



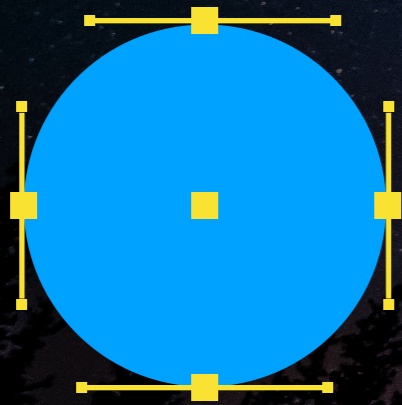
SVG MAGIC

Animation, Integration, Libraries,
Accessibility, & Support

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WHAT IS SVG?

Scalable Vector Graphics



Vector

```
<?xml version="1.0" encoding="utf-8"?>
<svg height="100" width="100">
  <circle cx="50" cy="50" r="40"
    stroke="black" stroke-width="3"
    fill="red" />
</svg>
```

XML



**Scale/Animate/
Style**

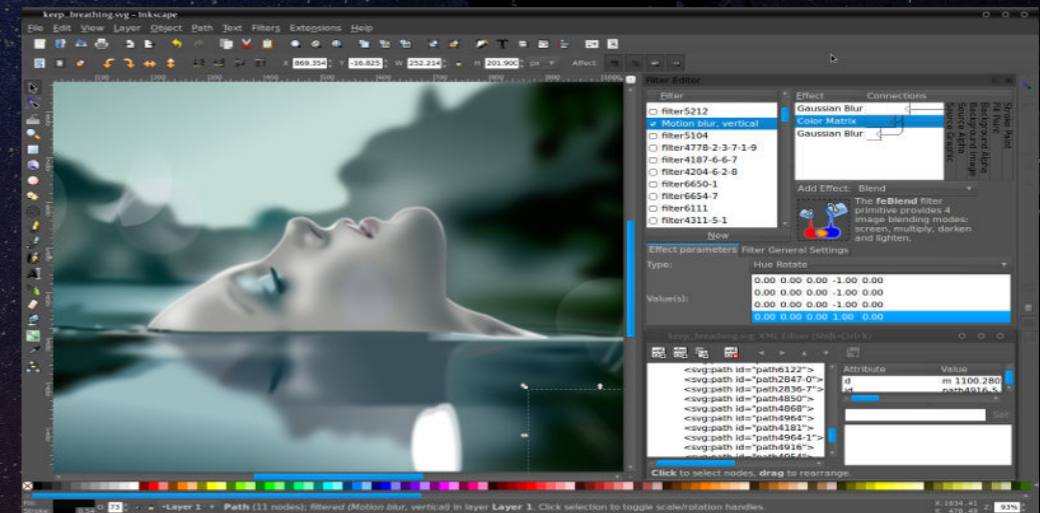
CREATING <SVG>

Tools for creating an <svg>

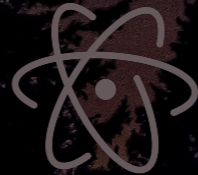
```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8" />
  <title>Embedded SVG</title>
</head>
<body>
  <h1>Embedded SVG</h1>

  <!-- SVG code -->
  <svg width="300px" height="300px"
    xmlns="http://www.w3.org/2000/svg">
    <text x="10" y="50" font-size="30">My SVG</text>
  </svg>

</body>
</html>
```



Text Editors



Many More

SVG Editors for Designers



ANIMATION

There are three methods to animate SVG elements.



Animate with CSS

```
SVG
<svg viewBox="0 0 127.9 178.4">
  <path id="left-leg" d="M37.6,138.8c0 ... " />
</svg>
```

```
CSS
.left-leg {
  fill: orange;
  animation: dance 2s infinite alternate;
}
@keyframes dance {
  100% {
    transform: rotate(3deg);
  }
}
```

SVG ANIMATION WITH SMIL

Animate with SMIL

```
SVG
<svg viewBox="0 0 127.9 178.4">
  <path d="M37.6,138.8c0 ... "
    <animate attributeName="fill"
dur="5000ms" to="#f06d06" fill="freeze" />
  </path>
</svg>
```



Animate with JS

```
SVG
<svg id="robot" viewBox="0 0 127.9 178.4">
  <circle id="left-pupil" cx="34.4"
cy="15.4" r="4.8" />
</svg>
```

```
SnapSVG
var s = Snap("#robot");
var leftPupil = s.select("#left-pupil");
leftPupil.animate({
  r: 50,
  fill: "lightgreen"
}, 1000);
```

Uses <http://snapsvg.io/> Library

EMBEDDING SVG

Getting an SVG on a web page.

Your Options

- ✓ Use the `<object>` tag
- ✓ Use the `` tag
- ✓ Use the CSS **image** property
- ✓ Use the CSS **background-image** property
- ✓ Use the inline `<svg>` tag
- ✓ Use the `<iframe>` tag
- ✓ Use the `<embed>` tag

How to pick

Most situations if you want dynamic effects.

`<object>`

Images without interaction.

`` CSS

If the situation calls for it.

`<svg>` `<iframe>`

NEVER!

`<embed>`

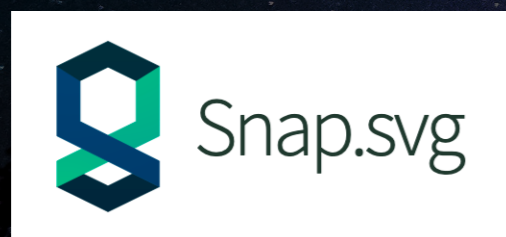
LIBRARIES



SVG.js

A lightweight library for manipulating and animating SVG.

<https://svgjs.com>



Snap.svg

Snap.svg is designed for modern browsers and therefore supports the newest SVG features like masking, clipping, patterns, full gradients, groups, and more.

<http://snapsvg.io/>



Bonsai

Bonsai is a JavaScript graphics library. This means you write out the code for the graphics you want in JS and it rendered into SVG along with any other final code.

<http://bonsaijs.org/>

MORE



ACCESSIBILITY

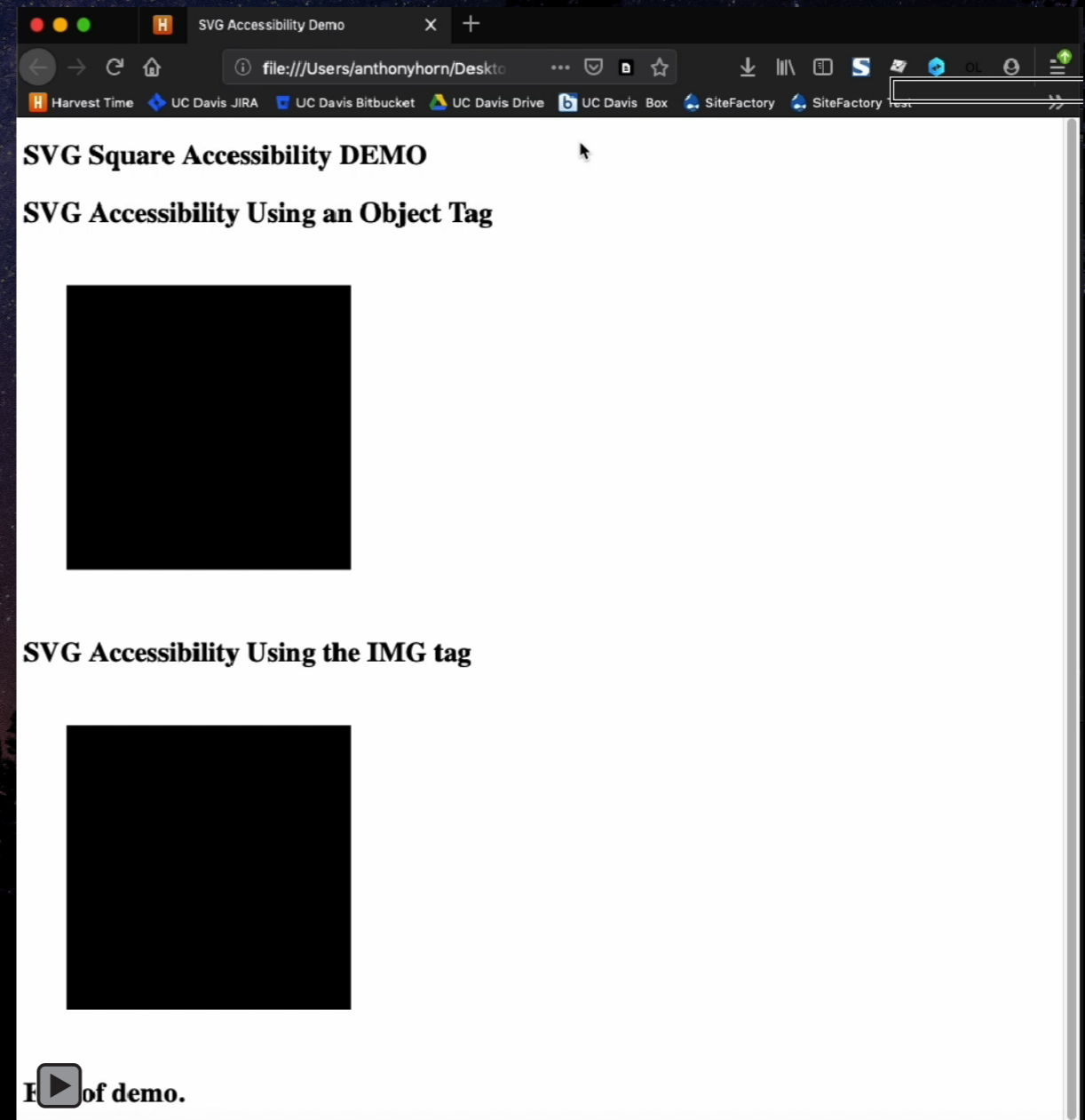
Let's look at a way to add some accessibility to an interactive `<svg>`

index.html

```
<object type="image/svg+xml" data="square.svg"
role="group" width="300" height="300">
  <p>This interactive SVG is not supported
by your browser.</p>
</object>
```

Square.svg

```
<?xml version="1.0" encoding="utf-8"?>
<svg version="1.1" id="Layer_1" xmlns="http://
www.w3.org/2000/svg" xmlns:xlink="http://
www.w3.org/1999/xlink" x="0px" y="0px"
viewBox="0 0 500 500" style="enable-
background:new 0 0 500 500;"
xml:space="preserve">
<style type="text/css">.nvda-title {font-size:
0;}</style>
<text class="nvda-title">This is an interactive
SVG with at least some accessibility.
Currently it is just a square.</text>
  <rect x="60" y="42" width="403"
height="403"></rect>
</svg>
```



ACCESSIBILITY

** tag is much more accessible.**

index.html

```

```

**** 



SUPPORT

Well supported among modern browsers.

SVG (basic support) - REC Usage % of all users ?
Global 98.16% + 0.35% = 98.51%

Method of displaying basic Vector Graphics features using the embed or object elements. Refers to the SVG 1.1 spec.

Current aligned Usage relative Date relative Apply filters Show all ?

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Blackberry Browser	Opera Mobile *	Chrome for Android	Firefox for Android	IE Mobile	UC Browser for Android	Samsi Interr
								2.1-2.3							
6-8		2		3.1				¹ 3-4.3							
² 9-10	² 12-17	3-66	4-74	3.2-12	10-57	3.2-12.1		4.4-4.4.4	7	12-12.1			² 10		4-8
² 11	² 18	67	75	12.1	58	12.2	all	67	10	46	75	67	² 11	11.8	9.2
	76	68-69	76-78	13-TP		13									

Notes Known issues (4) Resources (7) Feedback

¹ Partial support in Android 3 & 4 refers to not supporting masking.
² IE9-11 desktop & mobile don't properly scale SVG files. [Adding height, width, viewBox, and CSS rules](#) seem to be the best workaround.

DYNAMIC CONTENT EXAMPLE



CMS

Add *SVG Rectangle* custom block ☆

[Home](#) » [Add custom block](#)

Block description *

Create a Blue Rectangle

A brief description of your block.

SVG Width

400

SVG Height

110

SVG Fill Color

rgb(0,0,255)

SVG Stroke Width

3

SVG Stoke Color

rgb(0,0,0)

[Save](#)

CMS Template

block.html.twig

```
<svg width="{{ svg.width }}"
height="{{ svg.height }}"
<rect
width="{{ svg.width }}"
height="{{ svg.height }}"
style="
fill:{{ svg.fill }};
stroke-width:{{ svg.stroke-width }};
stroke:{{ svg.stroke-fill }}"
/>
</svg>
```

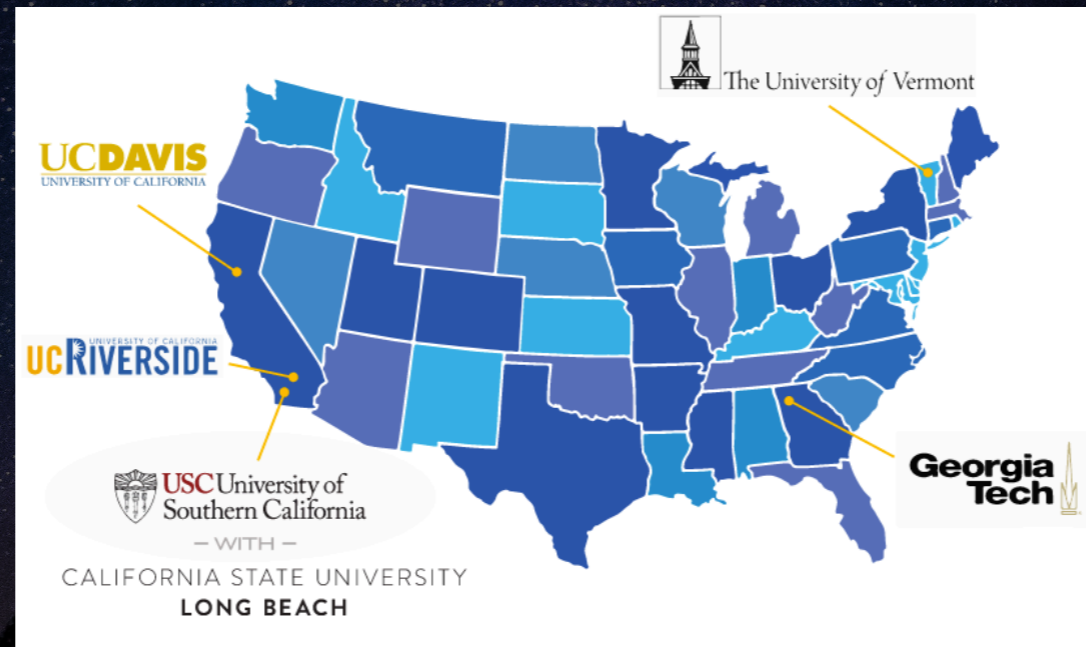
Rendered HTML

html

```
<svg width="400" height="110">
<rect
width="300"
height="100"
style="
fill:rgb(0,0,255);
stroke-width:3;
stroke:rgb(0,0,0)"
/>
</svg>
```



SVG IN ACTION



<https://codepen.io/anthorn305/pen/XLjRrB>

- ✓ Vector Images
- ✓ SVG Video Filters
- ✓ SVG Video Masks
- ✓ Interactive Teaching Tools
- ✓ Animated Buttons
- ✓ UX Components
- ✓ Whole web interfaces
- ✓ Animated Statistics
- ✓ UX Interactions
- ✓ Goopy Effects

<https://www.hongkiat.com/blog/svg-animations/>

← CHECK THEM OUT

UCDAVIS



FIN

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