReq>). 1996 call for proposals. This call brought in six proposals and led to the formation of the W3C group that developed SVG.

- [Secret Origin of SVG](https://www.w3.org/Graphics/SVG/WG/wiki/Secret_Origin_of_SVG) (https://www.w3.org/Graphics/SVG/WG/wiki/Secret\_Origin\_of\_SVG). Describes proposals from 1998 that influenced the development of SVG.
- [Interview with Jon Ferraiolo: SVG past, present, and future \(2012\)](https://web.archive.org/web/20210416112250/https://www.adobe.com/devnet/svg/articles/svg-jon-ferraiolo-interview.html) (https://web.archive.org/web/20210416112250/https://www.adobe.com/devnet/svg/articles/svg-jon-ferraiolo-interview.html). Ferraiolo was the editor of the specification for SVG 1.0. Link via Internet Archive.
- [SVG 1.0 published as W3C Recommendation on September 4, 2001 | from Web Design Museum](https://www.webdesignmuseum.org/web-design-history/svg-1-0-2001) (https://www.webdesignmuseum.org/web-design-history/svg-1-0-2001).
- [IETF RFC 3023: XML Media Types \(January 2001\)](https://www.ietf.org/rfc/rfc3023.txt) (https://www.ietf.org/rfc/rfc3023.txt). Section 8.19 concerns the Internet media type for SVG.
- [PRONOM entry for fmt/91](https://www.nationalarchives.gov.uk/pronom/fmt/91) (https://www.nationalarchives.gov.uk/pronom/fmt/91). Information in PRONOM from UK National Archives about SVG (1.0). PUID: fmt/91.
- [PRONOM entry for fmt/92](https://www.nationalarchives.gov.uk/pronom/fmt/92) (https://www.nationalarchives.gov.uk/pronom/fmt/92). Information in PRONOM from UK National Archives about SVG (1.1). PUID: fmt/92.
- [PRONOM entry for fmt/413](https://www.nationalarchives.gov.uk/pronom/fmt/413) (https://www.nationalarchives.gov.uk/pronom/fmt/413). Information in PRONOM from UK National Archives about SVG Tiny (1.2). PUID: fmt/413.
- [PRONOM entry for x-fmt/109](https://www.nationalarchives.gov.uk/pronom/x-fmt/109) (https://www.nationalarchives.gov.uk/pronom/x-fmt/109). Information in PRONOM from UK National Archives about SVG Compressed (.svgz). PUID: x-fmt/109. Outline record only.
- [Wikidata entry for Q2078](https://www.wikidata.org/wiki/Q2078) (https://www.wikidata.org/wiki/Q2078). Information in Wikidata about Scalable Vector Graphics, no version declared. Wikidata Title ID: Q2078.

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