

# Practical CSS Transforms

Jing Jin

Co-founder, Konsult

[jing@konsu.it](mailto:jing@konsu.it)

[github.com/jingidy/practical-css-transforms-2014](https://github.com/jingidy/practical-css-transforms-2014)

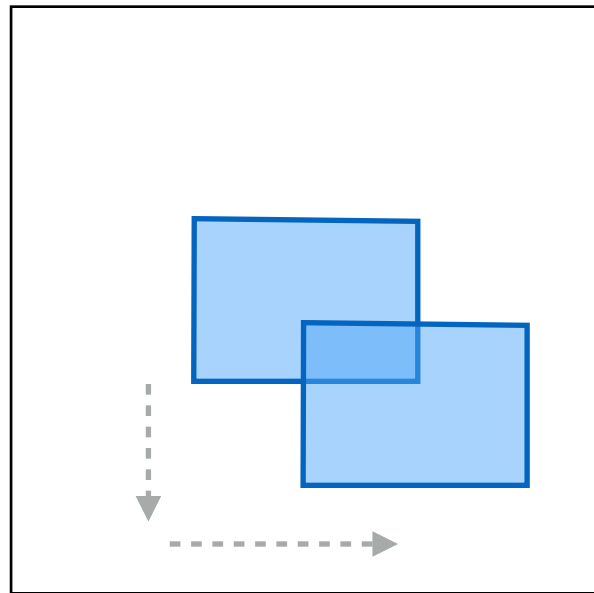
What  
Support  
Benefits  
Code!  
Gotchas

What

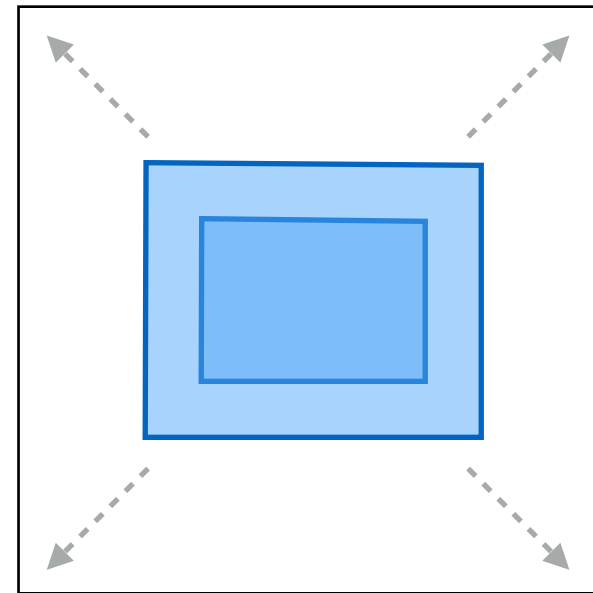
2D & 3D

2D

translate

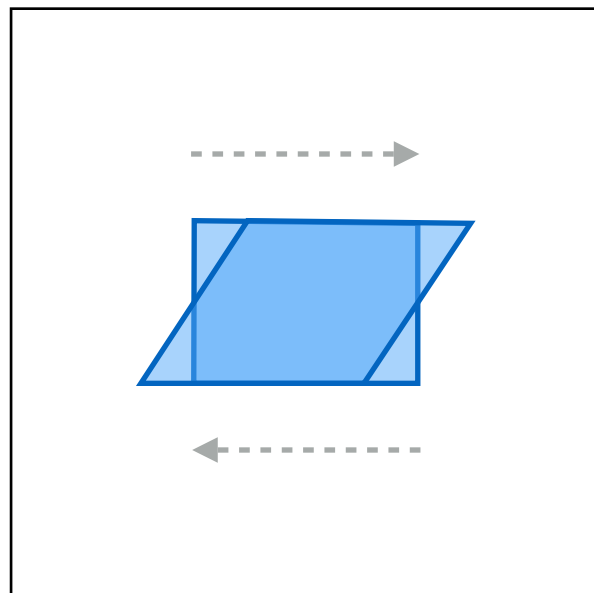


scale

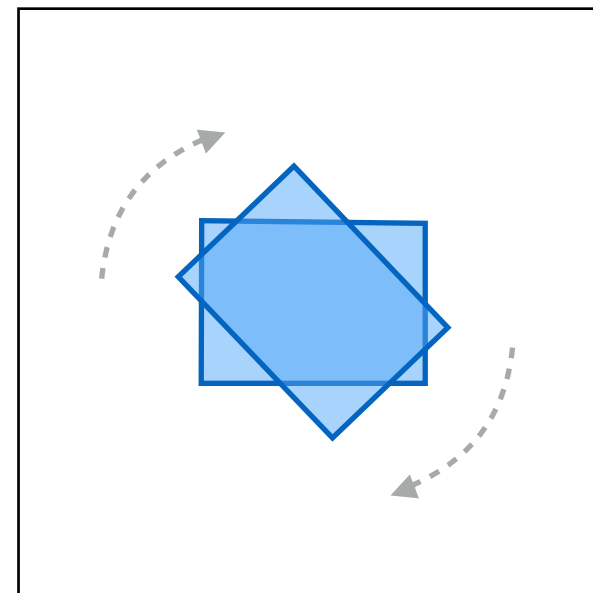


2D

skew



rotate



# The Simpsons in CSS

Below are some Simpsons characters made in pure CSS - Made by [Chris Pattle](#).

(Best viewed in Chrome)

[View on Github](#)

[Follow me on Twitter](#)



**Homer**

[View CSS](#)



**Bart**

[View CSS](#)



**Marge**

[View CSS](#)



**Lisa**

[View CSS](#)





parallax.js

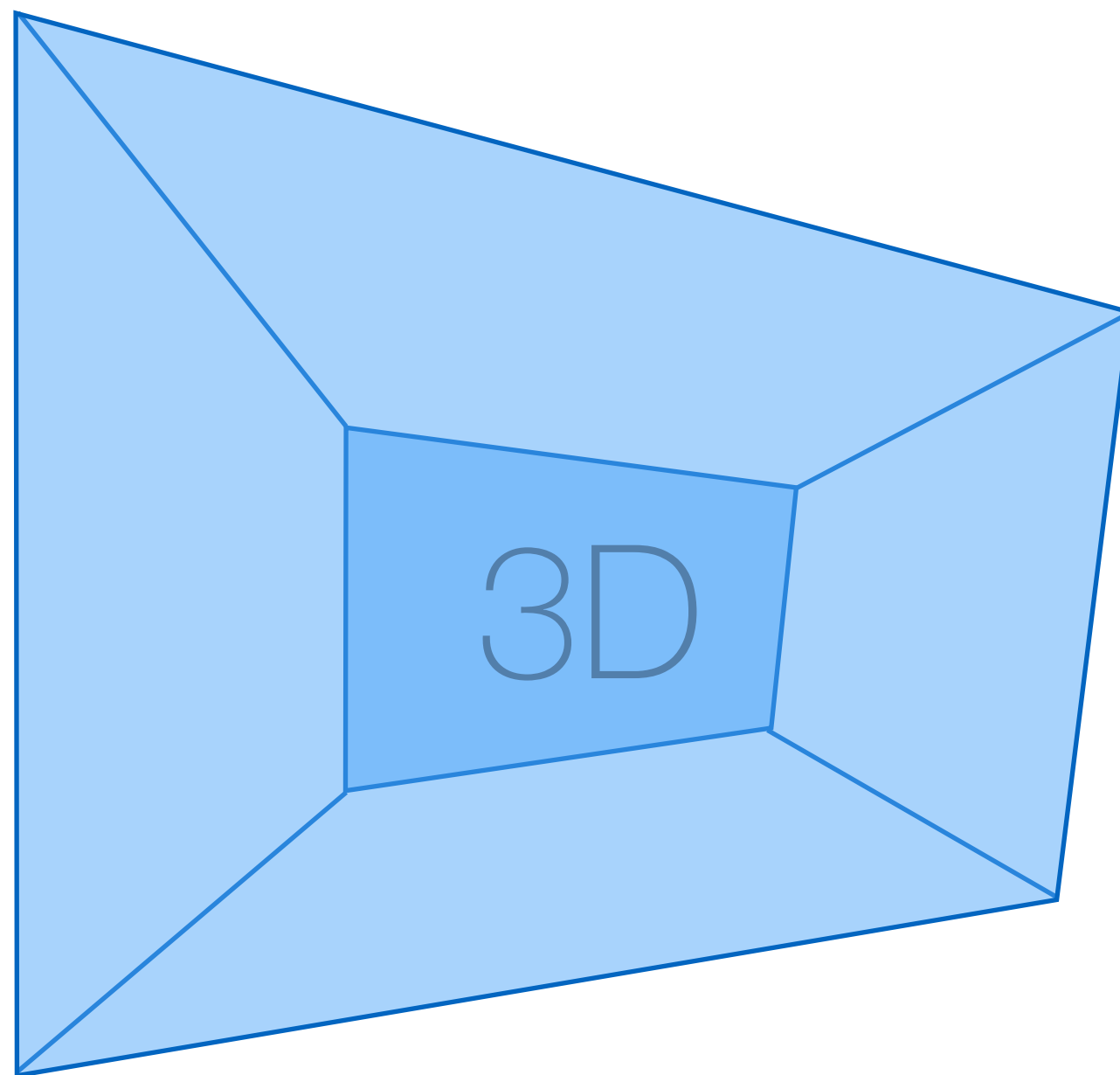


<http://matthew.wagerfield.com/parallax/>

 Like 433

 Tweet 5,452

3D





# Transitions

Cube  
Rotate In  
Horizontal Flip  
Multi-Flip  
Dissolve  
Unfold  
Toss  
Slide In  
Iris  
Fade Through



Watch it again



Explore the gallery



CREATIVE  
SANDBOX by Google

Add us on

g+1

Like

2k



SHARE

FWB THE CUTTING  
EDGE AWARD

# WELCOME TO THE DIGITAL CREATIVITY VILLAGE.

CLICK. DRAG. PULL.  
FIND NEW CREATIVE OPPORTUNITIES FROM GOOGLE



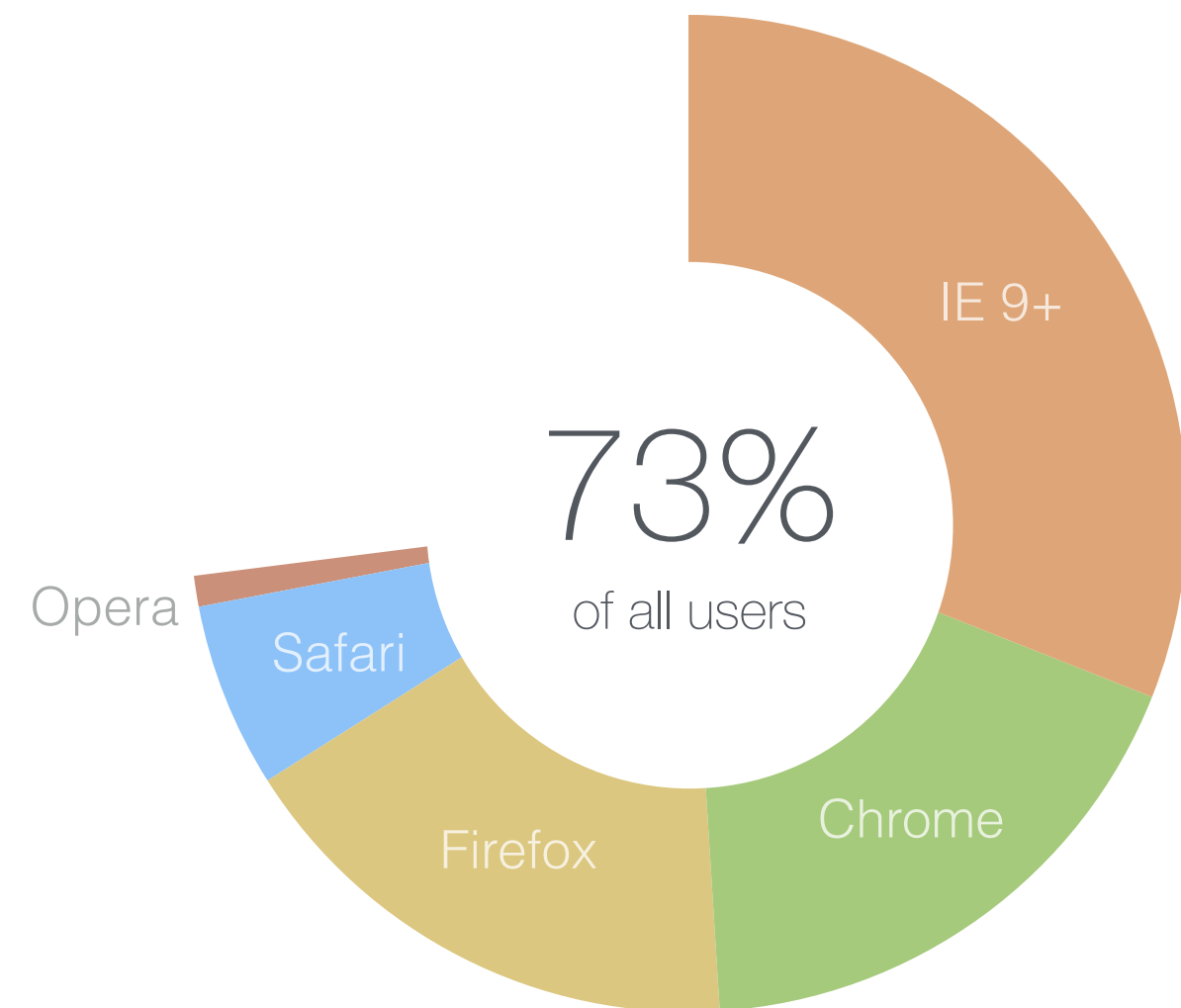
<http://www.creativesandbox.com/guidebook>



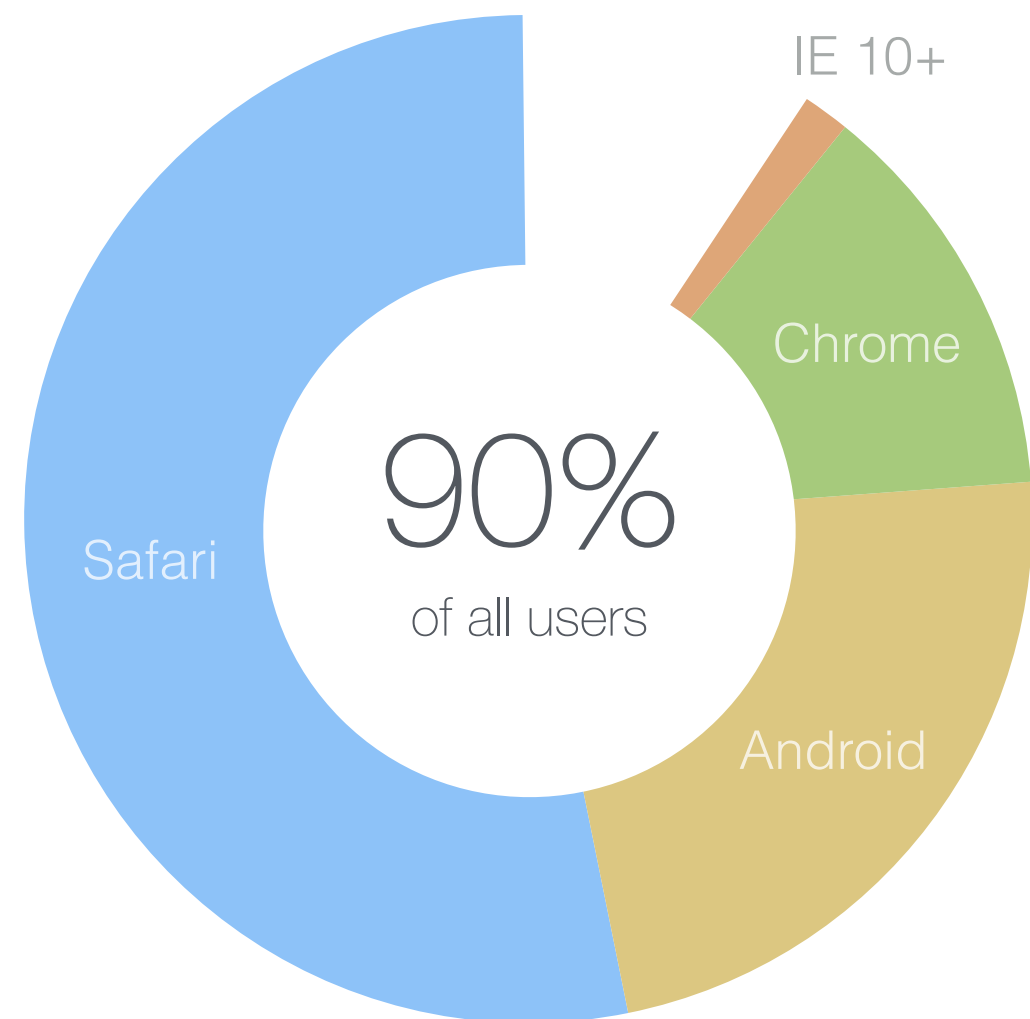
# Browser Support

# 2D Transform Support

Desktop

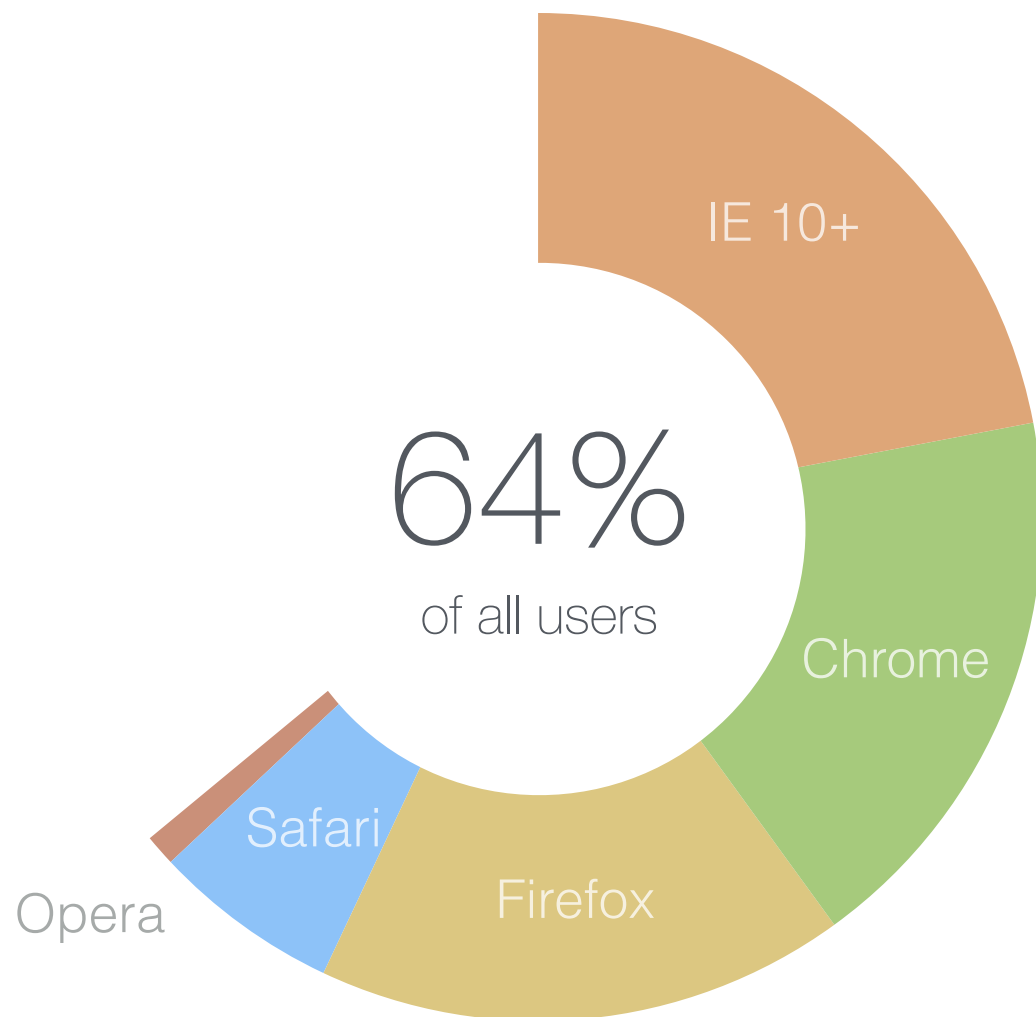


Mobile

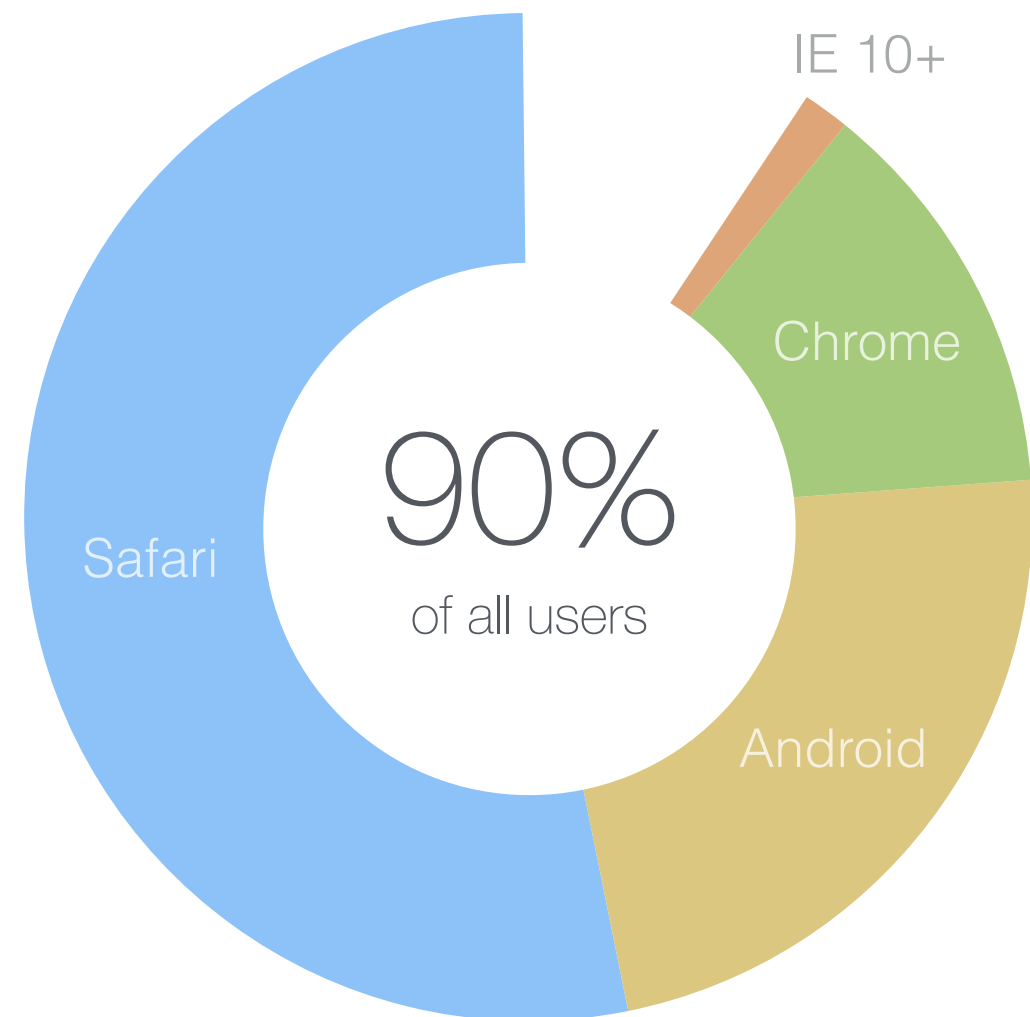


# 3D Transform Support

Desktop



Mobile





# 3D Transform Support

Rule of thumb: use with graceful degradation

Benefits

Resolution Independent

2x Image

Send Message

1x

Send Message

2x Transforms

Send Message

# Smooth Animations

```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

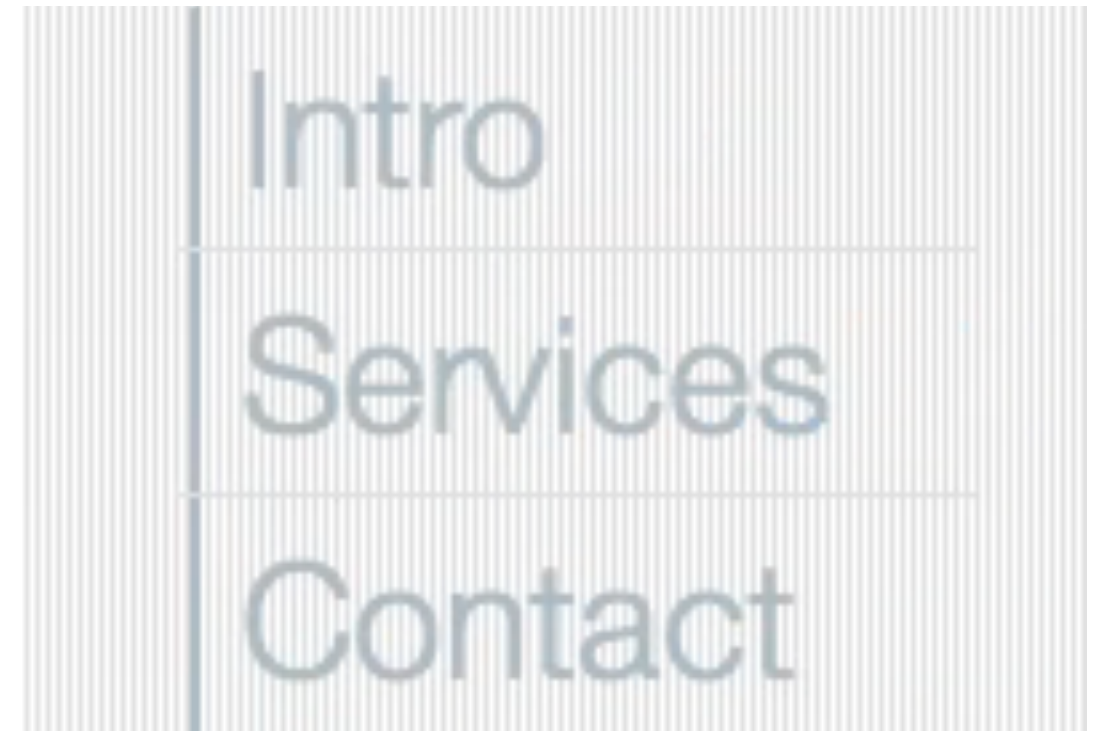
```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```

```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

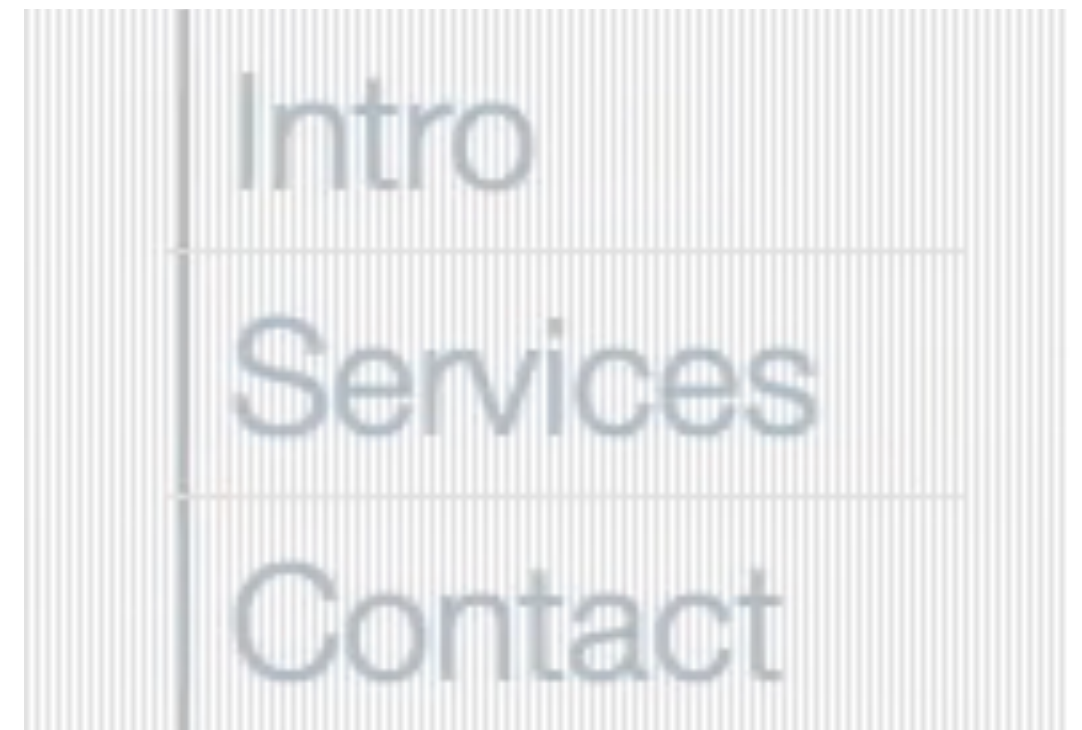
```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```



Snapped to pixel boundaries



Sub-pixel interpolation

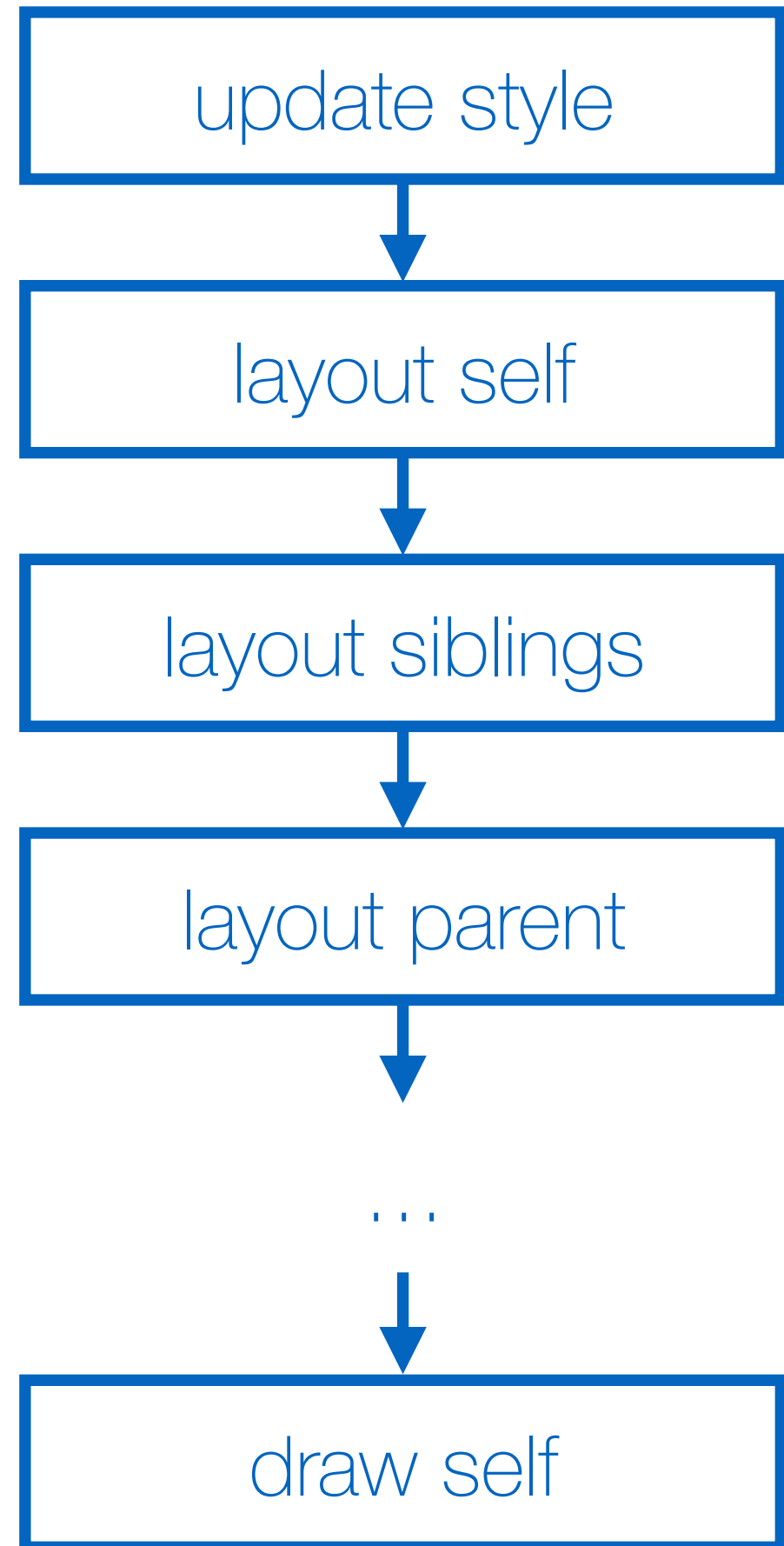


```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```

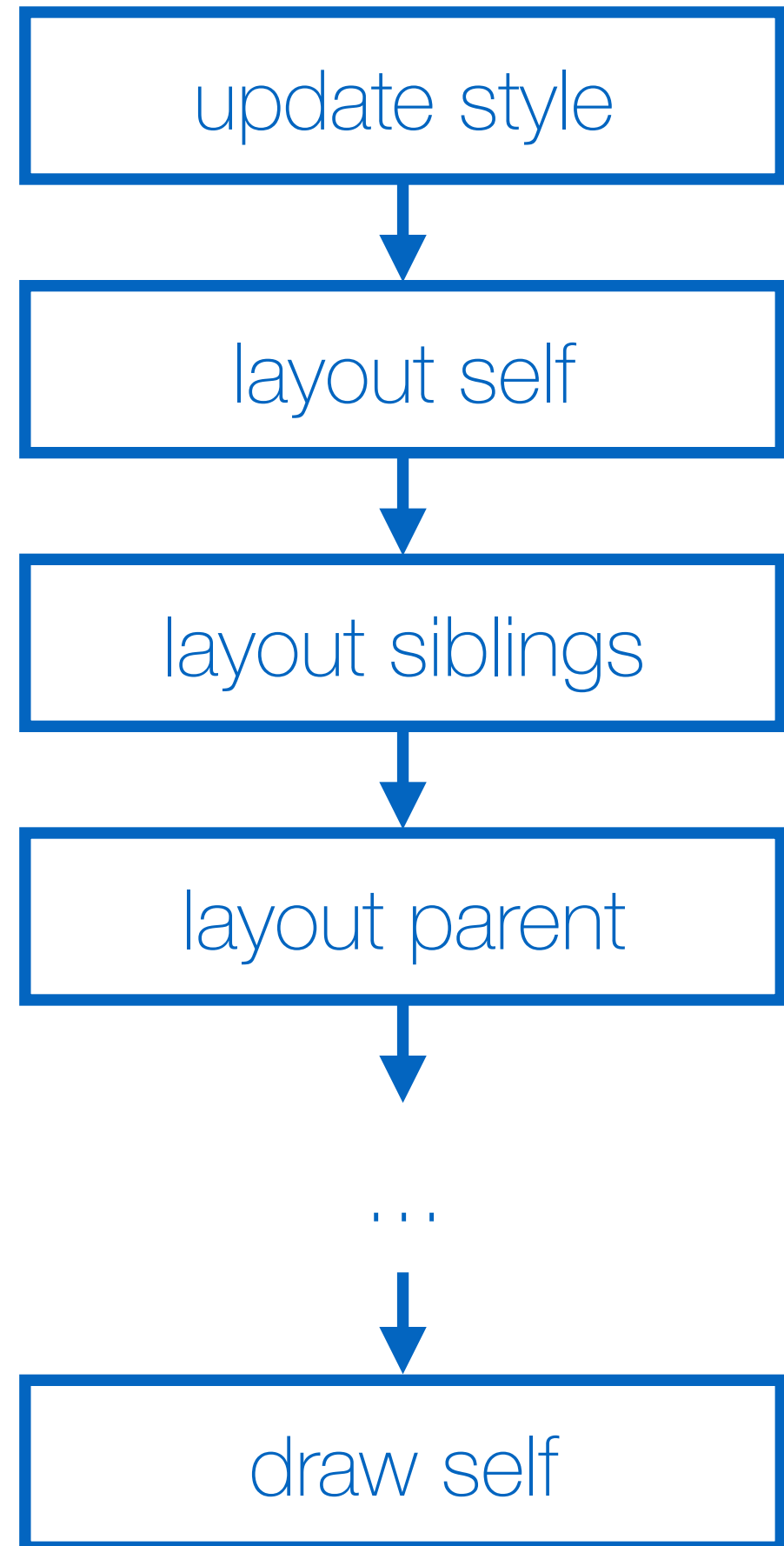
```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```



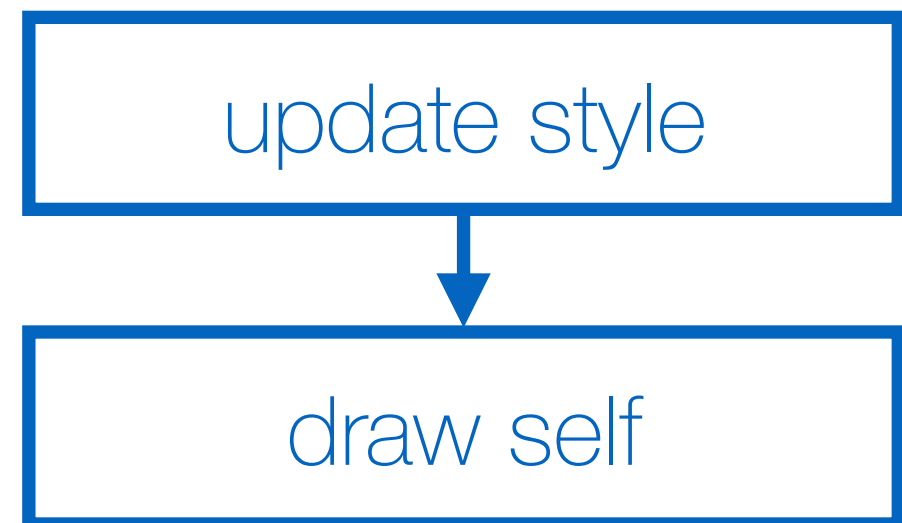
```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```



```
@keyframes pos {  
  0% {  
    left: 0;  
  }  
  100% {  
    left: 50px;  
  }  
}
```

```
@keyframes trans {  
  0% {  
    transform: none;  
  }  
  100% {  
    transform:  
      translateX(50px);  
  }  
}
```



```
@keyframes pos {
```

```
  0% {  
    left: 0;  
  }
```

```
  100% {  
    left: 50px;  
  }
```

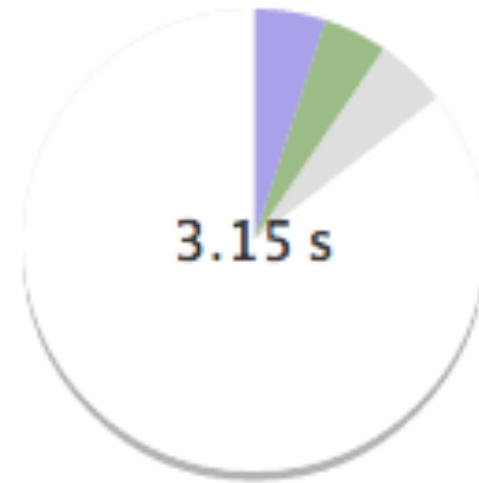
```
}
```

```
@keyframes trans {
```

```
  0% {  
    transform: none;  
  }
```

```
  100% {  
    transform:  
      translateX(50px);  
  }
```

```
}
```

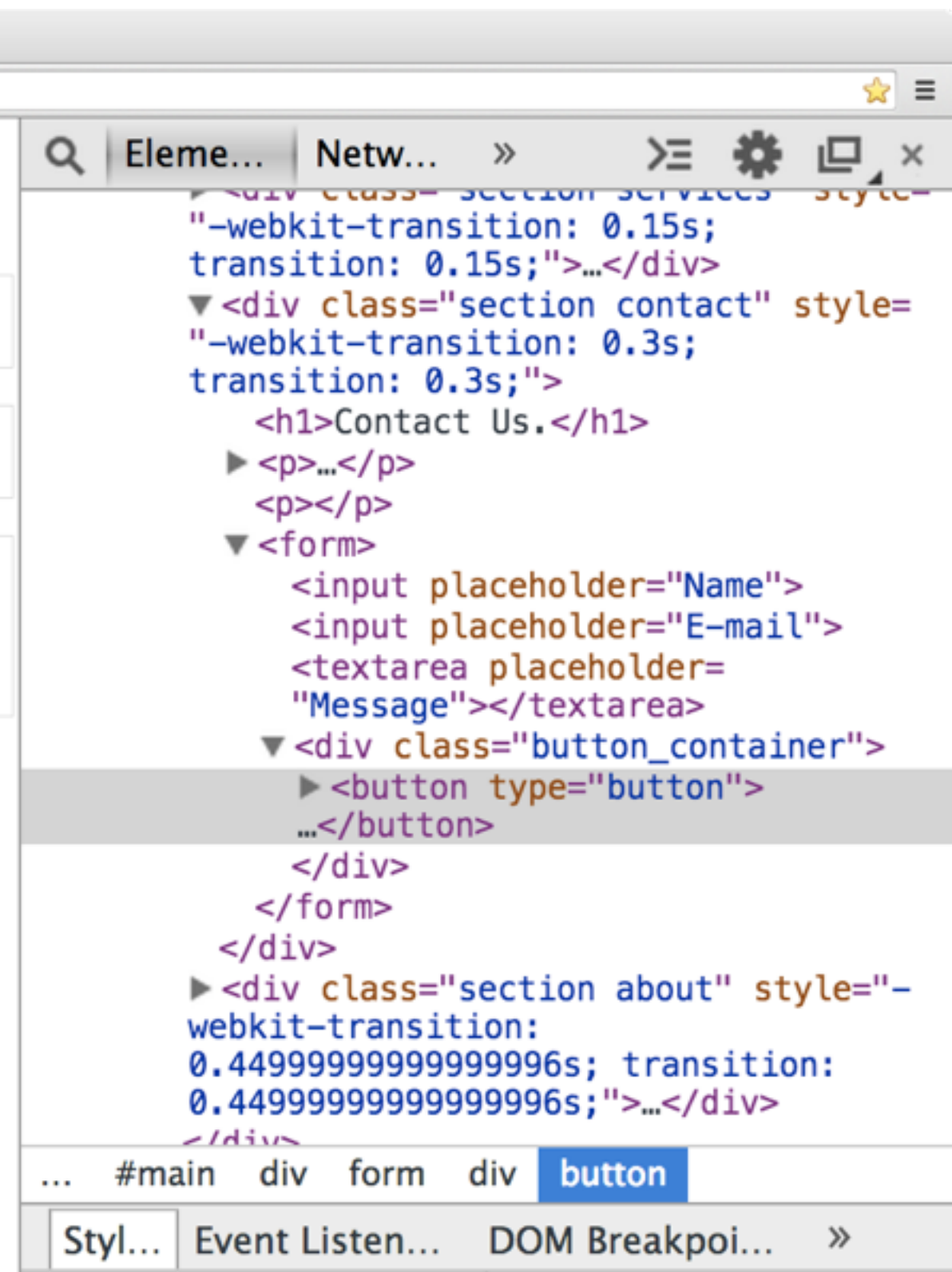
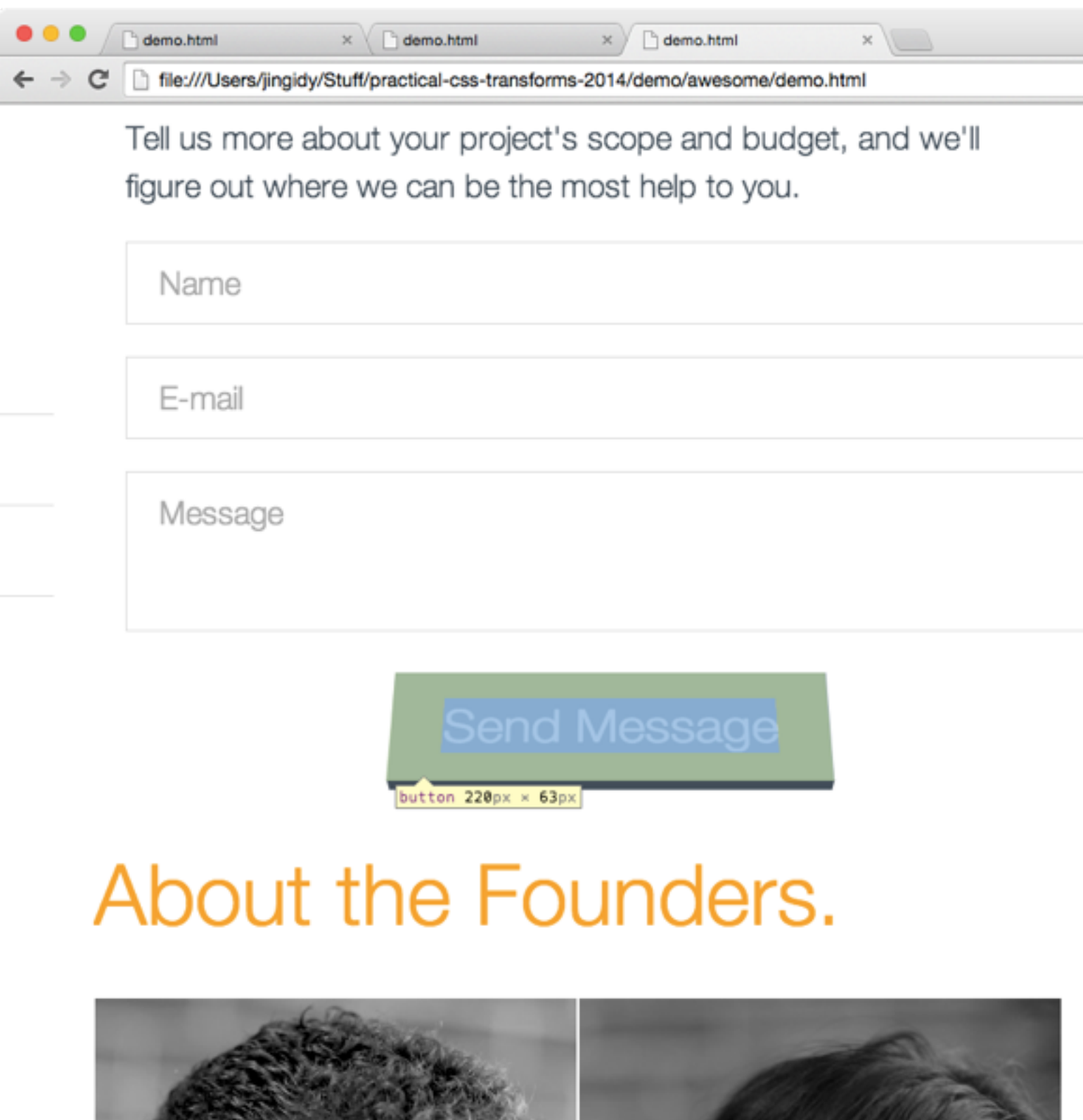


157.934 ms Rendering  
141.581 ms Painting  
157.215 ms Other  
2.70 s Idle



8.415 ms Scripting  
2.198 ms Rendering  
3.350 ms Painting  
15.885 ms Other  
3.12 s Idle

# Hit-testing & Accessibility



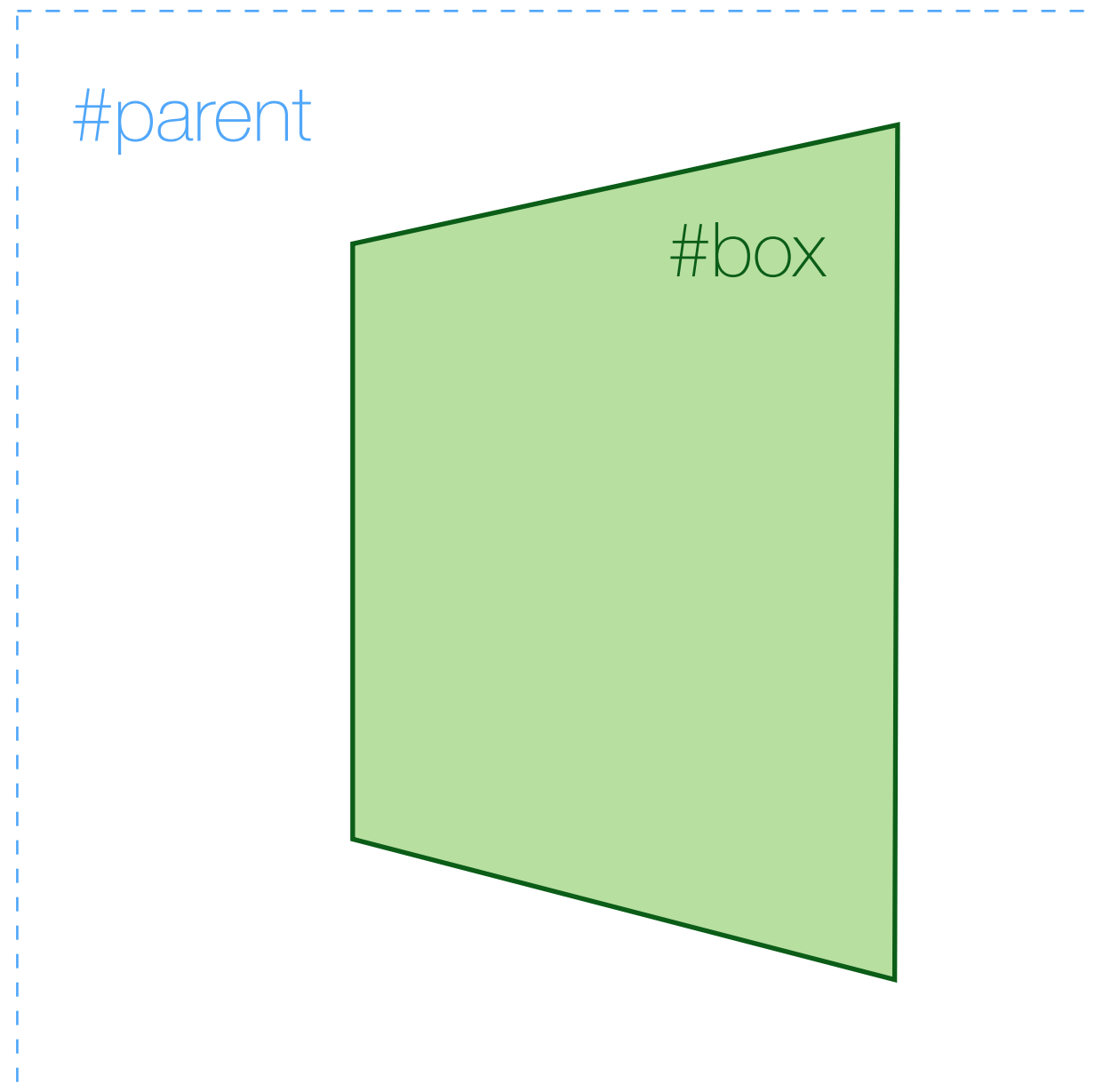


# Why

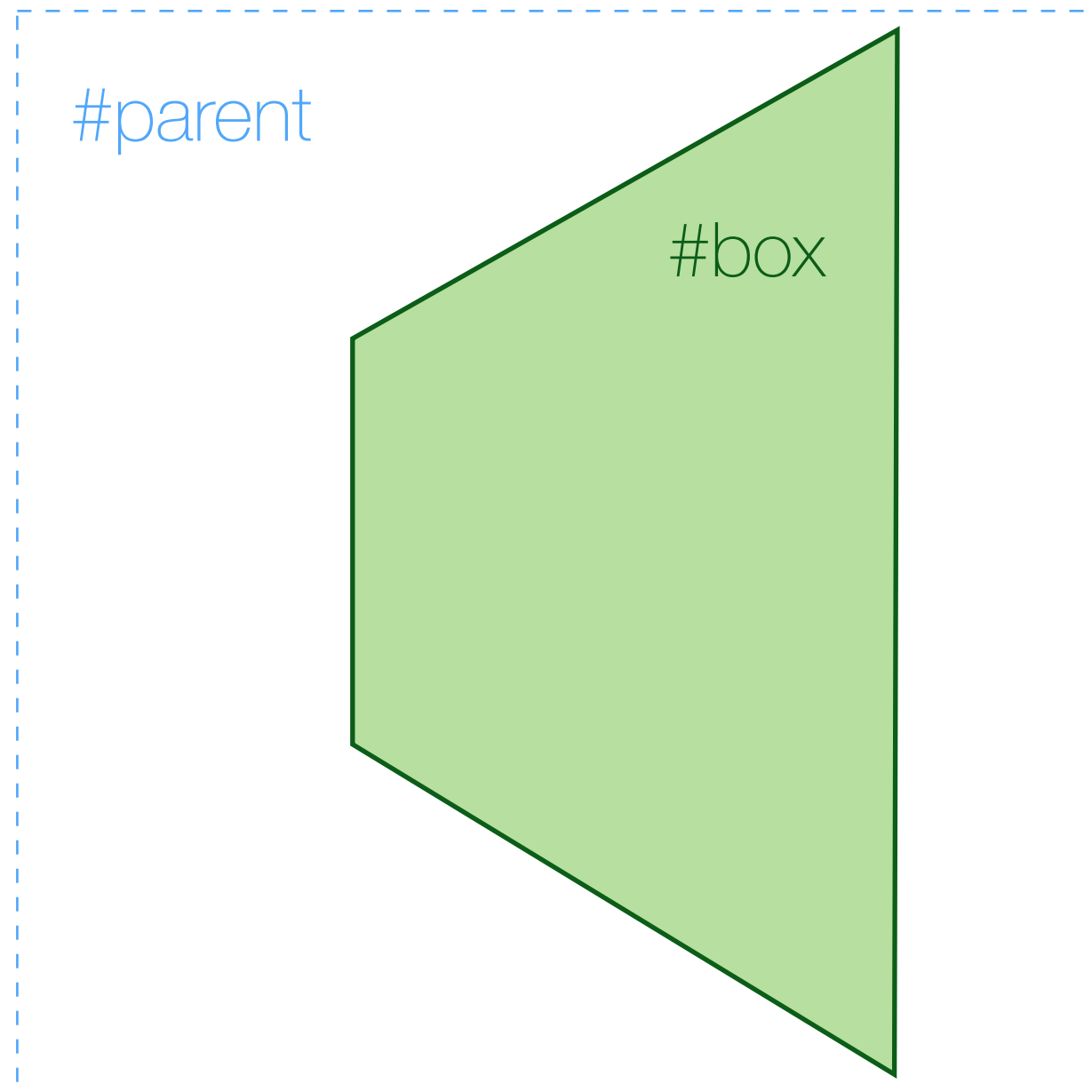
- Resolution independent
- Smooth & fast animations
- Easy hit-testing & accessibility

Code!

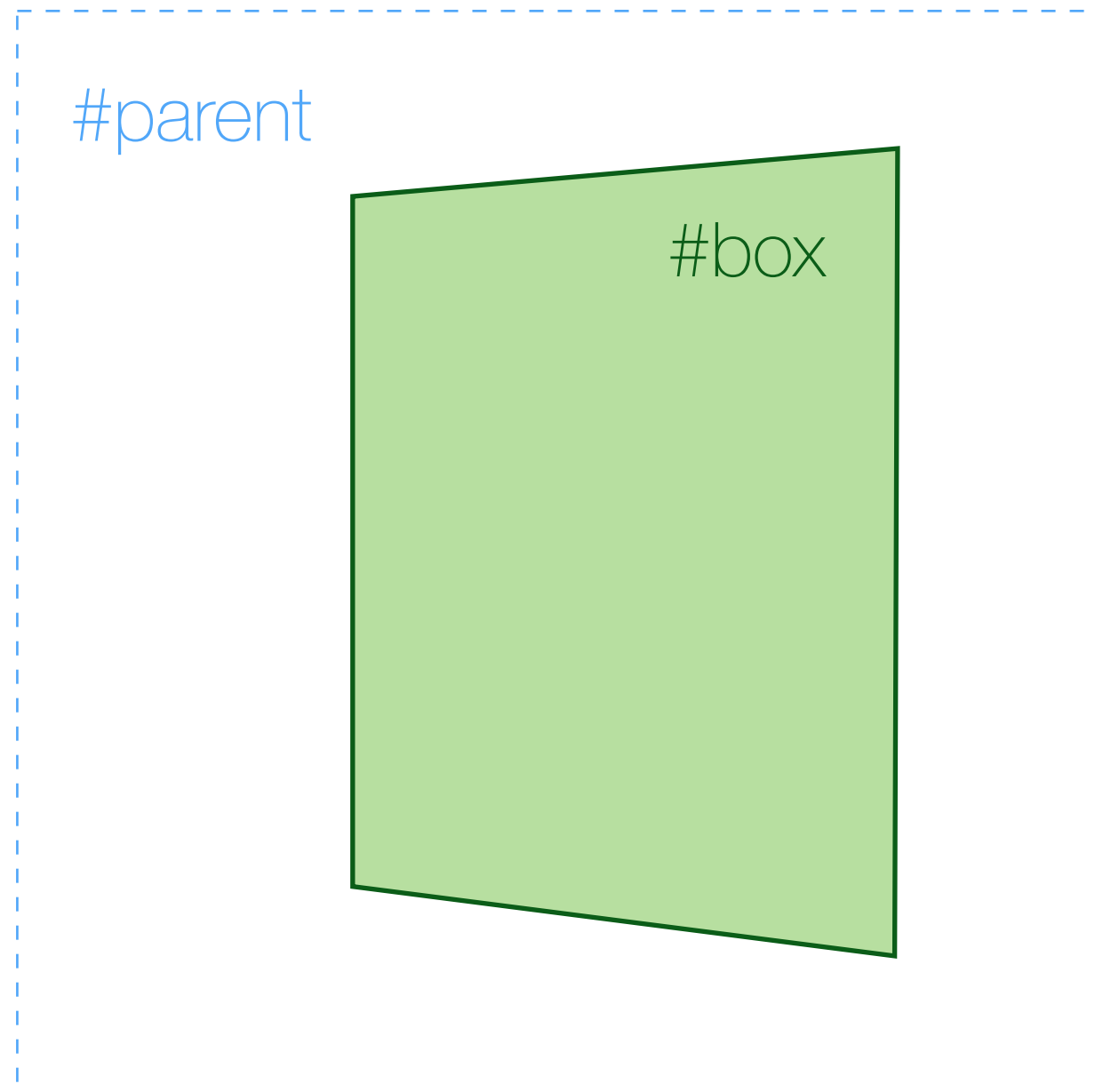
# perspective



# small perspective

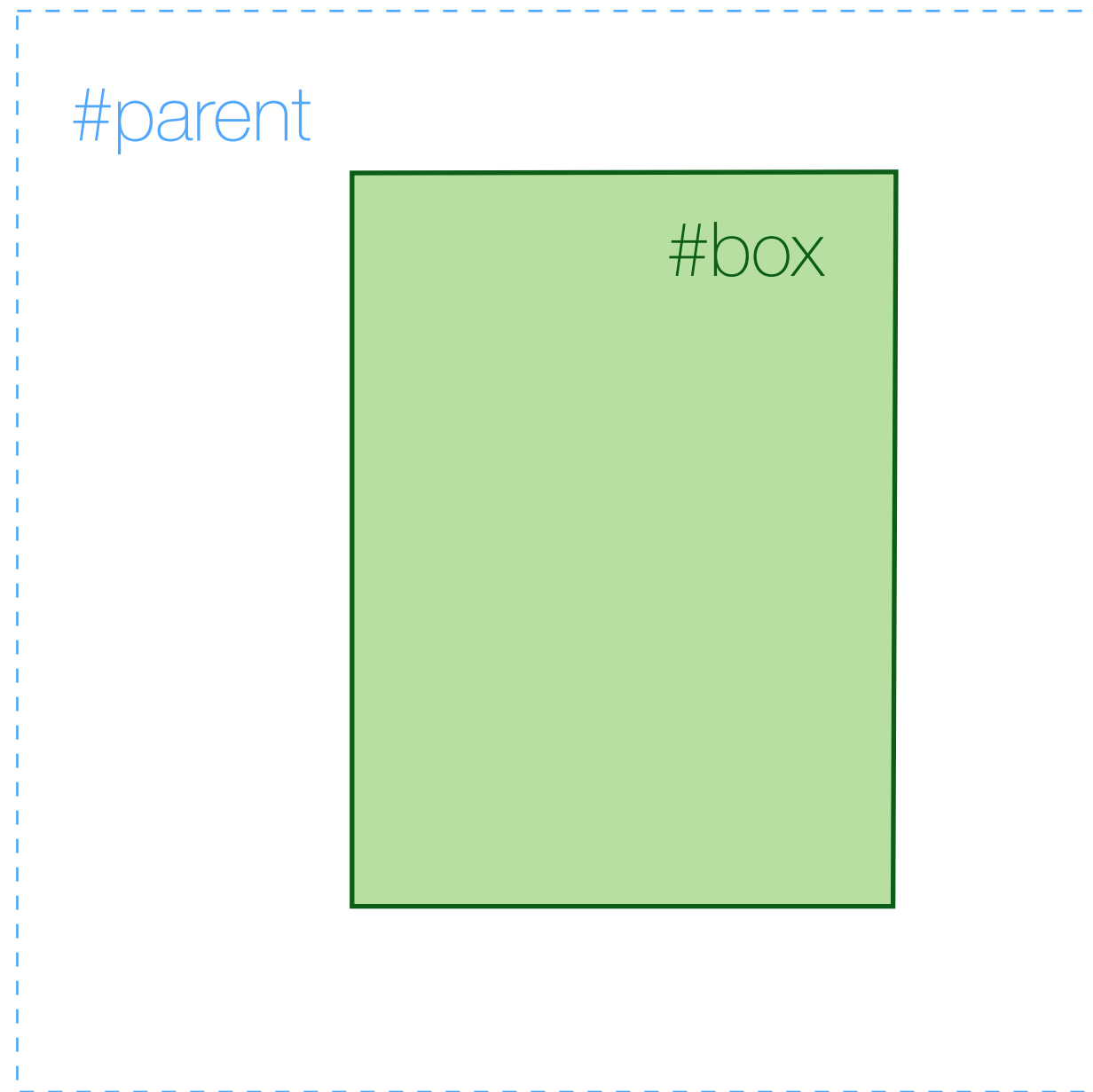


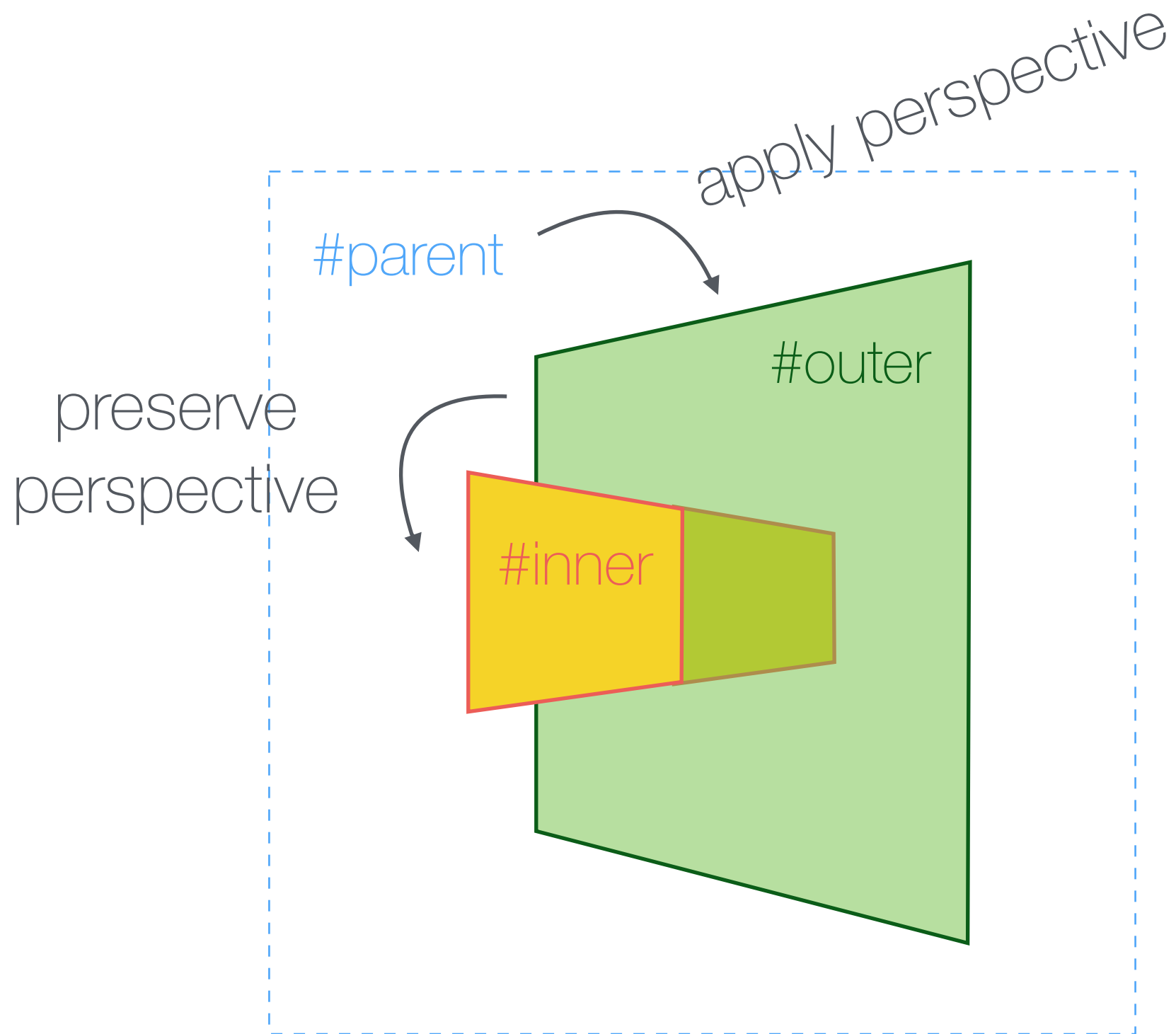
# large perspective

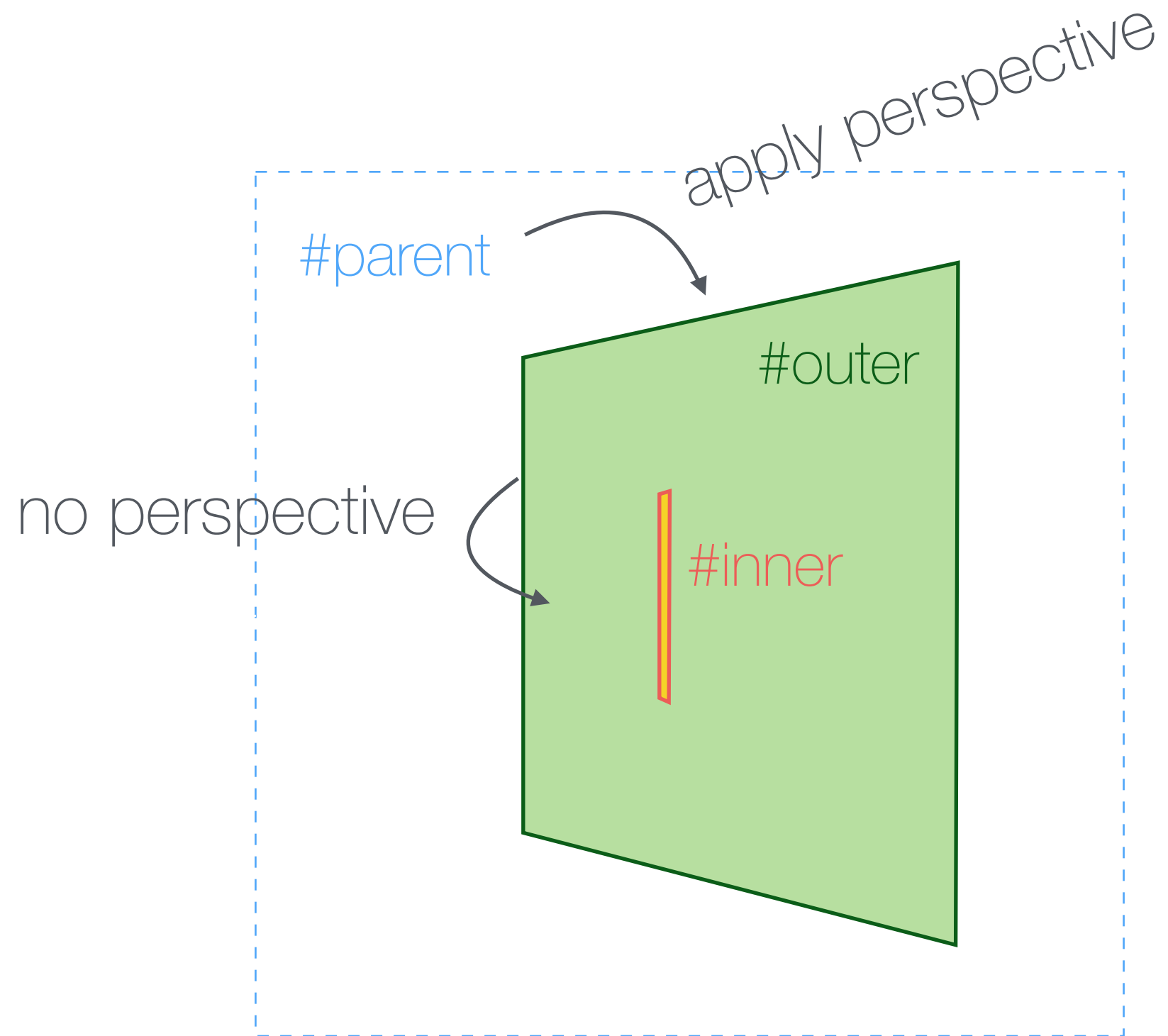


# infinite perspective

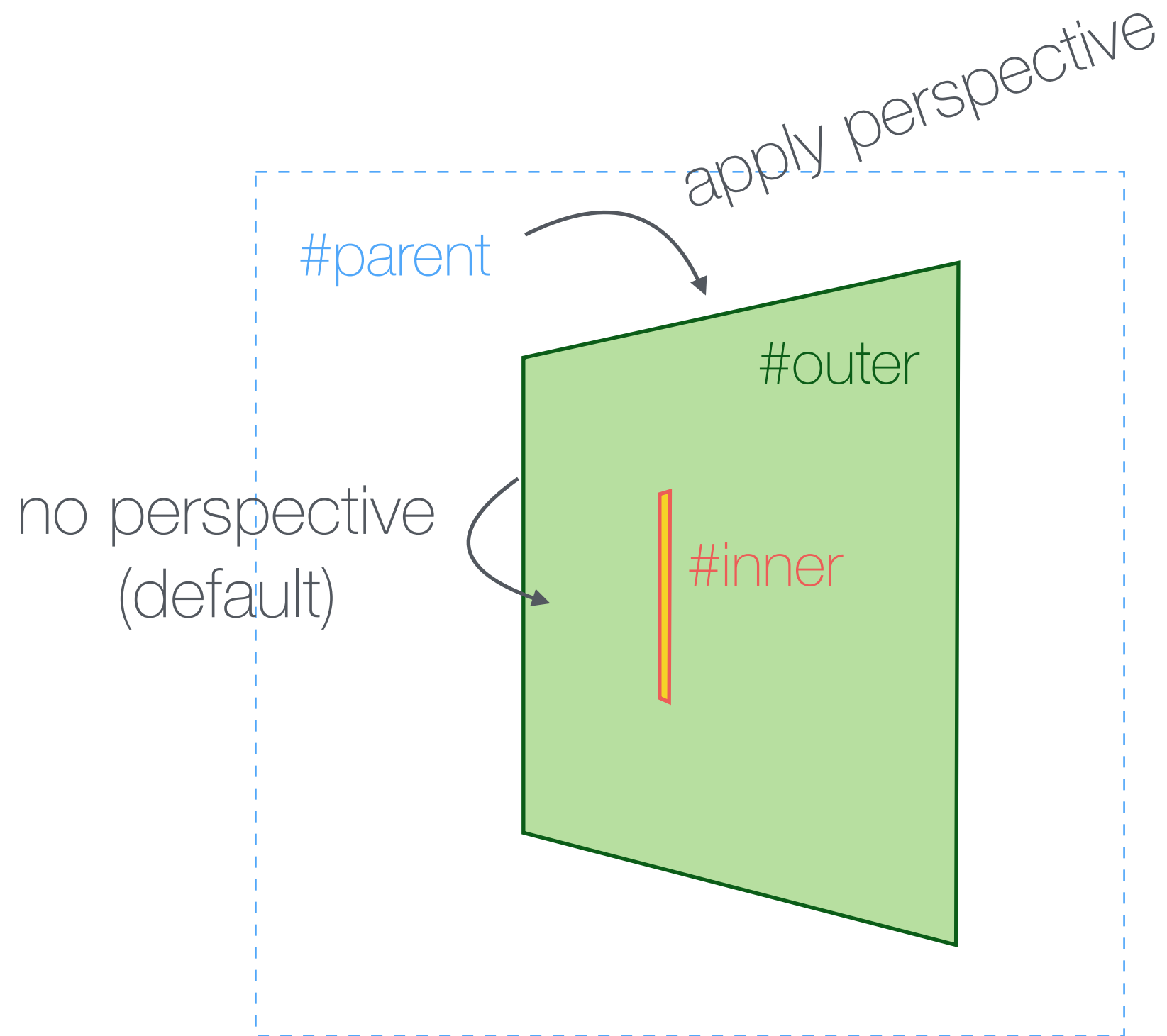
default  
value









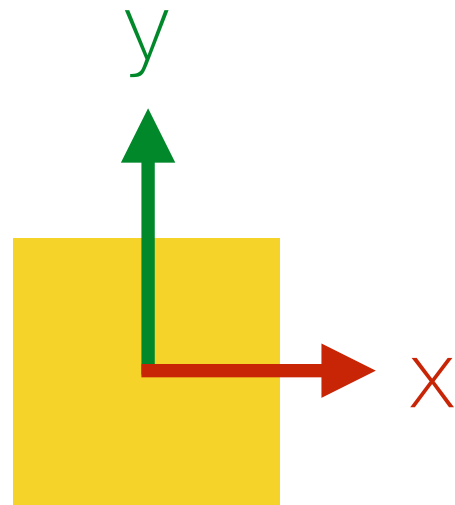


Gotchas

# Gotchas

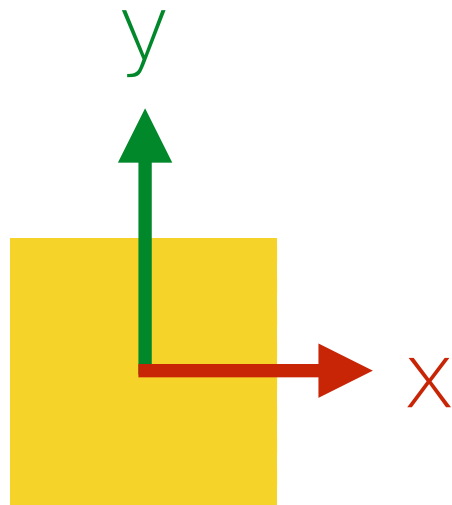
- Order of operation matters

# Gotchas



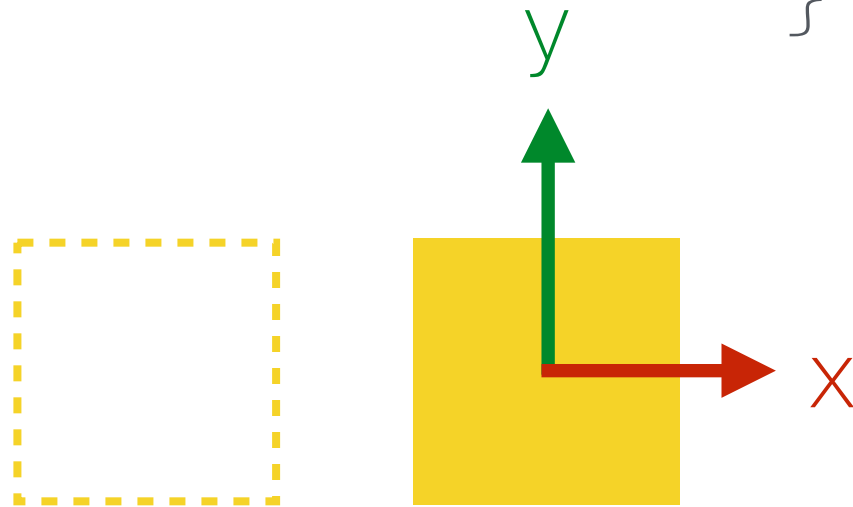
# Gotchas

```
#box {  
    transform:  
        translateX(20px)  
        rotate(45deg);  
}
```



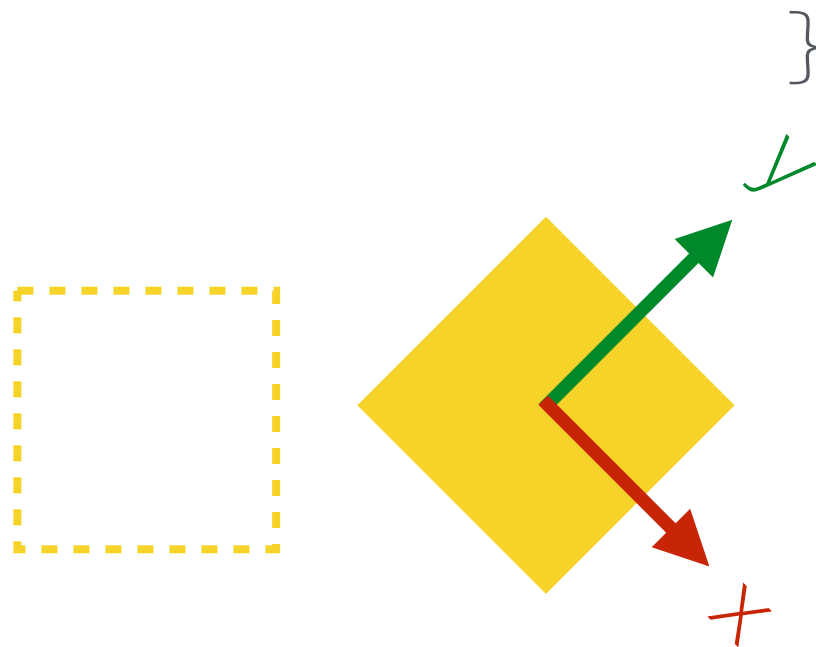
# Gotchas

```
#box {  
  transform:  
    translateX(20px)  
    rotate(45deg);  
}
```



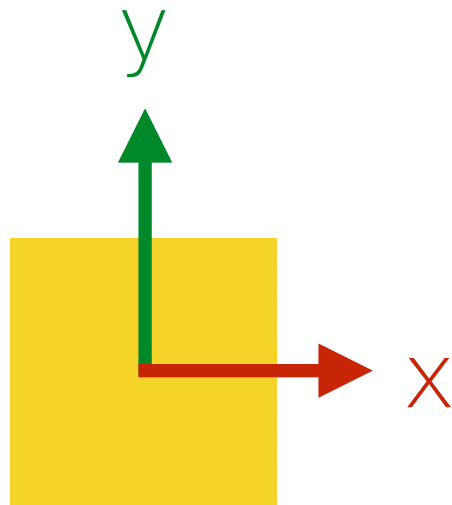
# Gotchas

```
#box {  
  transform:  
    translateX(20px)  
    rotate(45deg);  
}
```



# Gotchas

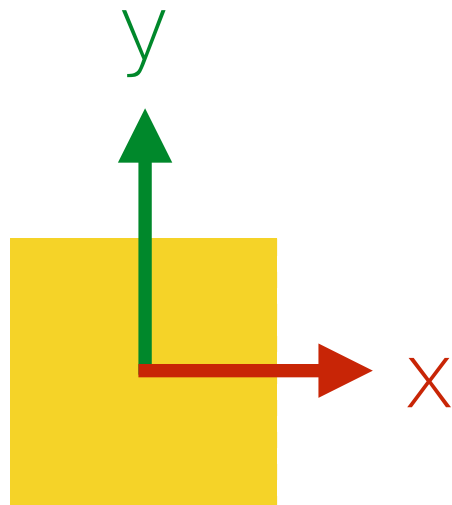
```
#box {  
    transform:  
        translateX(20px)  
        rotate(45deg);  
}
```





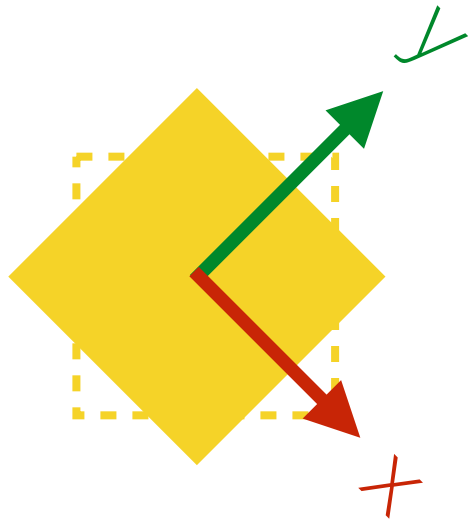
# Gotchas

```
#box {  
  transform:  
    rotate(45deg)  
    translateX(20px) ;  
}
```



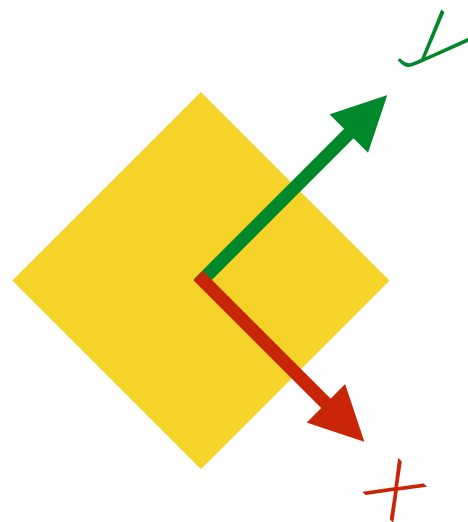
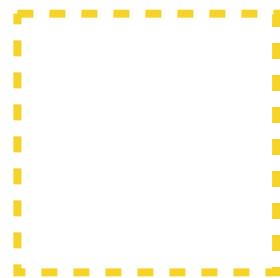
# Gotchas

```
#box {  
  transform:  
    rotate(45deg)  
    translateX(20px);  
}
```



# Gotchas

```
#box {  
  transform:  
    rotate(45deg)  
    translateX(20px);  
}
```



# Gotchas

- Order of operation matters

# Gotchas

- Order of operation matters
- No “preserve-3d” on IE

# Gotchas

```
button {  
  transform: rotateX(30deg);  
  transform-style: preserve-3d;  
}  
button:after {  
  transform: rotateX(-90deg);  
}  
.button_container:hover button:after {  
  transform: rotateX(-90deg) scaleY(2);  
}  
  
.button_container:active button:after {  
  transform: rotateX(-90deg) scaleY(0);  
}
```

# Gotchas

```
button {  
  transform: rotateX(30deg);  
}
```

```
button:after {  
  transform: perspective(800px) rotateX(-60deg);  
}
```

```
.button_container:hover button:after {  
  transform: perspective(800px) rotateX(-60deg)  
           scaleY(2);  
}
```

```
.button_container:active button:after {  
  transform: perspective(800px) rotateX(-60deg)  
           scaleY(0);  
}
```

# Gotchas

- Order of operation matters
- No “preserve-3d” on IE



# Gotchas

- Order of operation matters
- No “preserve-3d” on IE
- They’re just rectangles

What  
Support  
Benefits  
Code!  
Gotchas

[github.com/jingidy/practical-css-transforms-2014](https://github.com/jingidy/practical-css-transforms-2014)

# CSS Transforms Cheat Sheet

## Properties

### transform

translate(1px, 5px), translateX(1px), translateY(5px)  
scale(1.2, 1.5), scaleX(1.2), scaleY(1.5)  
rotate(5deg) **positive = clockwise**  
rotate(5deg, 10px, 5px) **move x, y, then rotate**  
skew(10deg, 5deg), skewX(10deg), skewY(5deg)  
matrix(1, 0, 0, .5, ...) **3x3 = 9 numbers**

translate3d(1px, 5px, 2px)  
translateZ(5px) **positive = closer**  
scale3d(1.2, .5, 2), scaleZ(2)  
rotate3d(1, .5, .2, 10deg) **first 3 numbers define the direction of the rotation axis**  
rotateX(10deg), rotateY(5deg), rotateZ(2deg)  
perspective(800px) **same as property, but not inherited**  
matrix3d(1, 0, .3, ...) **4x4 = 16 numbers**

e.g. `transform: translateX(-5px) rotate(10deg);`

### perspective-origin, transform-origin

left, center (**default**), right, top, bottom, %, px

e.g. `transform-origin: left top 10px;` **3rd value is Z origin**

### transform-style

flat (**default**), preserve-3d

### perspective

e.g. `perspective: 800px;` **smaller = closer = more distorted**

### backface-visibility

visible (**default**), hidden

## Browser Support

	IE	Firefox	Chrome	Safari	Opera	
2D	>9					
3D	>10					IE 10 & 11 don't support preserve-3d

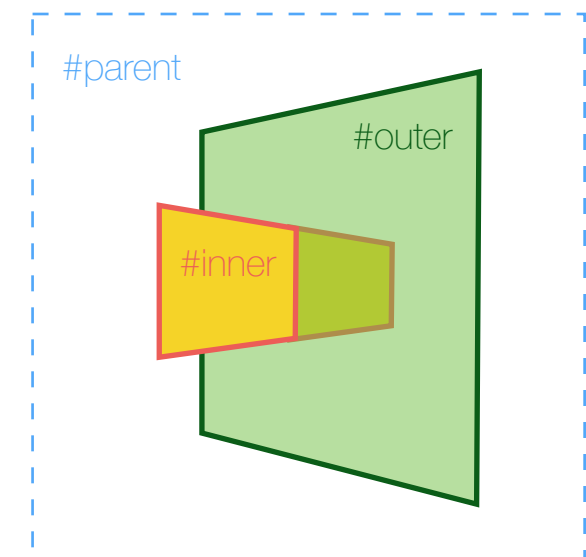
	Mobile Safari	Opera Mini	Android	Blackberry	Opera Mobile	Chrome for Android	Firefox for Android	IE Mobile
2D								
3D					>22			

## How To 3D

```
#parent {
  perspective: 800px;
}

#outer {
  transform: rotateY(-40deg);
  transform-style: preserve-3d;
}

#inner {
  transform: rotateY(90deg);
}
```



## Tips

- order of operation matters
- IE doesn't support preserve-3d

## Prefixes

-webkit Safari, Chrome  
-moz Firefox  
-o Opera  
-ms IE

e.g. `-webkit-transform: scale(1.1)`