



Mobbles touch



www.w3.org/TR/touch-events

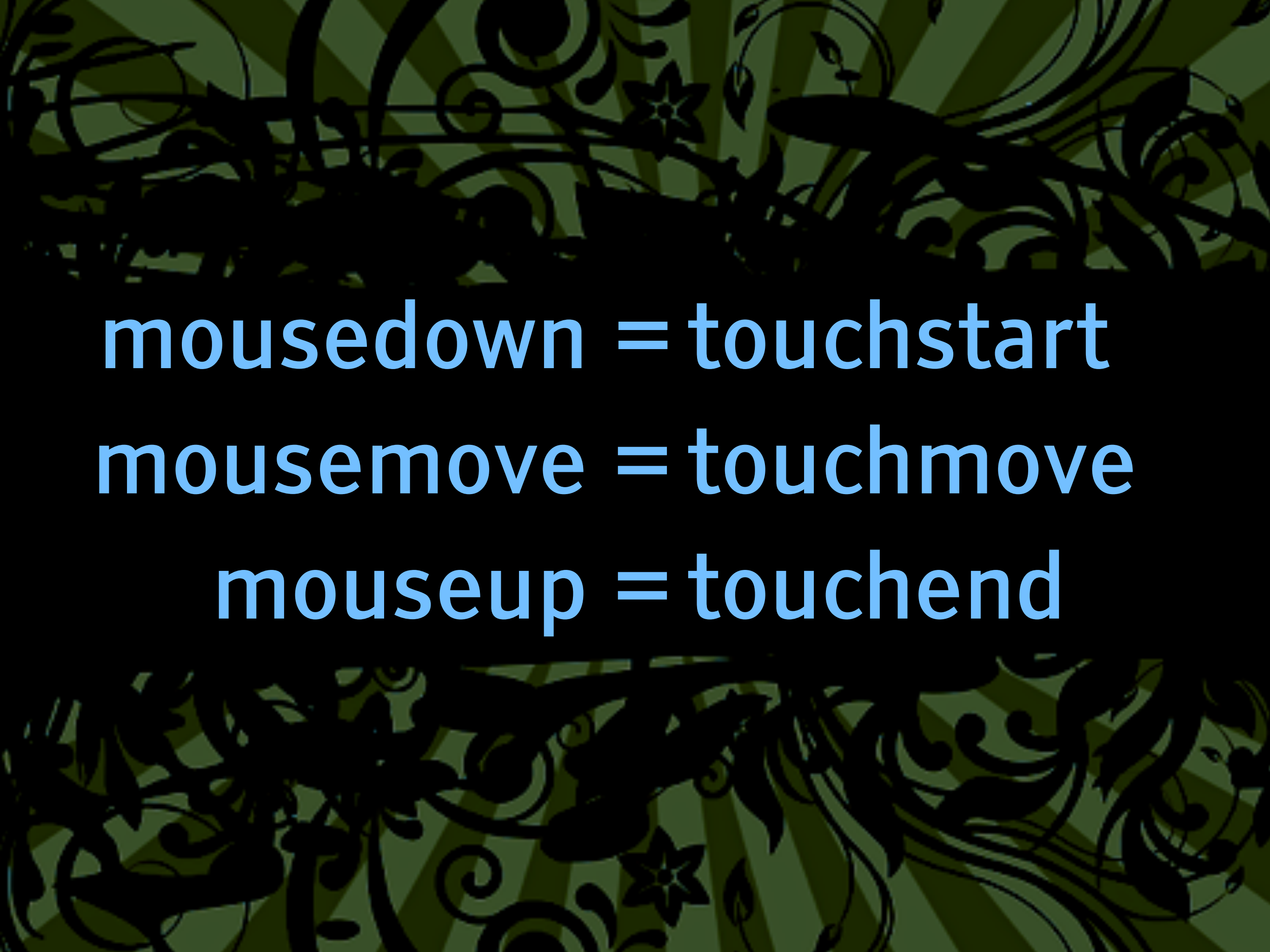
Microsoft

```
var lastXY = { };
function DoEvent(eventObject) {
    // stop panning and zooming so we can draw
    if (eventObject.preventDefault)
        eventObject.preventDefault();
    else
        eventObject.preventDefault();

    // if we have an array of changedTouches, use it, else create an array of one with our event
    var touchPoints = (typeof eventObject.changedTouches != 'undefined') ? eventObject.changedTouches : [eventObject];
    for (var i = 0; i < touchPoints.length; ++i) {
        var touchPoint = touchPoints[i];
        // pick up the unique touchPoint id if we have one or use 1 as the default
        var touchPointId = (typeof touchPoint.identifier != 'undefined') ? touchPoint.identifier : 1;
        if (eventObject.type.match(/(down|start)$/i)) {
            // process mousedown, MSPointerDown, and touchstart
            lastXY[touchPointId] = { x: touchPoint.pageX, y: touchPoint.pageY };
            startDraw(touchPointId, touchPoint.pageX, touchPoint.pageY);
        }
        else if (eventObject.type.match(/move$/i)) {
            // process mousemove, MSPointerMove, and touchmove
            if (lastXY[touchPointId] && !(lastXY[touchPointId].x == touchPoint.pageX && lastXY[touchPointId].y == touchPoint.pageY)) {
                lastXY[touchPointId] = { x: touchPoint.pageX, y: touchPoint.pageY };
                extendDraw(touchPointId, touchPoint.pageX, touchPoint.pageY);
            }
        }
        else if (eventObject.type.match(/(up|end)$/i)) {
            // process mouseup, MSPointerUp, and touchend
            delete lastXY[touchPointId];
            endDraw(touchPointId);
        }
    }
}
```



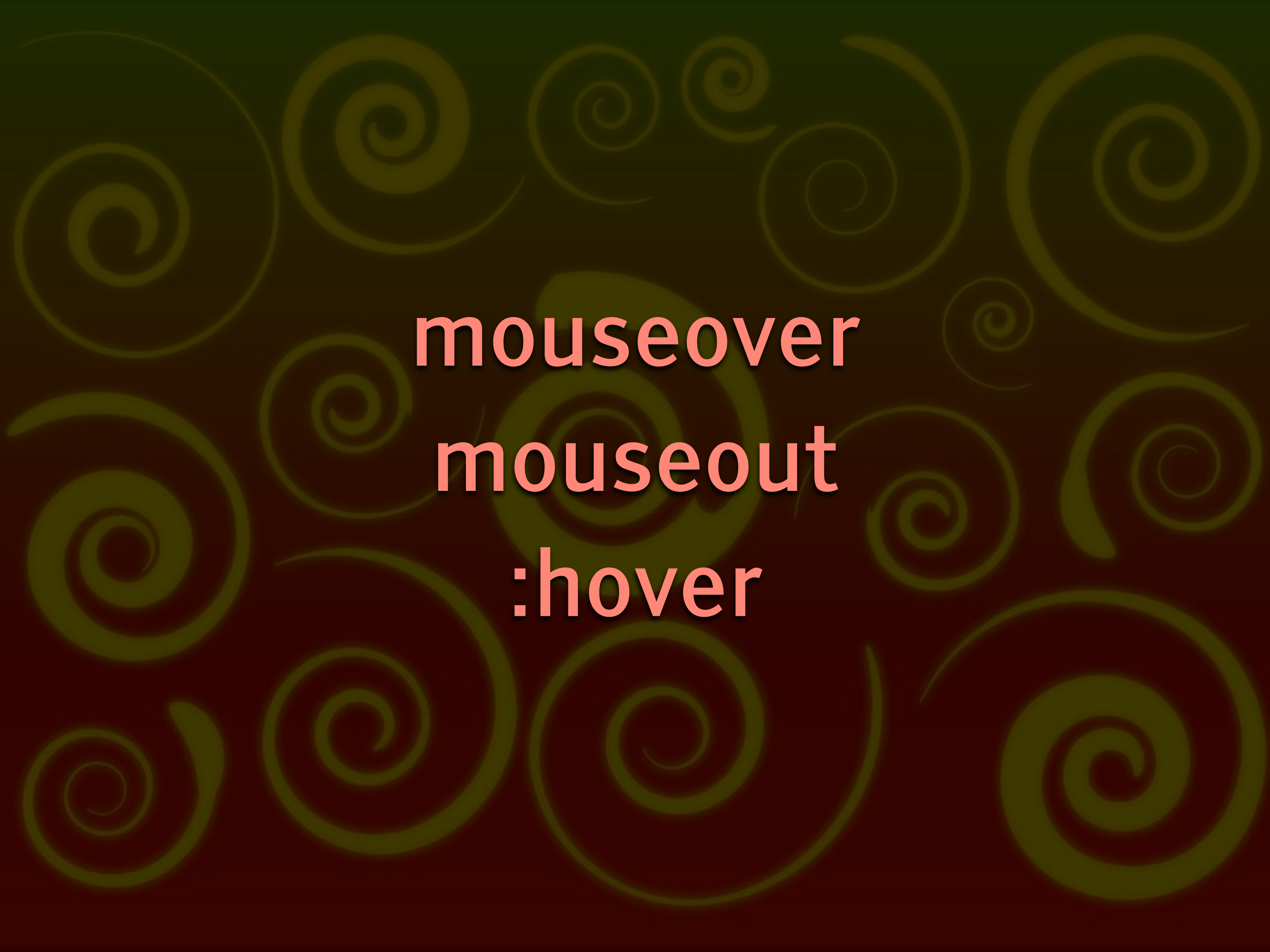
<http://blogs.msdn.com/b/ie/archive/2011/10/19/handling-multi-touch-and-mouse-input-in-all-browsers.aspx>



mousedown = touchstart

mousemove = touchmove

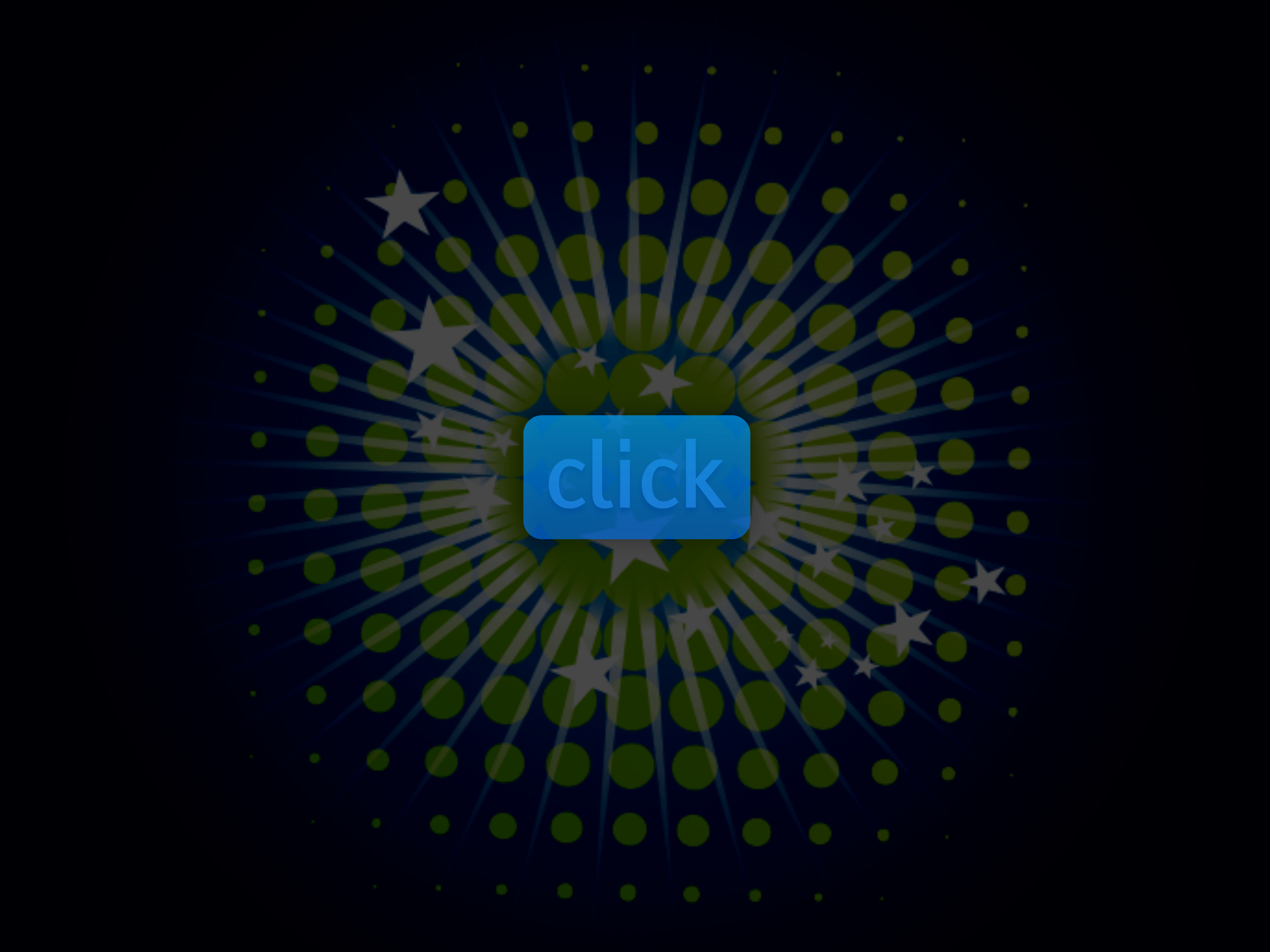
mouseup = touchend



mouseover

mouseout

:hover



click

```
element.ontouchstart =  
function(event){...}
```

```
element.addEventListener  
(‘touchstart’,...,...)
```

TouchEvent interface

`event.touches = [...]`

`event.changedTouches = [...]`

TouchEvent interface

`event.pageX` → `event.touches[i].pageX`

`event.target` → `event.touches[i].target`
`event.targetTouches`

Touch interface

`touch.pageX/touch.pageX`

`touch.target`

`touch.identifier`

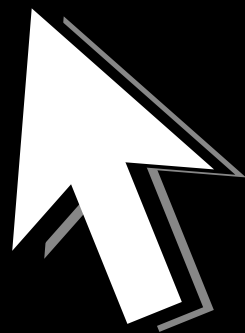
mousedown



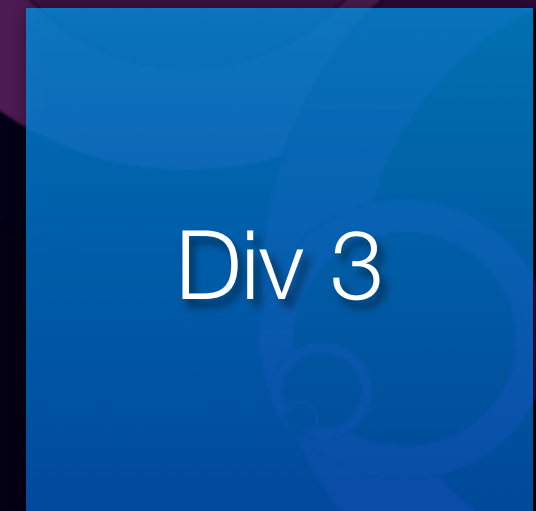
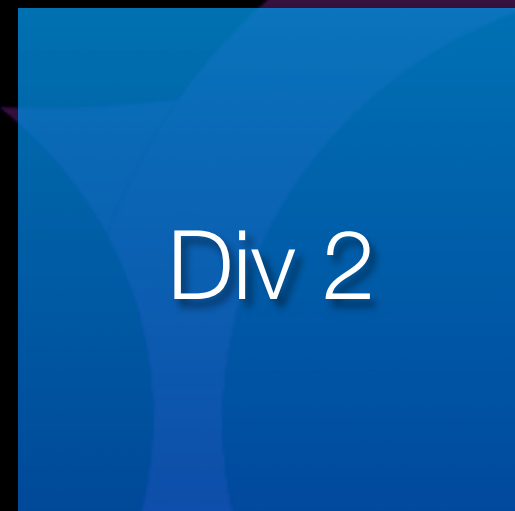
mousemove



mouseup



touchstart
touchmove
touchend



```
var timer;
```

Tap and....

```
ontouchstart = function() {  
    timer = setTimeout(hold, 1000)  
}
```

...hold!

```
ontouchend = function() {  
    clearTimeout(timer)  
    if (!held) tap()  
}
```

Hold on!

```
ontouchstart = function(e) {  
  if (e.touches.length > 1) return;  
  clearTimeout(timer)  
  timer = setTimeout(hold, 1000)  
  e.preventDefault()  
}
```



call
event.preventDefault()

A close-up photograph of a rabbit's face, focusing on its eyes and nose. The rabbit has grey fur and large, orange-brown eyes. A semi-transparent dark blue rectangular overlay is positioned across the middle of the image, containing white text. The text is a JavaScript code snippet for preventing default browser actions on a touchmove event.

```
body.ontouchmove =  
function(e) {e.preventDefault()}
```

A close-up, slightly blurred image of a cartoon rabbit's face, focusing on its large red nose and blue ears. The rabbit has grey fur and long white whiskers. The image is used as a background for the text.

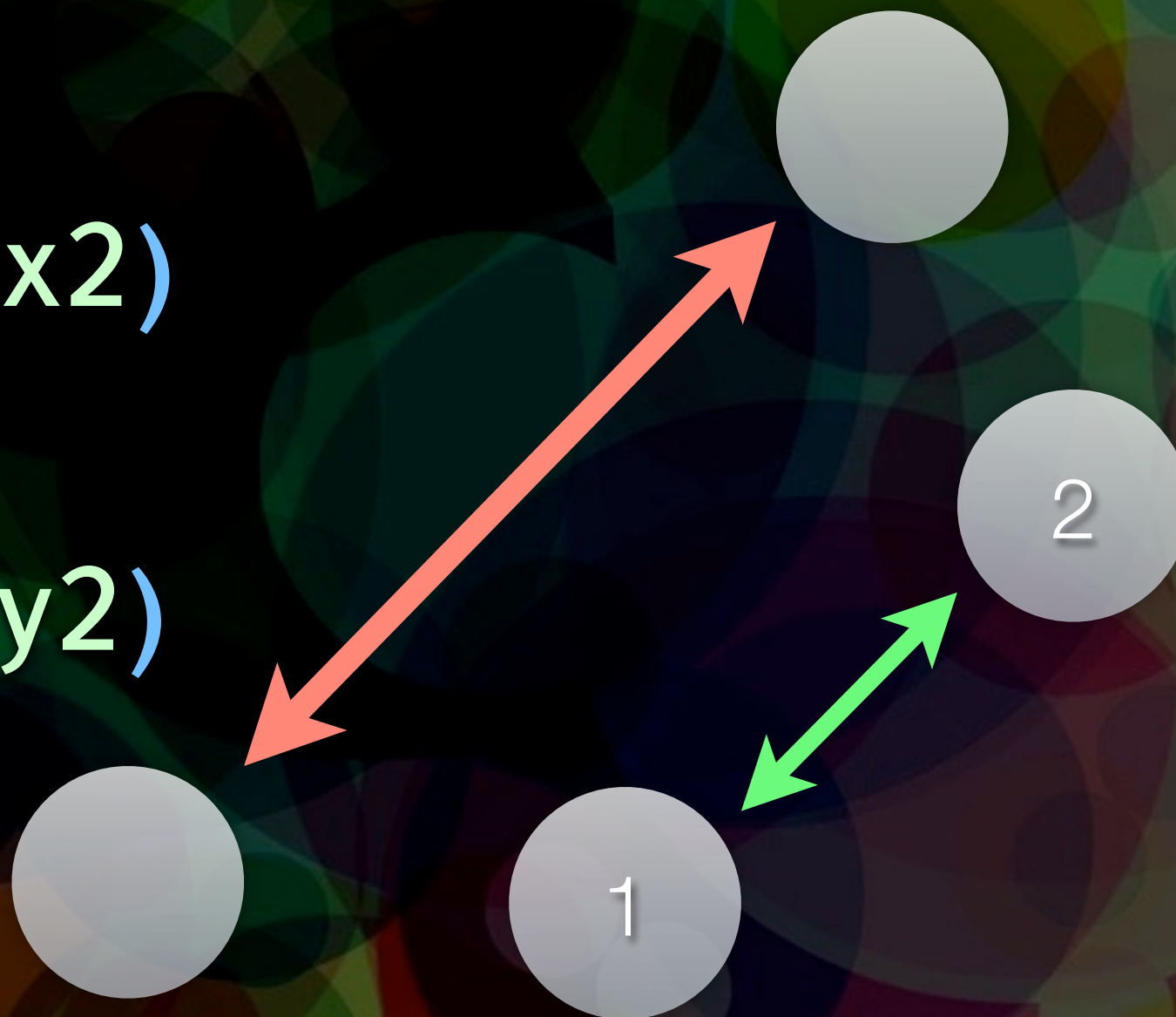
:active trick

```
body.ontouchmove = function() {}
```



gesturestart
gestureend

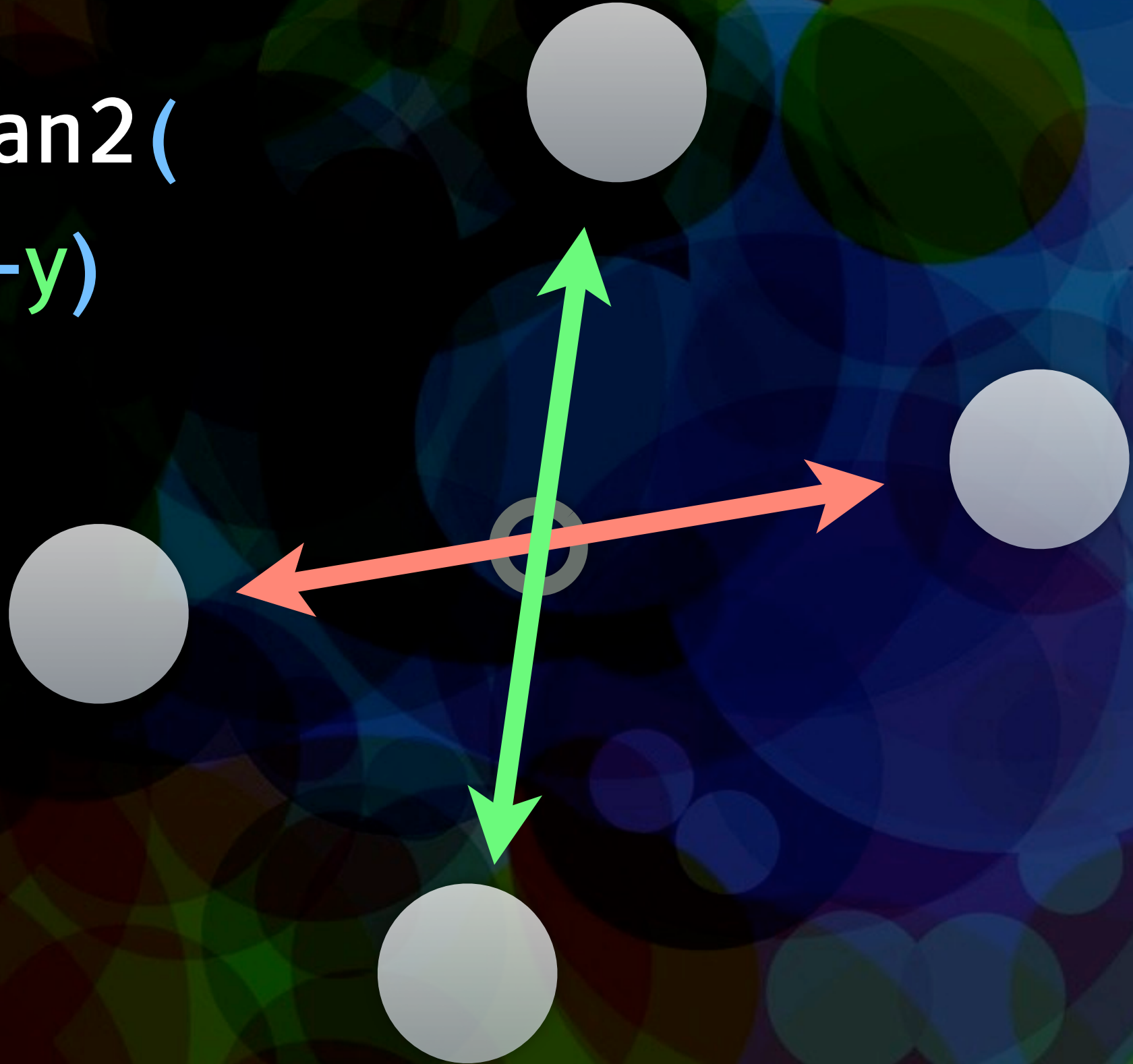
```
Math.sqrt(  
  (x1-x2)*(x1-x2)  
  +  
  (y1-y2)*(y1-y2)  
)
```

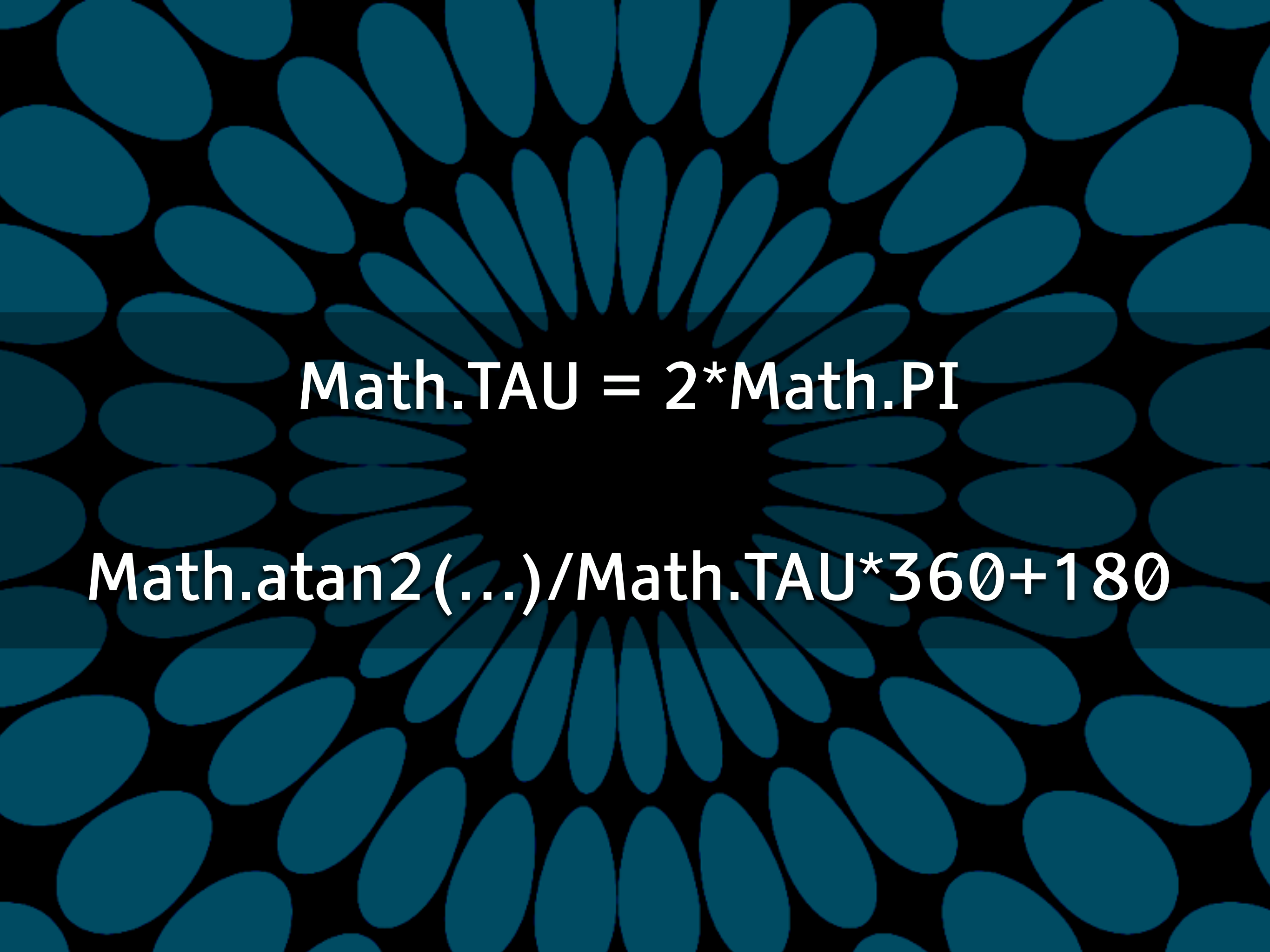


Zoom moves!



```
Math.atan2(  
  (x-x), (y-y)  
)
```

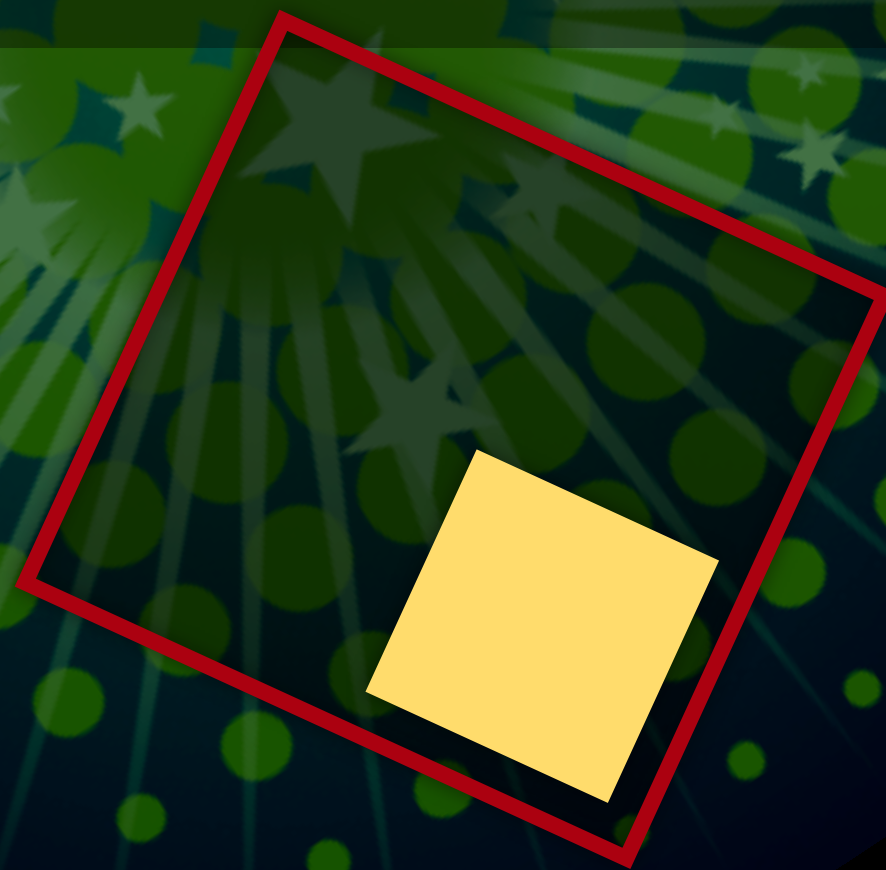




`Math.TAU = 2*Math.PI`

`Math.atan2(...)/Math.TAU*360+180`

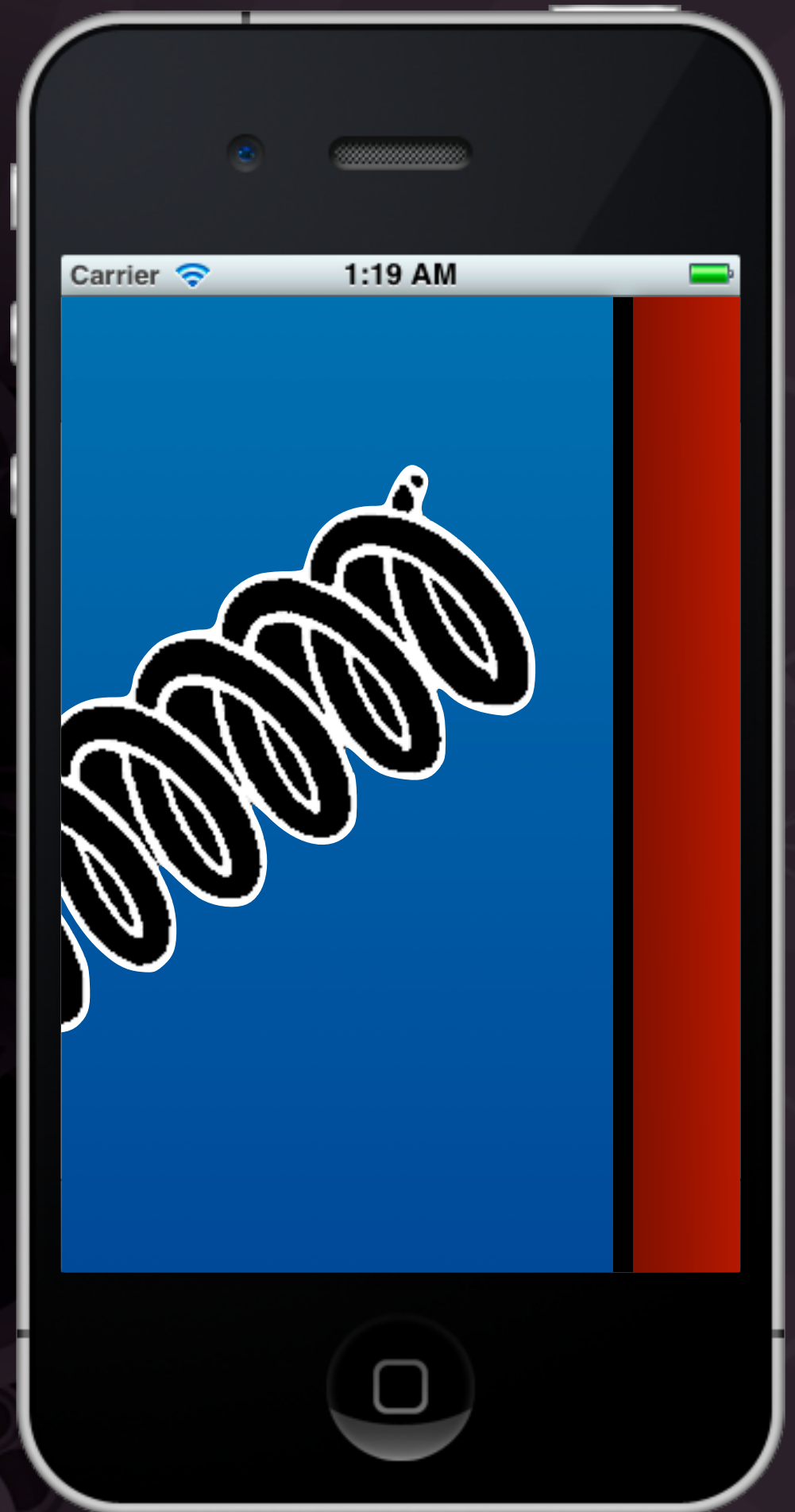
Beware of CSS transforms order!



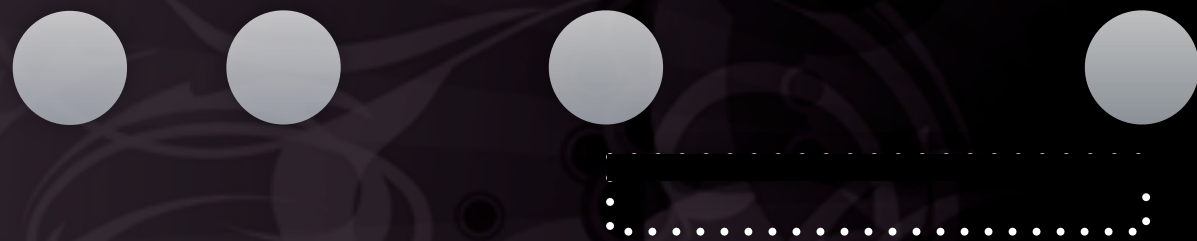
Swipe

Slow = peek

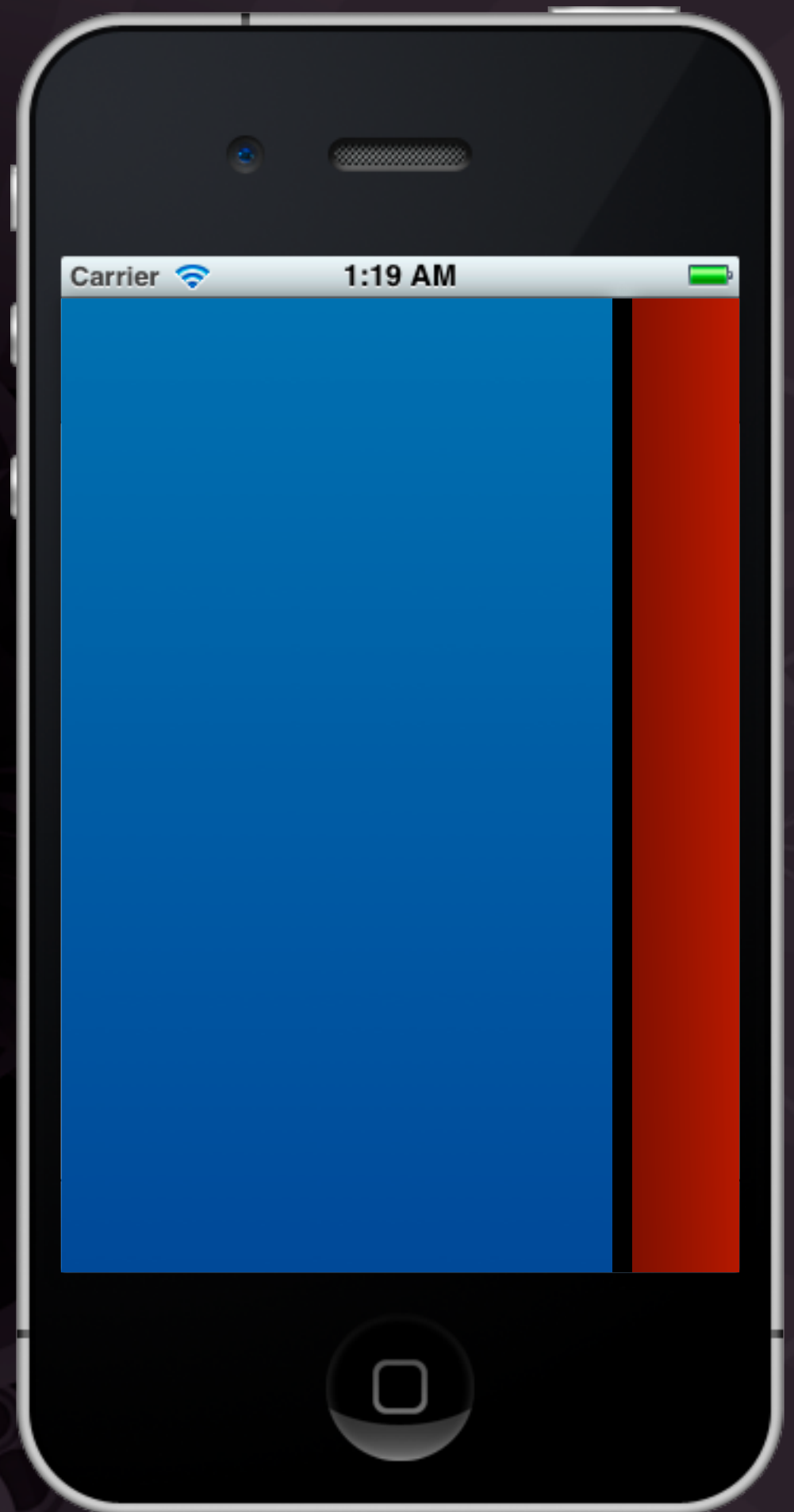
Fast = switch



Swipe



`event.timestamp`





Device



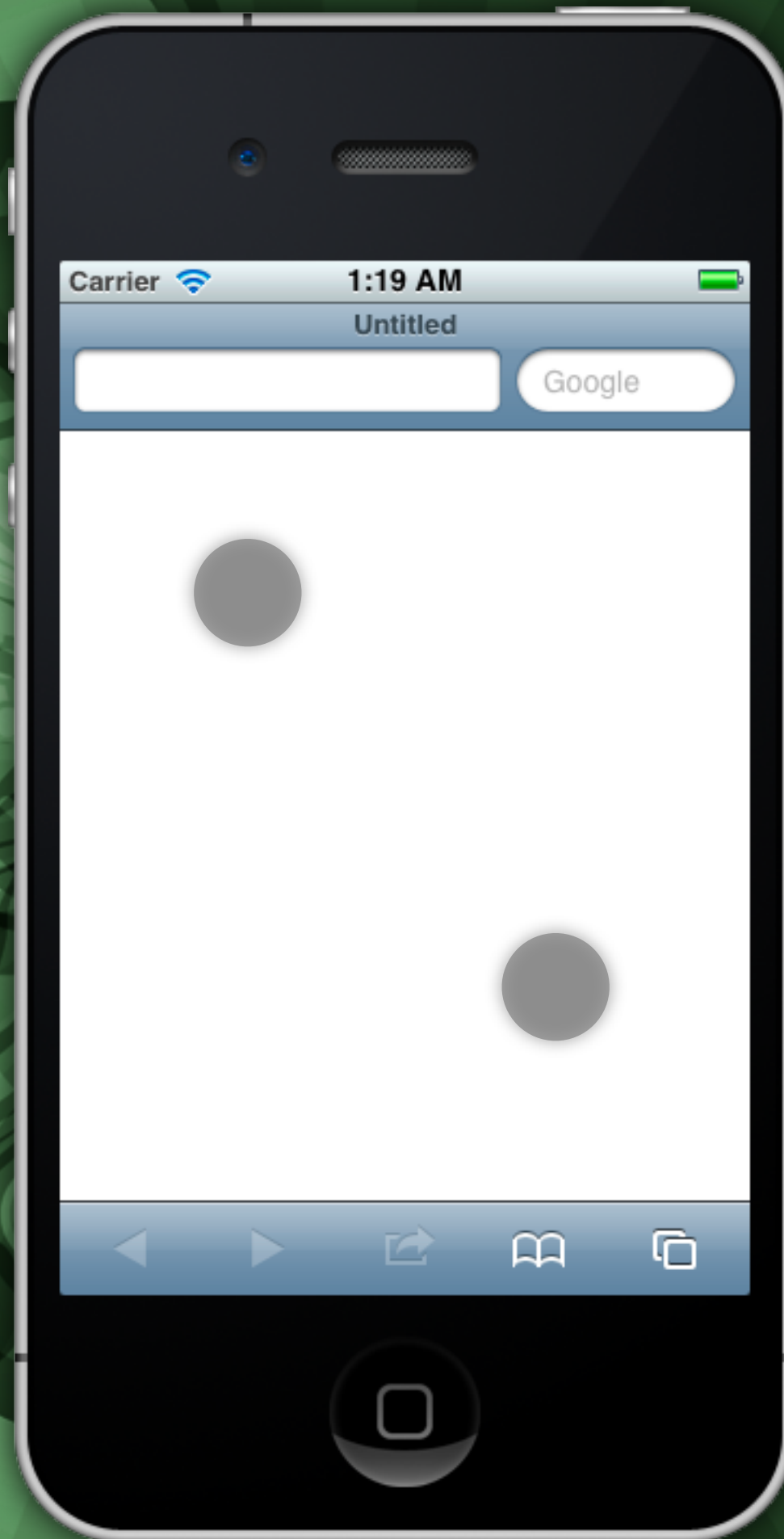
?

Emulator



None

Alt



Alt
+
Shift

vodori.com/blog/phantom-limb.html

Phantom limb



```
@media all and (-moz-touch-enabled:1) {...}
```

```
if (ontouchstart in window) {...}
```

```
document.body.ontouchstart = function() {  
    touch_enabled = true;  
}
```

Detection

Trackpad $\neq$ Multitouch

MozSwipeGesture *XUL only*

MozMousePixelScroll
onscroll event.wheelDeltaX/Y

@pornelski

Image credits: Flickr-Vectorportal <http://www.flickr.com/photos/vectorportal>, Flickr-Peter Kaminski <http://flickr.com/people/peterkaminski>, Denis-Carl <http://www.deniscarl.com>, Failblog.com and Dailysquee.com.
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