



BADCAMP 2019

UCDAVIS



# SVG MAGIC

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Animation, Integration, Libraries,  
Accessibility, & Support

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# ANTHONY HORN

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Official Title: **Developer**

anthorn305 on Drupal.org

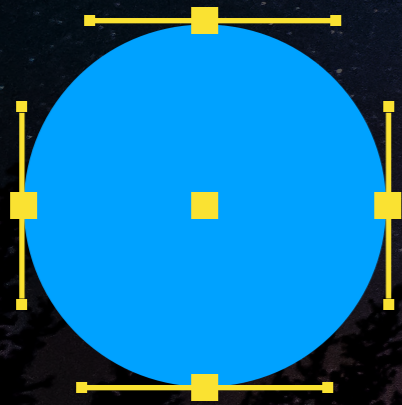
@anthorn305 on CodePen

ahorn-ucd on GitHub

# WHAT IS SVG?

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## 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**

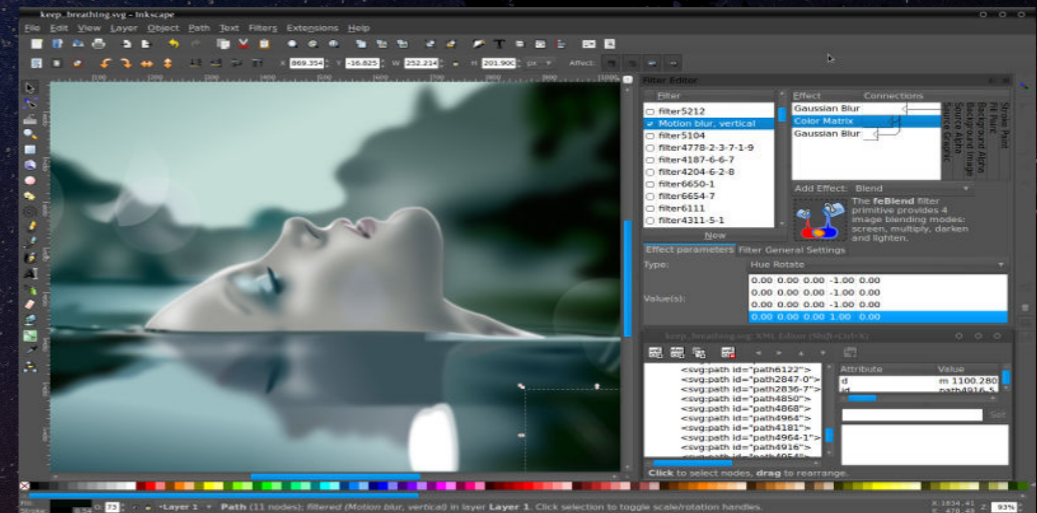
# CREATING <SVG>

## 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>
```

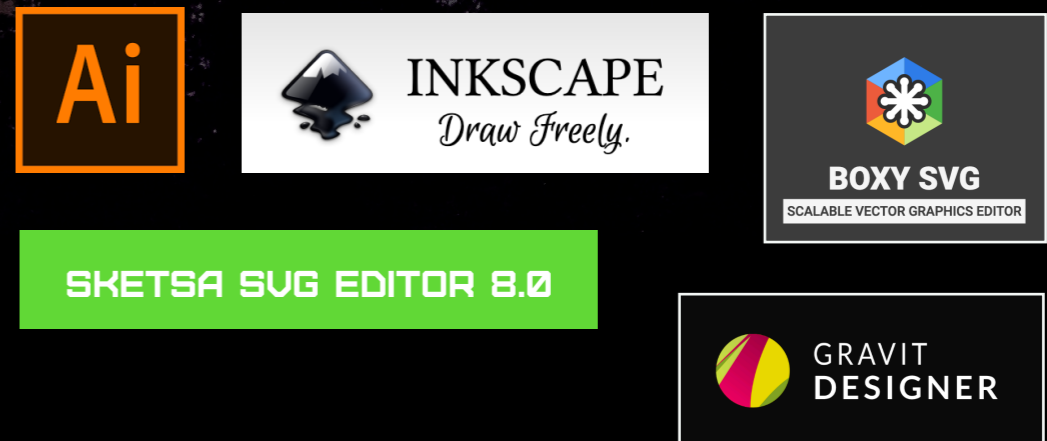


## Text Editors



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 `<img>` 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.

`<img>` CSS

If the situation calls for it.

`<svg>` `<iframe>`

NEVER!

`<embed>`

# LIBRARIES

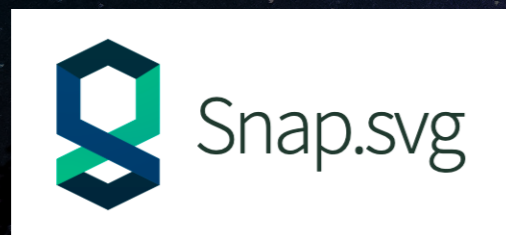
---



## 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**



# LIBRARIES

QuickTime Player File Edit View Window Help

Simple Clock x Animated Weather Cards x Leica Camera Illustration W/Bor x

https://codepen.io/fuzzyma/pen/LMxERd

Simple Clock  
A PEN BY Ulrich-Matthias Schäfer

HTML


```
1
```

CSS

```
1 html, body {
2   width: 100%;
3   height: 100%;
4   margin: 0;
5   padding: 0;
6   background: #111;
7 }
8
```

JS

```
1 /*****
2   This codepen is part of the svg.js
3   advent calendar. You can find all
4   the pens at twitter: @svg_js
5   *****/
6
7 const width = window.innerWidth
8 const height = window.innerHeight - 10
9
10 // Create SVG and set viewBox
11 // so that we zoom into the center
12 const canvas = SVG()
13   .addTo('body')
14   .size(width, height)
```



Console Assets Comments ⌘ Shortcuts

DataStax: IT Architecture Modernization Survey Results

Collections Embed Export Share

Screen Shot 2019-09...PM.png Screen Shot 2019-09...PM.png Screen Shot 2019-09...PM.png



# ACCESSIBILITY

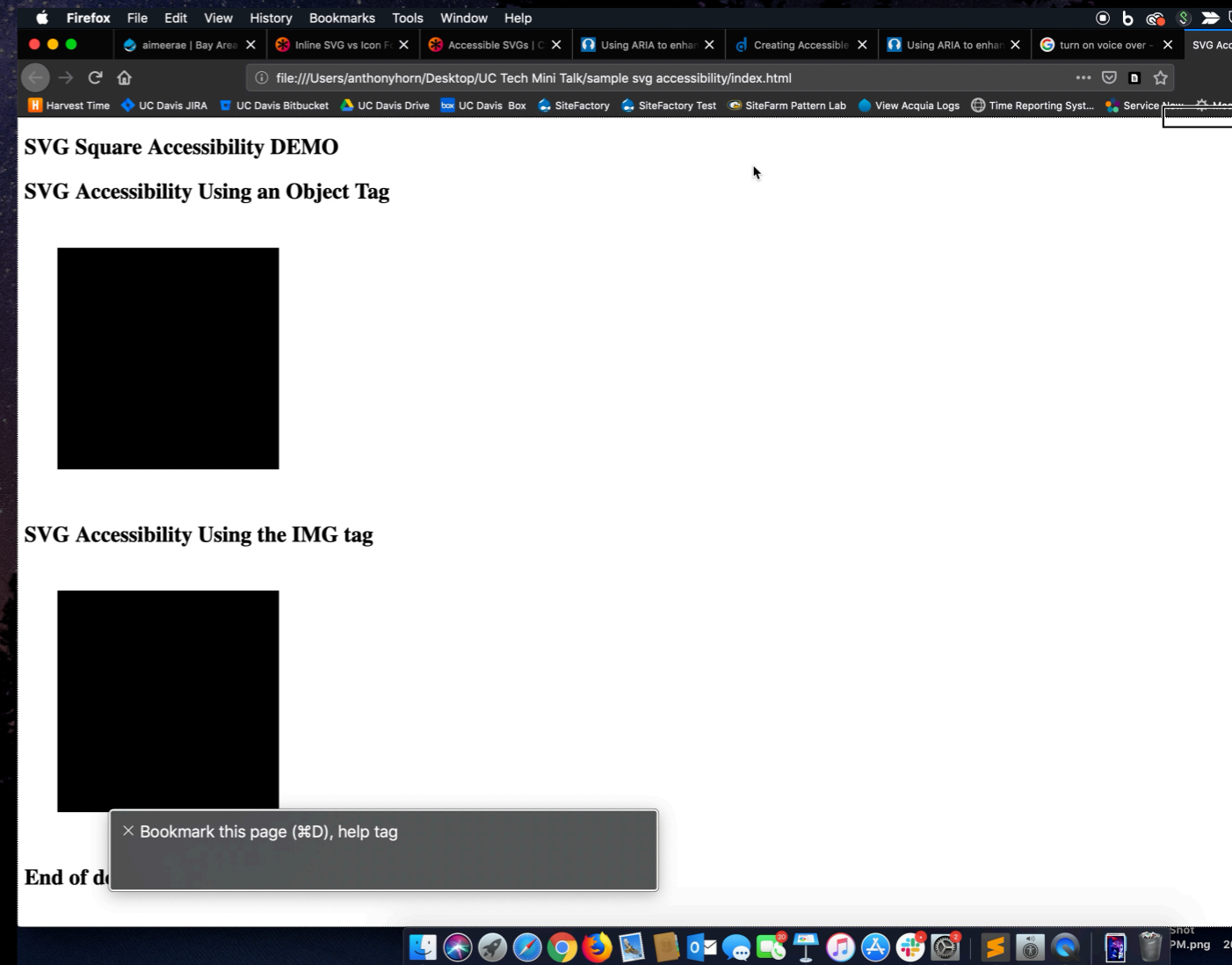
Let's look at a way to add some accessibility to an interactive `<svg>`

index.html

```
<object type="image/svg+xml" data="square.svg"
role="img" aria-labelledby="title desc"
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="square"
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">
<title id="title">My Square</title>
<desc id="desc">Four sides.</desc>
<rect x="60" y="42" width="403"
height="403"></rect>
</svg>
```



# ACCESSIBILITY

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**<img> tag is much more accessible.**

index.html

```

```

**<IMG>** 

# 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				<sup>1</sup> 3-4.3							
<sup>2</sup> 9-10	<sup>2</sup> 12-17	3-66	4-74	3.2-12	10-57	3.2-12.1		4.4-4.4.4	7	12-12.1			<sup>2</sup> 10		4-8
<sup>2</sup> 11	<sup>2</sup> 18	67	75	12.1	58	12.2	all	67	10	46	75	67	<sup>2</sup> 11	11.8	9.2
	76	68-69	76-78	13-TP		13									

Notes Known issues (4) Resources (7) Feedback

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

# SECURITY

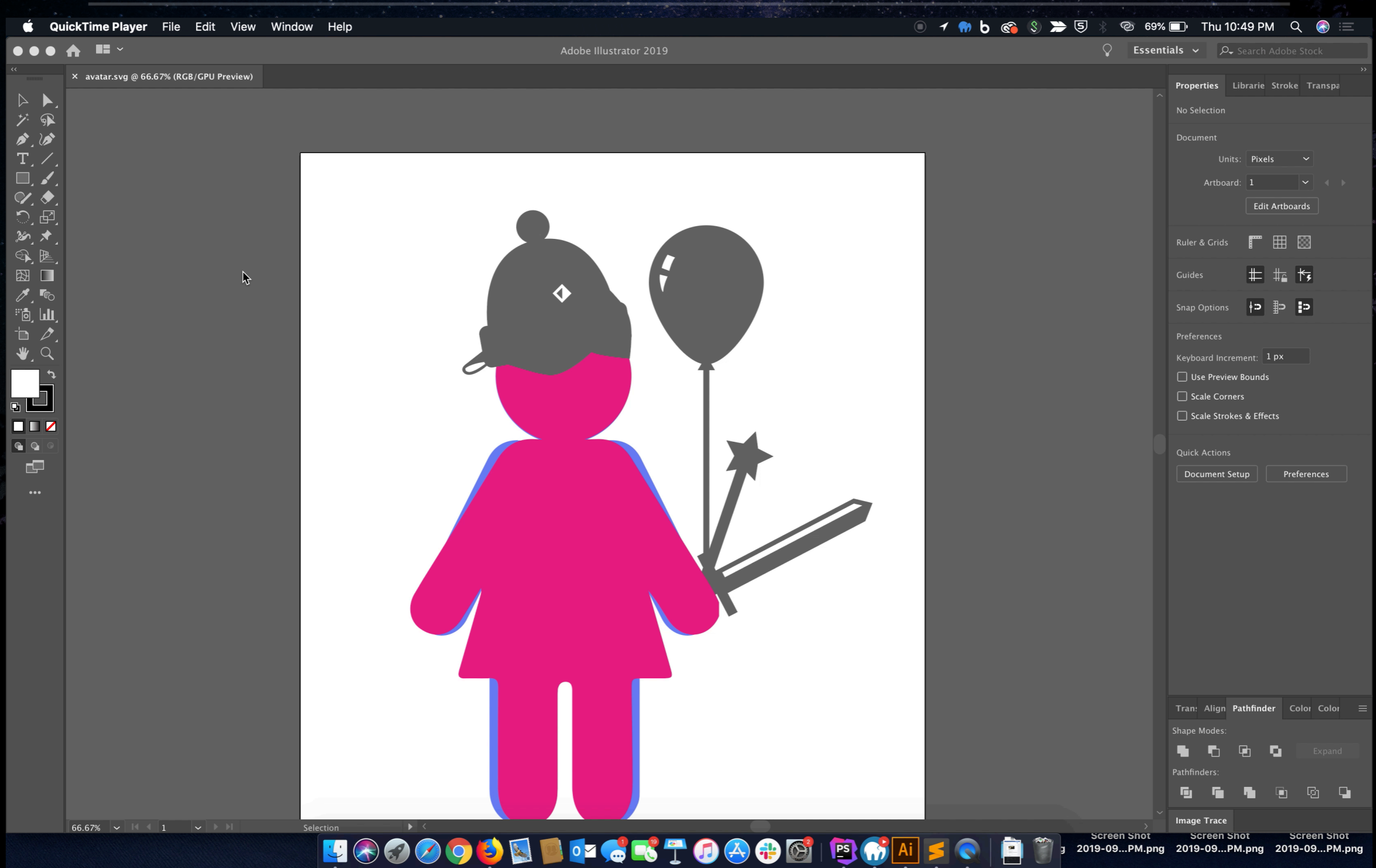
---

**The security concerns are real.**



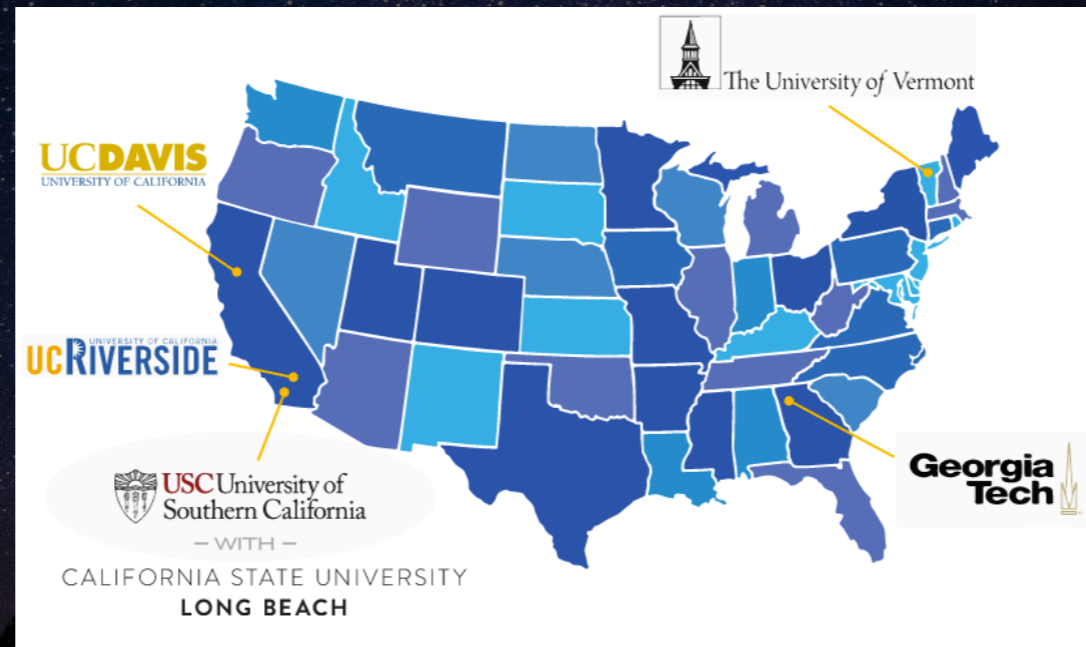
- **Uploading SVG is the concern**
- **JS is the issue**
- **Cross Site Scripting Attacks**

# DRUPAL DEMO TIME



<https://github.com/ahorn-ucd/drupal-avatar>

# 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
- ✓ Gooney Effects

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

← CHECK THEM OUT

# SVG IN ACTION

QuickTime Player File Edit View Window Help

SVG video mask on text SVG Filters on HTML5 Video Snap.svg - Snap Demos SVG Animation Stats animation. Goopy Menu

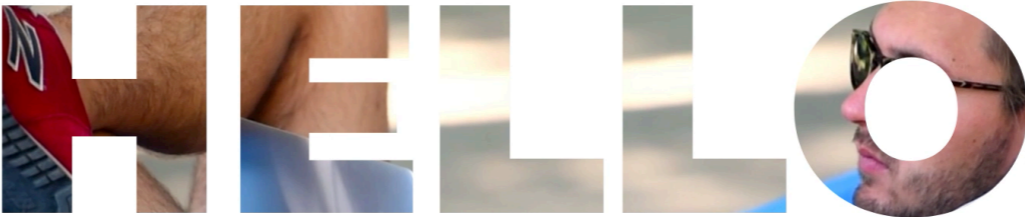
https://codepen.io/SimonEvans/pen/weoLLB

SVG video mask on text A PEN BY Simon Evans

```
HTML
1 <video src="https://www.youtube.com/watch?v=c72986b&profile_id=119" />
2 </video>
3 <svg xmlns="http://www.w3.org/2000/svg" viewBox="0
4 0 285 80" preserveAspectRatio="xMidYMid slice">
5 <defs>
6 <mask id="mask" x="0" y="0" width="100%"
7 height="100%" >
8 <rect x="0" y="0" width="100%" height="100%"
9 />
10 <text x="72" y="50">Hello</text>
11 </mask>
12 </defs>
13 <rect x="0" y="0" width="100%" height="100%" />
14 </svg>
```

```
CSS (SCSS)
14 left: 0;
15 width: 100%;
16 height: 100%;
17
18 text {
19   font-family: 'Montserrat', sans-serif;
20   font-weight: 900;
21   text-transform: uppercase;
22   font-size: 40px;
23 }
24
25 > rect {
26   -webkit-mask: url(#mask);
27   mask: url(#mask);
```

```
JS
1 // Nope
```



Console Assets Comments ⌘ Shortcuts

Microsoft Azure: Containerize apps with Kubernetes in Azu...

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# </PRESENTATION>

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Presentation @ [bit.ly/2oqzEwZ](https://bit.ly/2oqzEwZ)

[#svg](https://drupal.slack.com)