



ИРИНА РУДЕНКО

@RYNARUD

# ТЕМНАЯ СТОРОНА SVG





1SVG ROCKS



# feColorMatrix

- Use "feColorMatrix"
  - Use color transformations
  - And JS to animate this stuff
- 



BUY ITEM

459\$

[codepen.io/rynarud/pen/bVJpwd](https://codepen.io/rynarud/pen/bVJpwd)

**type = "matrix | saturate | hueRotate | luminanceToAlpha"**

Indicates the type of matrix operation. The keyword 'matrix' indicates that a full 5x4 matrix of values will be provided. The other keywords represent complete matrix. If attribute '[type](#)' is not specified, then the effect is as if a value of **matrix** were specified.

[Animatable](#): yes.

**values = "list of <number>s"**

The contents of '[values](#)' depends on the value of attribute '[type](#)':

- For **type="matrix"**, '[values](#)' is a list of 20 matrix values (a00 a01 a02 a03 a04 a10 a11 ... a34), separated by whitespace and/or a comma. For example:

```
type="matrix"
values="1 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 1 0"
```

- For **type="saturate"**, '[values](#)' is a single real number value (0 to 1). A **saturate** operation is equivalent to the following matrix operation:

$$\begin{array}{c|ccccc|c|c} R' & | & 0.213+0.787s & 0.715-0.715s & 0.072-0.072s & 0 & 0 & | & R \\ G' & | & 0.213-0.213s & 0.715+0.285s & 0.072-0.072s & 0 & 0 & | & G \\ B' & = & 0.213-0.213s & 0.715-0.715s & 0.072+0.928s & 0 & 0 & * & B \\ A' & | & 0 & 0 & 0 & 1 & 0 & | & A \\ 1 & | & 0 & 0 & 0 & 0 & 1 & | & 1 \end{array}$$

- For **type="hueRotate"**, '[values](#)' is a single one real number value (degrees). A **hueRotate** operation is equivalent to the following matrix operation:

$$\begin{array}{c|ccccc|c|c} R' & | & a_{00} & a_{01} & a_{02} & 0 & 0 & | & R \\ G' & | & a_{10} & a_{11} & a_{12} & 0 & 0 & | & G \\ B' & = & a_{20} & a_{21} & a_{22} & 0 & 0 & * & B \\ A' & | & 0 & 0 & 0 & 1 & 0 & | & A \\ 1 & | & 0 & 0 & 0 & 0 & 1 & | & 1 \end{array}$$

where the terms a00, a01, etc. are calculated as follows:

```
a00 a01 a02 | [ +0.213 +0.715 +0.072]
a10 a11 a12 | = [ +0.213 +0.715 +0.072] +
a20 a21 a22 | [ +0.213 +0.715 +0.072]
               [ +0.787 -0.715 -0.072]
cos(hueRotate value) * [-0.213 +0.285 -0.072] +
                     [-0.213 -0.715 +0.928]
                     [-0.213 -0.715+0.928]
sin(hueRotate value) * [ +0.143 +0.140-0.283]
                     [-0.787 +0.715+0.072]
```

Thus, the upper left term of the hue matrix turns out to be:

```
.213 + cos(hueRotate value)*.787 - sin(hueRotate value)*.213
```

- For **type="luminanceToAlpha"**, '[values](#)' is not applicable. A **luminanceToAlpha** operation is equivalent to the following matrix operation:

$$\begin{array}{c|ccccc|c|c} R' & | & 0 & 0 & 0 & 0 & 0 & | & R \\ G' & | & 0 & 0 & 0 & 0 & 0 & | & G \\ B' & = & 0 & 0 & 0 & 0 & 0 & * & B \\ A' & | & 0.2125 & 0.7154 & 0.0721 & 0 & 0 & | & A \\ 1 & | & 0 & 0 & 0 & 0 & 1 & | & 1 \end{array}$$

R G B A  
● (200, 60, 100, 1)

<feColorMatrix>

RGBA

RGBA\*

$$\begin{bmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 0.6 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \end{bmatrix} \times \begin{bmatrix} 100 \\ 100 \\ 100 \\ 1 \end{bmatrix} = \begin{bmatrix} 200 \\ 60 \\ 100 \\ 1 \end{bmatrix}$$

x

=

## FILTER PRIMITIVE

---

```
<filter id="matrix">  
  <feColorMatrix color-interpolation-filters="sRGB"  
    values=  
      "1 0 0 0 0  
      0 1 0 0 0  
      0 0 1 0 0  
      0 0 0 1 0">  
</filter>
```



WE ARE PATTI STUDIO

..... SINCE 2008 .....

SERVING WEB DESIGN

SATURATE

Patti Website

by Madalin Tudose

```
<feColorMatrix type="saturate" in="SourceGraphic"  
values="0.4"/>
```

## APPLY FILTER

---

```
<image xlink:href="http://image.png"  
width="520" height="720" filter="url(#matrix)">
```



Fitness Tracking UI Animation

by Tob Siripak

# SVG Doughnut

Animate Gradient



[codepen.io/rynarud/pen/EPYqMJ](https://codepen.io/rynarud/pen/EPYqMJ)

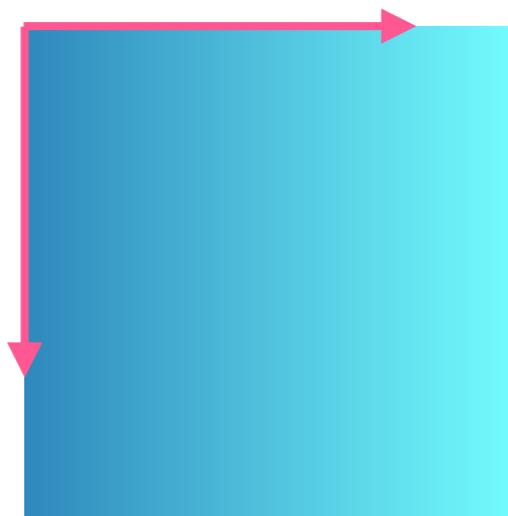
## GRADIENT

---

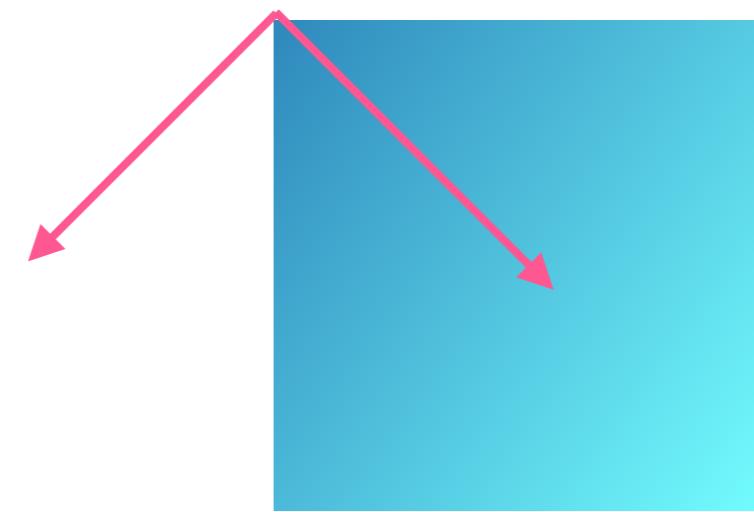
```
<defs>
  <linearGradient id="grad" gradientTransform="rotate(90)">
    <animateTransform attributeName="gradientTransform" />
    ...
    <stop offset="50%" stop-color="#5C6BC0" stop-opacity=".5"></stop>
    <stop offset="50%" stop-color="#1DE9B6"></stop>
  </linearGradient>
</defs>
```

# objectBoundingBox

Initial (0 0 100 0)



Rotate (45 deg)



## ROTATING

---

```
<animateTransform  
    attributeType="XML"  
    type="rotate"  
    values="90;0;-90"  
    fill="freeze"  
    dur="5s"  
    additive="sum"  
>
```

## APPLY GRADIENT TO PATH

---

```
<path id="stat" fill="none" stroke="url(#grad)"  
      stroke-width="20" stroke-linecap="round"  
      d="M77.2 ...134.5" />
```

# SVG Doughnut

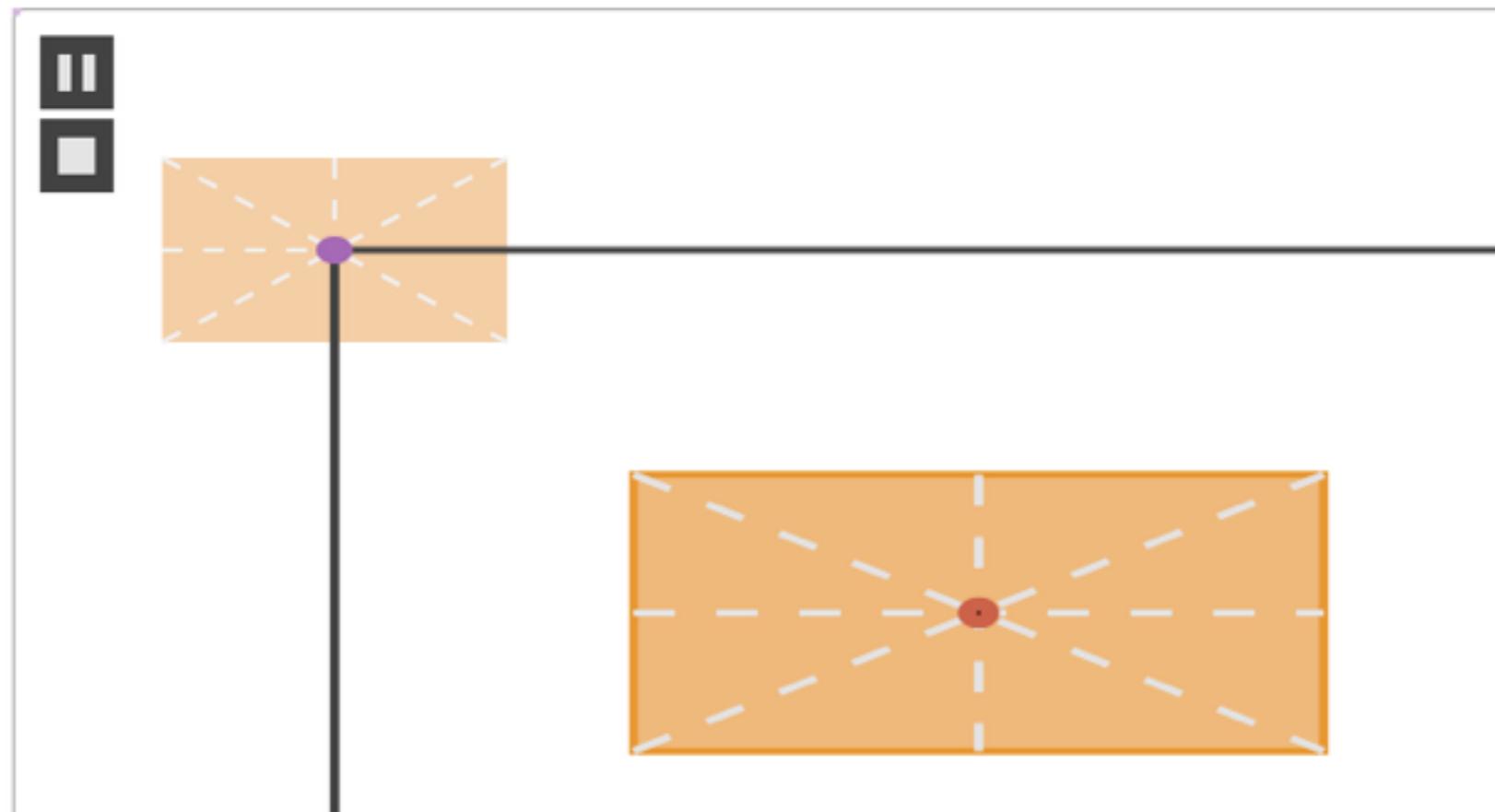
Chaining Animations



[codepen.io/rynarud/pen/dGyjwK](https://codepen.io/rynarud/pen/dGyjwK)

```
<use xlink:href="#label" transform="translate(125,-20)">  
  <animateTransform  
    attributeName="transform"  
    dur="3s" type="scale" additive="sum"  
    values="1 1; 1.5 1.5"  
    fill="freeze" begin="filling.end">  
    </animateTransform>  
</use>
```

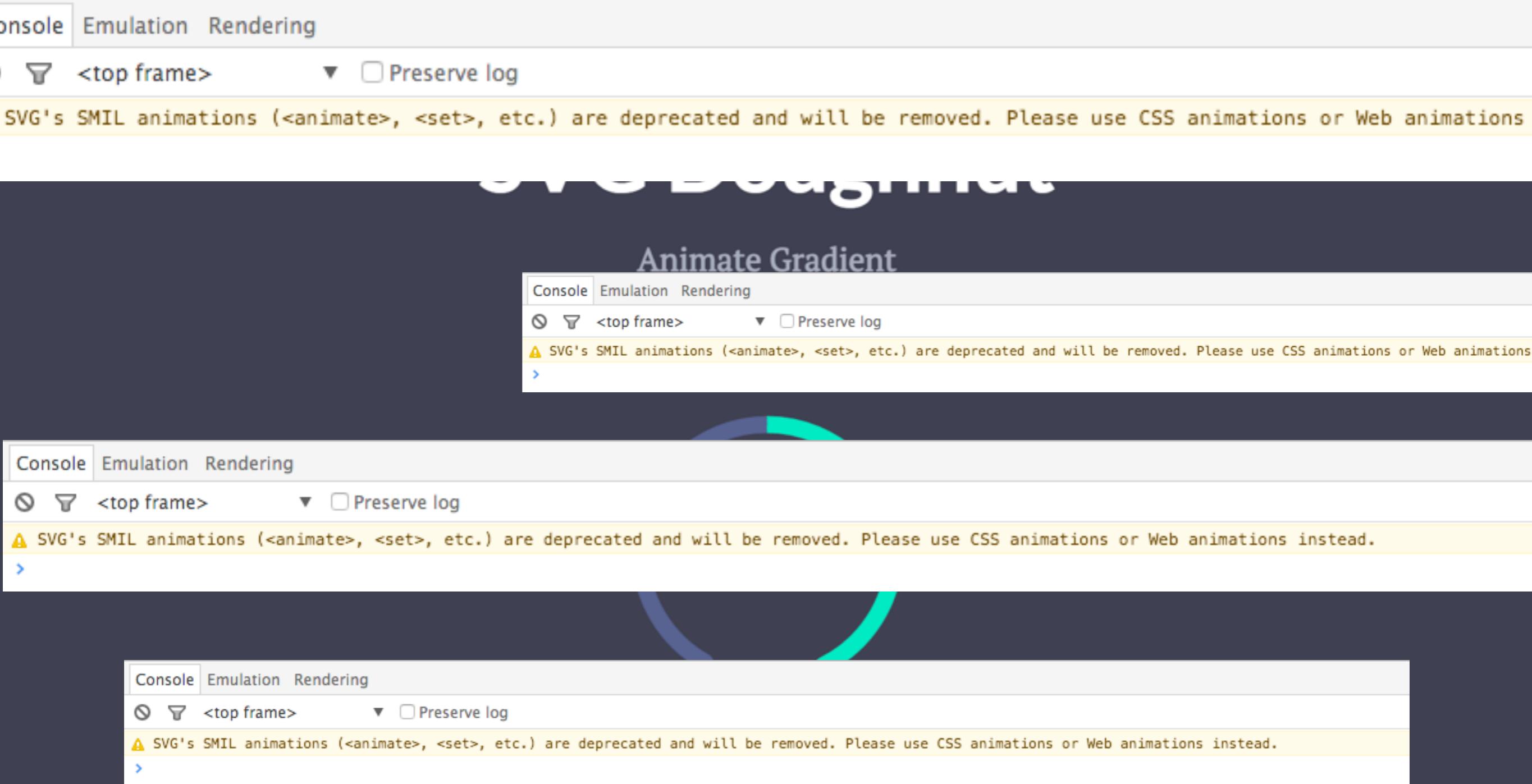
```
<rect transform='translate(140 105) scale(2 1.5)>
```



by Ana Tudor

[codepen.io/thebabydino/full/pvXyOW/](https://codepen.io/thebabydino/full/pvXyOW/)

```
<use xlink:href="#label" transform="translate(125,-20)">  
  <animateTransform  
    attributeName="transform"  
    dur="3s" type="scale" additive="sum"  
    values="1 1; 1.5 1.5"  
    fill="freeze" begin="filling.end">  
  </animateTransform>  
</use>
```



# SVG

```
<circle stroke-dasharray>  
<path id="myPath">  
clip-path=url(#myPath)
```

# CSS

```
transform-origin: 50% 50%;  
transform: rotate(-90deg);  
  
@keyframes {  
}
```



# The Missing Slice

by Lea Verou

[youtube.com/watch?v=s4HdeJctq-A](https://youtube.com/watch?v=s4HdeJctq-A)

2PARTIAL BLUR



# Moby

Played 234 046 times



## ПРОБЛЕМА

Кроссбраузерность

Не дублировать картинки (*sic!*)

## 1. PARTIAL BLUR

---

CSS

`filter: blur();`

## 1. PARTIAL BLUR

---

### CSS

Desktop		Mobile					
Feature		Chrome	Firefox (Gecko)	Internet Explorer	Opera	Safari (WebKit)	
Basic support		18.0 [1]	-webkit	35 (35) <sup>[2]</sup>	Not supported <sup>[3]</sup>	15.0 -webkit	6.0 -webkit
On SVG Elements		Not supported <sup>[4]</sup>	35 (35)	Not supported	Not supported	Not supported	

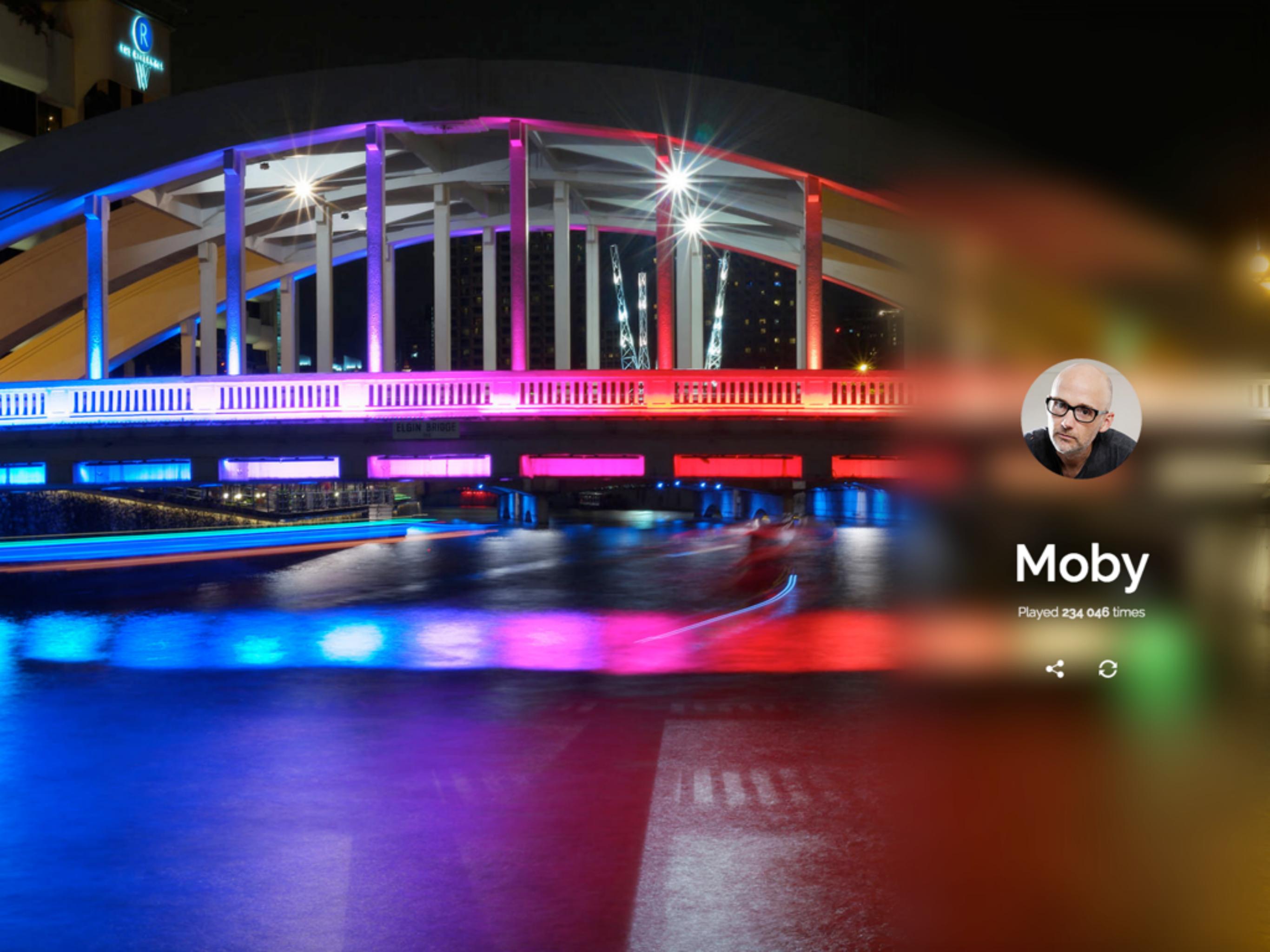
## 1. PARTIAL BLUR

---

CSS

Кросбраузерность

Не дублировать картинки (sic!)



# Moby

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## 1. PARTIAL BLUR

---

CSS

backdrop-filter: blur()

## 1. PARTIAL BLUR

---

CSS

backdrop-filter: blur()



# Moby

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**SVG**



43+



15+



41+



8+



10+

## ЧТО ЕСТЬ

<feBlend>  
<feColorMatrix>  
<feComponentTransfer>  
<feComposite>  
<feGaussianBlur>  
<feOffset>  
<feMerge>

...

## ЧТО ПРИГОДИТСЯ

<feBlend>

<feColorMatrix>

<feComponentTransfer>

<feComposite>

<feGaussianBlur>

<feOffset>

feMerge

## PARTIAL BLUR

---

```
<filter id="blur">
  <feGaussianBlur
    color-interpolation-filters="sRGB"
    stdDeviation="20" />
  <feOffset
    width="480"
    x="1440" />
  <feComponentTransfer>
    <feFuncA tableValues="1 1" type="discrete" />
  <feComposite in2="SourceGraphic" operator="atop"/>
</filter>
```



# Moby

Played 234 046 times



## PARTIAL BLUR

---

```
<image filter="url(#blur)"  
       width="100%"  
       height="100%"  
       xlink:href="image.jpg">
```



# Moby

Played 234 046 times



[CODEPEN.IO/RYNARUD/PEN/NGQXPG](https://codepen.io/rynarud/pen/NGQXPG)

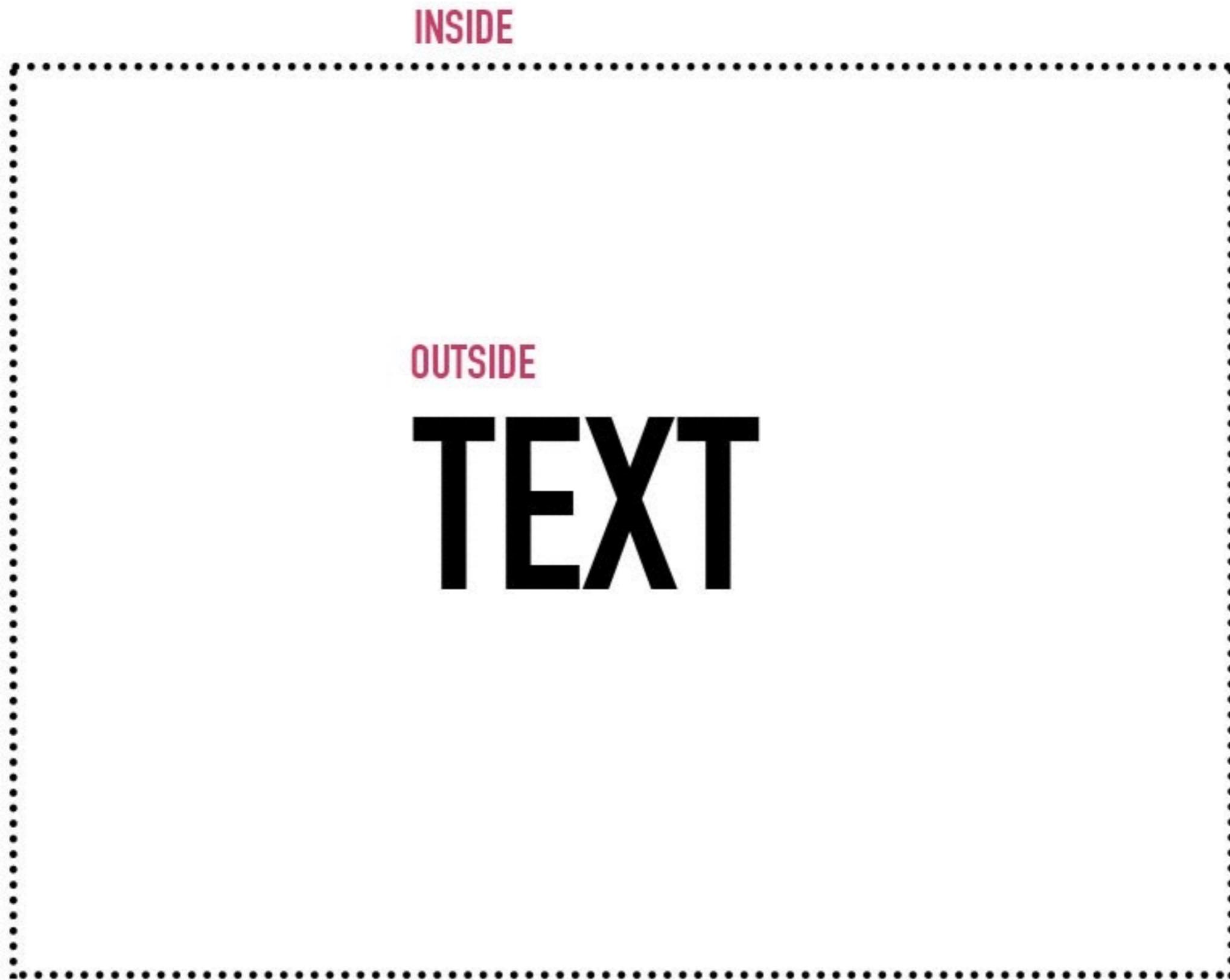
# 2SVG MASK

Introducing

# SVG MASK

## 2. SVG MASK

---



## 2. SVG MASK

---

```
<div class="wrapper">  
  <svg width="100%" height="100%">  
    <defs>  
      <linearGradient></linearGradient>  
      ...  
      <mask></mask>  
    </defs>  
    <rect width="100%" height="100%"  
          fill="url(#gradient)" fill-opacity="0.75"  
          mask="url(#mask)"/>  
  </svg>  
</div>
```

## 2. SVG MASK

---

```
<mask id="mask">  
  <rect width="100%" height="100%" fill="#fff"/>  
  <text x="10%" y="0" font-size="17em"  
        font-weight="800" dy="1em">SVG MASK</text>  
</mask>
```



# Introducing

## 2. SVG MASK

---

```
<path id="outside"  
d="M50,8 50,100... " />
```

[CODEPEN.IO/RYNARUD/PEN/GPYAWV](https://codepen.io/rynarud/pen/gPYAWv)

# 3RAIN

# 1. SVG only

```
<ellipse id="drop" cx="70" cy="70" rx="4" ry="5"  
filter="url(#dropBlur)" fill="url(#dropGradient)" />  
  
<use xlink:href="#drop" transform="translate(800, 0)" />
```

# 1. SVG only

```
<animateMotion dur="3s" repeatCount="indefinite"
  keySplines="0.1 0.8 0.2 1" id="dropMotion"
  fill="freeze">
  <mpath xlink:href="#dropPath" />
</animateMotion>
```

## 2. Handlebars + JS on Back End

OH, my bad

### **3. Ambient Light Sensor API**

[CODEPEN.IO/RYNARUD/PEN/OBGYGX](https://codepen.io/rynarud/pen/OBGYgX)

# CSS Motion Path

<motion-path> && <motion-offset> && <motion-rotation>



@RYNARUD

