

ИРИНА РУДЕНКО

@RYNARUD

# ТЕМНАЯ СТОРОНА SVG







1 SVG 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 ex

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

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

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

$$\begin{bmatrix} R' \\ G' \\ B' \\ A' \\ 1 \end{bmatrix} = \begin{bmatrix} a00 & a01 & a02 & 0 & 0 \\ a10 & a11 & a12 & 0 & 0 \\ a20 & a21 & a22 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} * \begin{bmatrix} R \\ G \\ B \\ A \\ 1 \end{bmatrix}$$

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:

$$\begin{bmatrix} R' \\ G' \\ B' \\ A' \\ 1 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0.2125 & 0.7154 & 0.0721 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} * \begin{bmatrix} R \\ G \\ B \\ A \\ 1 \end{bmatrix}$$

R G B A

 (200, 60, 100, 1)

<feColorMatrix>

RGBA

RGBA\*

$$\begin{bmatrix} 2 & 0 & 0 & 0 & 0 \\ 0 & 0.6 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \end{bmatrix}$$

x

$$\begin{bmatrix} 100 \\ 100 \\ 100 \\ 1 \end{bmatrix}$$

=

$$\begin{bmatrix} 200 \\ 60 \\ 100 \\ 1 \end{bmatrix}$$

## 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"/>
```

```
<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>
```

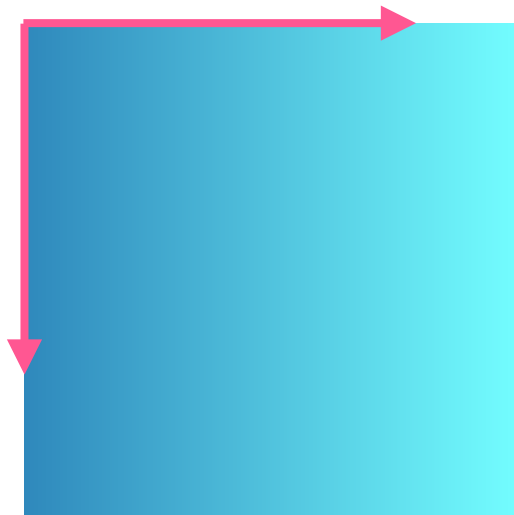
```
    <stop offset="50%" stop-color="#1DE9B6"></stop> </
```

```
linearGradient>
```

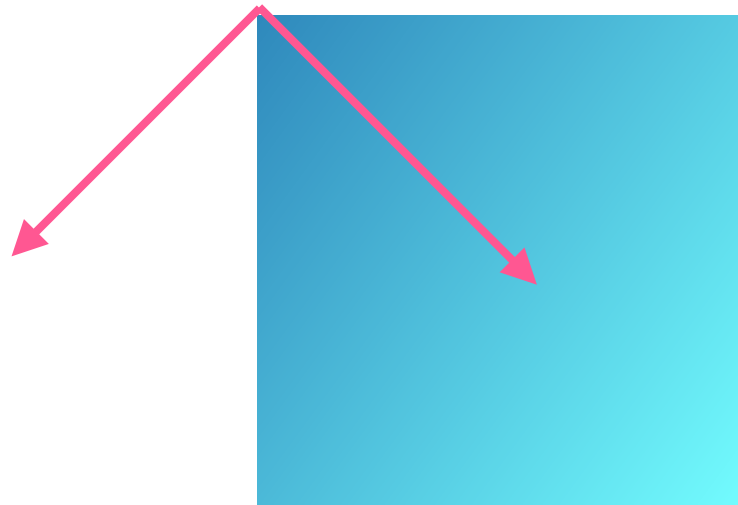
```
</defs>
```

# objectBoundingBox

Initial (0 0 100 0)



Rotate (45 deg)



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

## 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

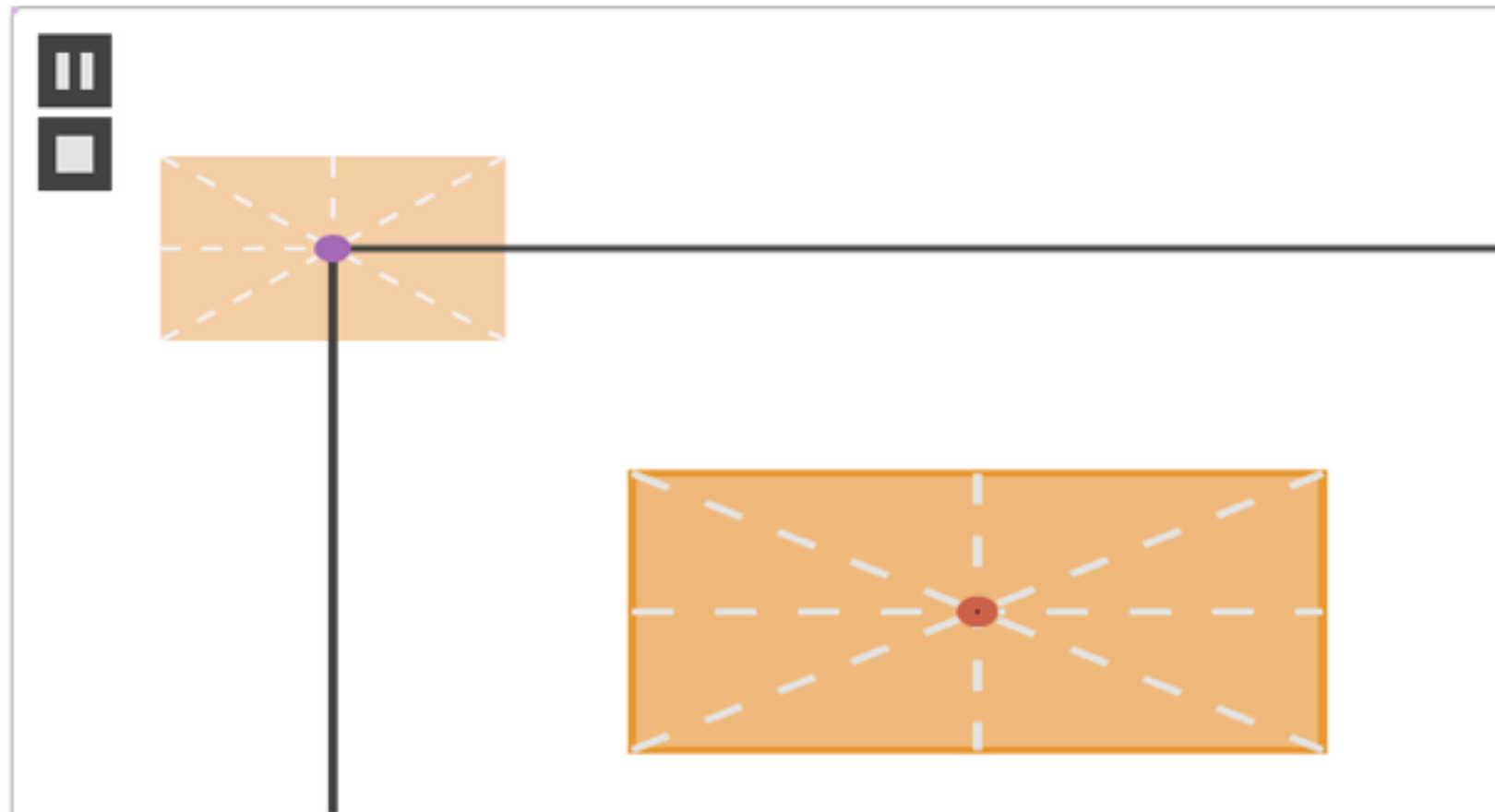
Chaining Animations



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

```
<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>
```

onsoleEmulationRendering




 <top frame>  ☐ Preserve log


SVG's SMIL animations (<animate>, <set>, etc.) are deprecated and will be removed. Please use CSS animations or Web animations

# SVG Design

## Animate Gradient




ConsoleEmulationRendering


  <top frame>  ☐ Preserve log

 SVG's SMIL animations (<animate>, <set>, etc.) are deprecated and will be removed. Please use CSS animations or Web animations

>




ConsoleEmulationRendering


  <top frame>  ☐ Preserve log

 SVG's SMIL animations (<animate>, <set>, etc.) are deprecated and will be removed. Please use CSS animations or Web animations instead.

>

ConsoleEmulationRendering

  <top frame>  ☐ Preserve log

 SVG's SMIL animations (<animate>, <set>, etc.) are deprecated and will be removed. Please use CSS animations or Web animations instead.

>

# 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

---

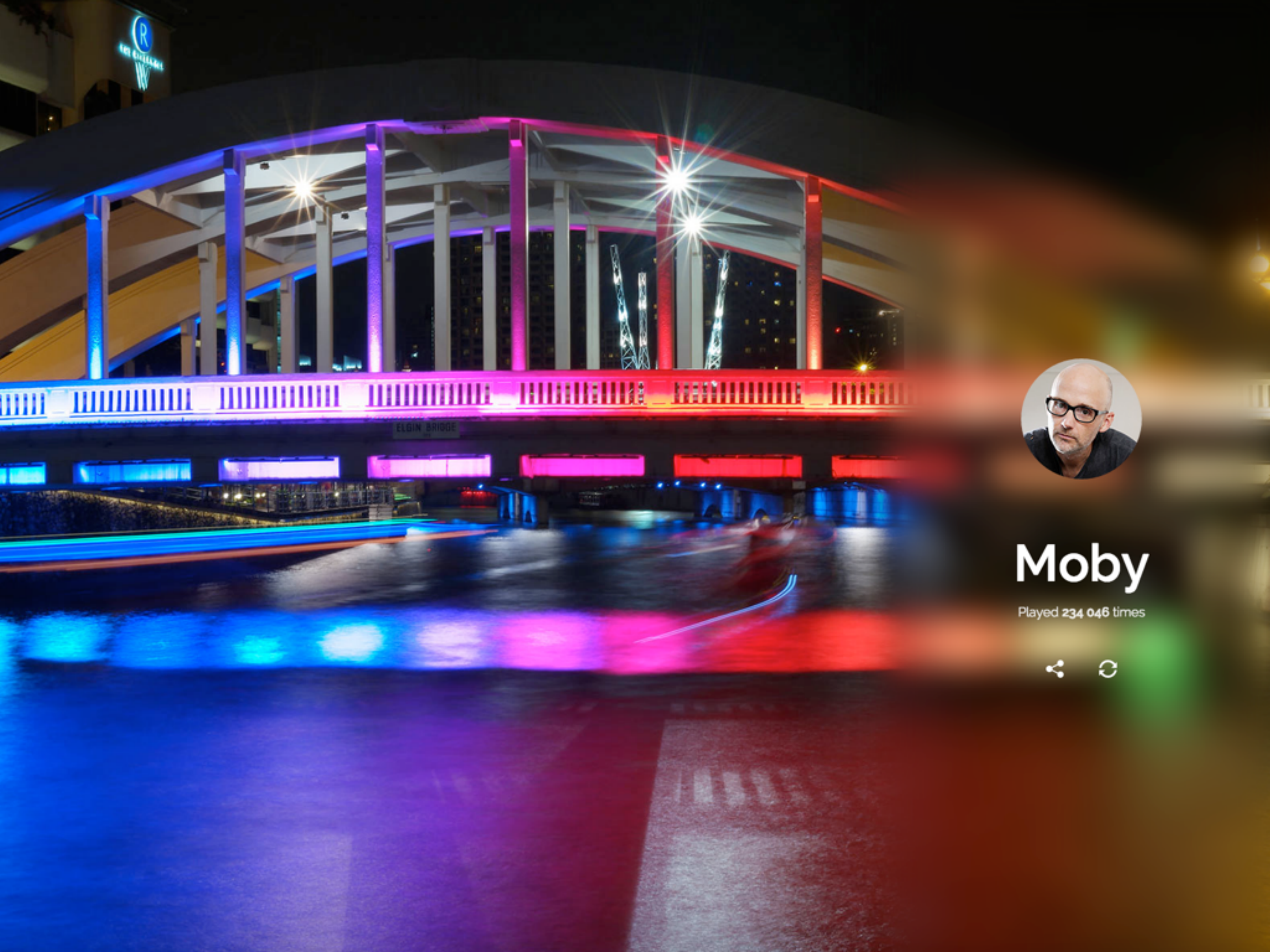
# CSS

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

# CSS

~~Кроссбраузерность~~

~~Не дублировать картинки (sic!)~~



Moby

Played 234 046 times



## 1. PARTIAL BLUR

---

CSS

`backdrop-filter: blur();`

## 1. PARTIAL BLUR

---

CSS

`backdrop-filter: blur();`





Moby

Played 234 046 times



SVG



43+



15+



41+



8+



10+



## ЧТО ЕСТЬ

<feBlend>

<feColorMatrix>

<feComponentTransfer>

<feComposite>

<feGaussianBlur>

<feOffset>

<feMerge>

...

## ЧТО ПРИГОДИТСЯ

<feBlend>

<feColorMatrix>

<feComponentTransfer>

<feComposite>

<feGaussianBlur>

<feOffset>

feMerge

```
<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



```
<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



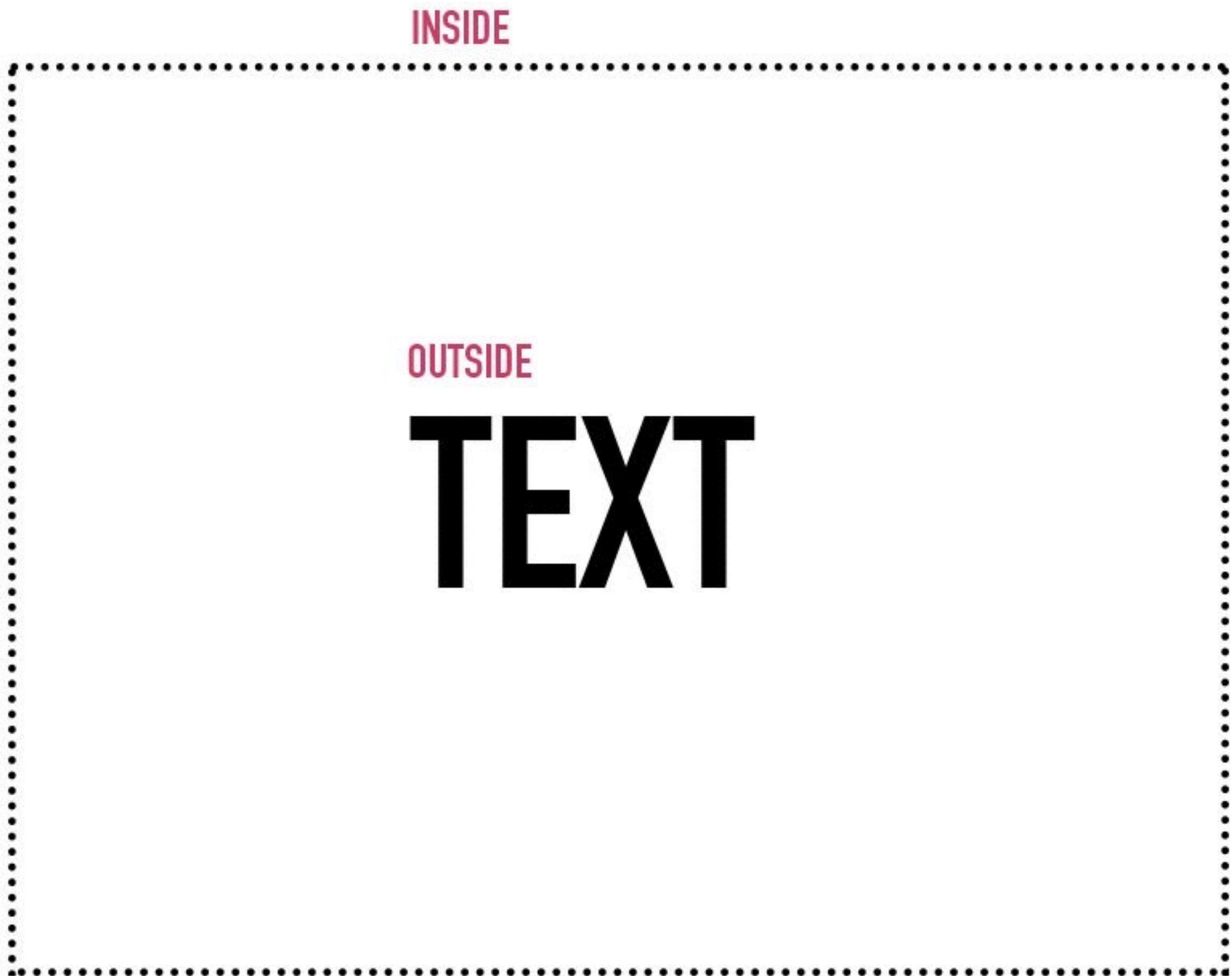
Introducing

# 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>
```



Introducción



## 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

