



Making Accessible Web Animations

CSUN 2020

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Digital Accessibility Consultant

 @stringy

Slides: <http://bit.ly/mawa2020>

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New animation tools

- CSS transitions and keyframes
- CSS queries
- Web Animations API for JavaScript



Inaccessible Animations



Attention deficits





35% of adults aged 40 years or older in the United States—approximately 69 million Americans—have experienced some form of vestibular dysfunction.

Vestibular Disorders Association

www.vestibular.org



Seizures and migraines





Why animate?



ACCESSIBILITY
IS BEAUTIFUL



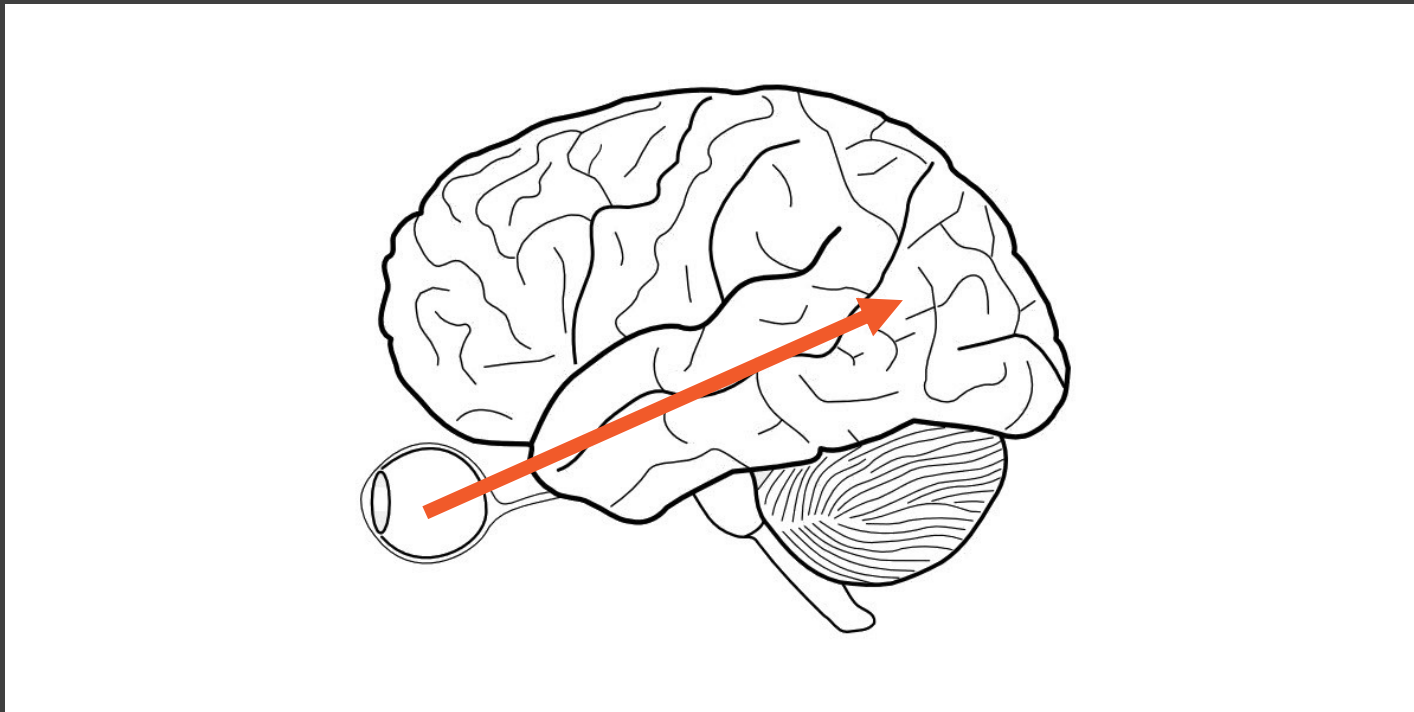
Animation has brain benefits!

Val Head

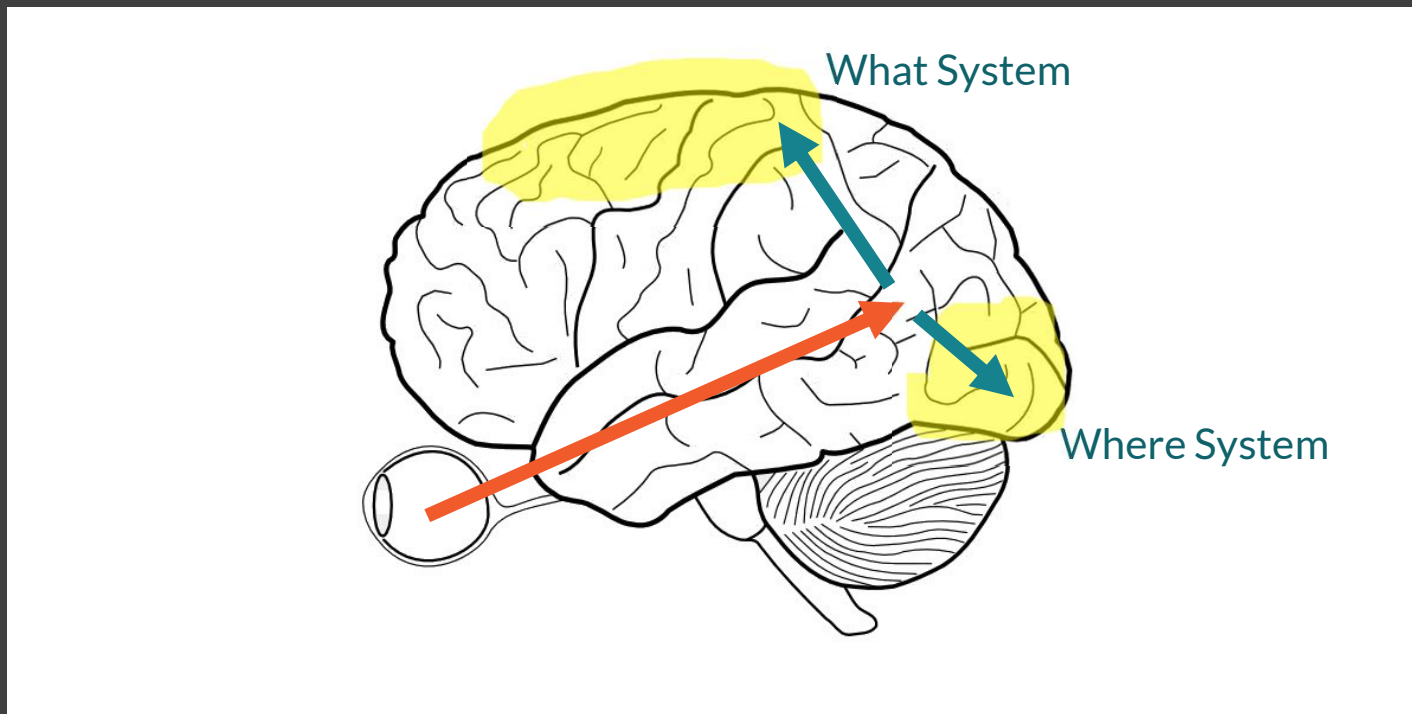


Source: Designing Interface Animation, 2016

Visual processing



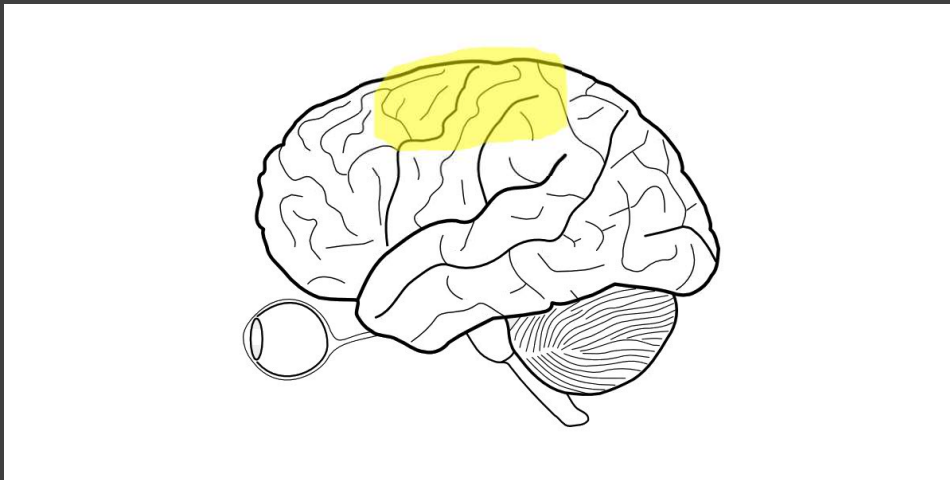
Visual processing



Margaret Livingstone, The Biology of Seeing



What System



- Colour
- Shapes
- Objects
- Faces





welcome to the @jongold, we got fun & games

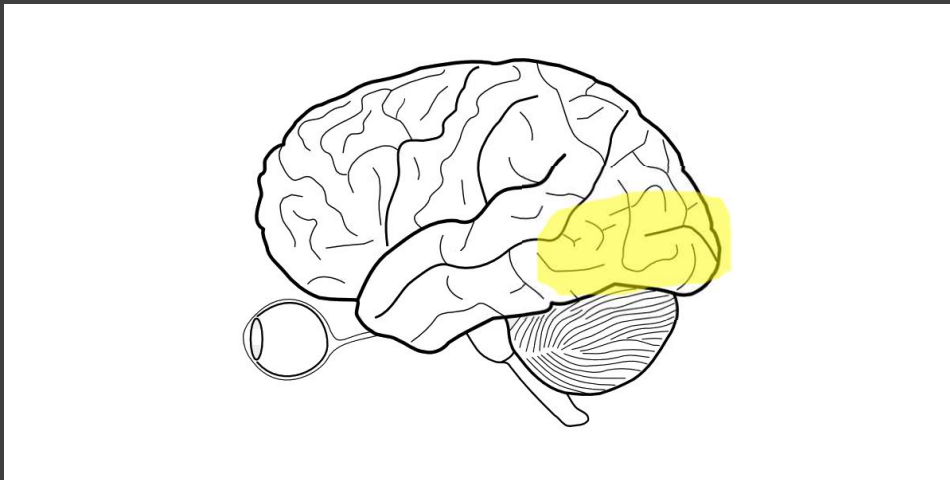
@jongold



which one of the two possible websites are you currently designing?



Where System



- Motion
- Edges
- Contrast



Source: Margaret Livingstone, The Biology of Seeing



By JJ Harrison (<https://www.jjharrison.com.au/>) - Own work, CC BY-SA 4.0



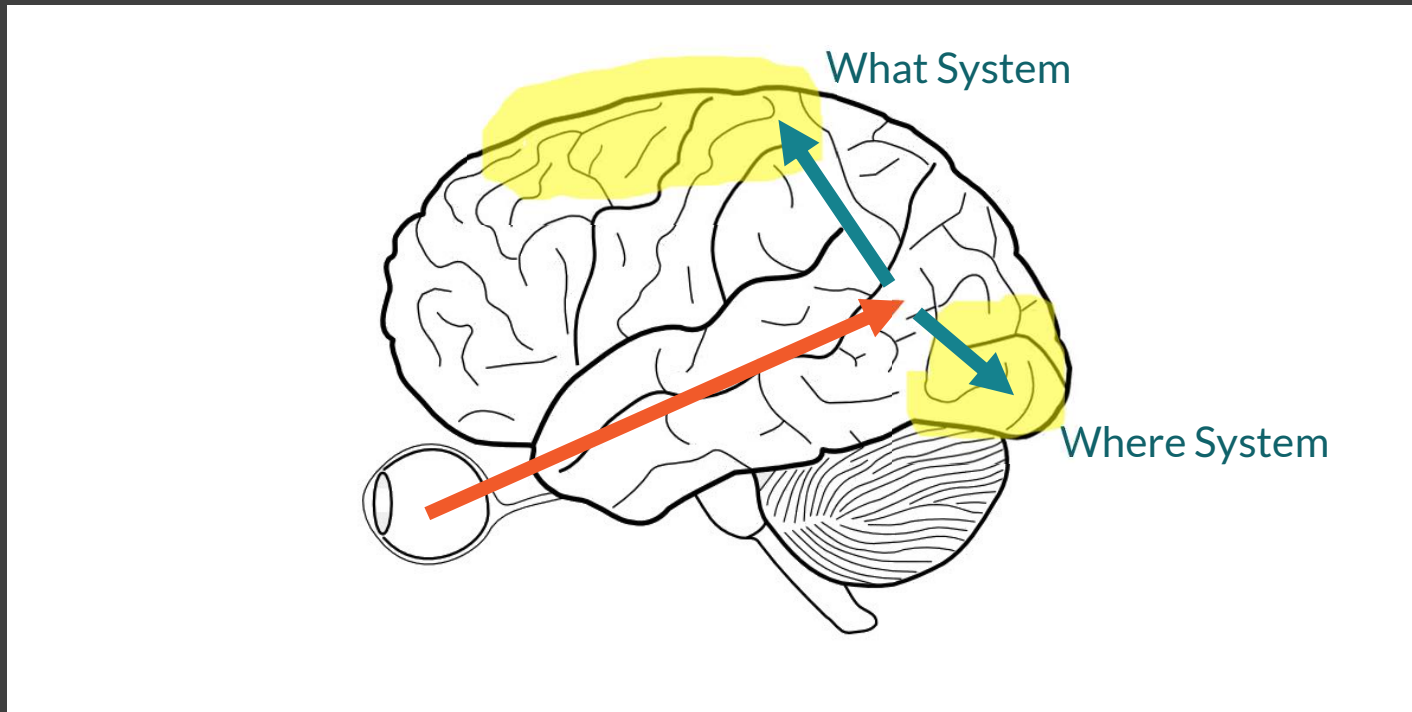
Animation itself is a visual
representation of change over time

Rachel Nabors

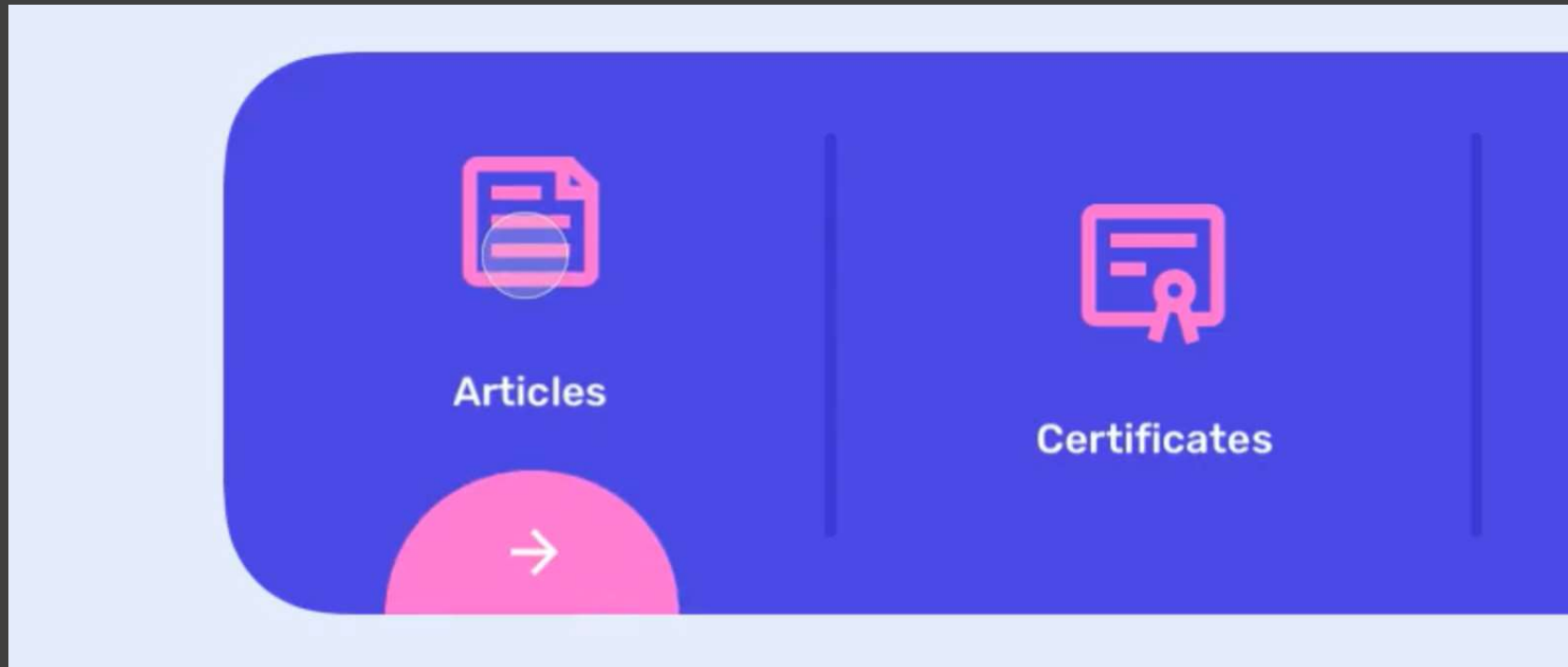


Source: Animation At Work, 2017

Two systems



Differences



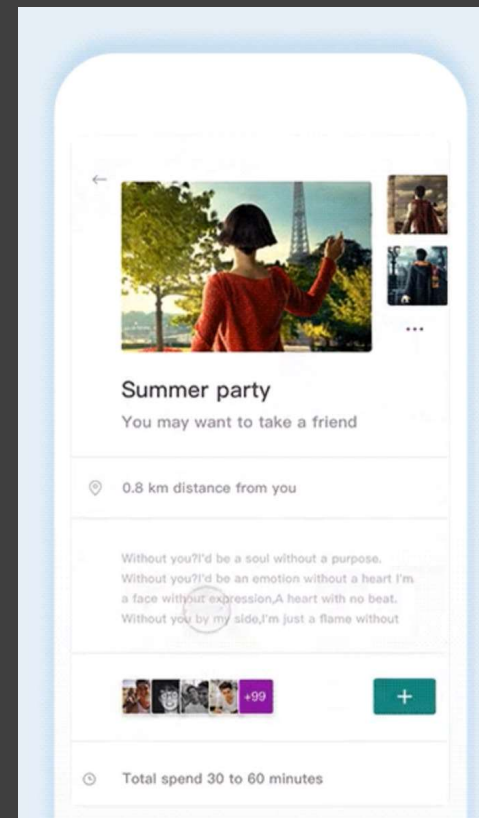
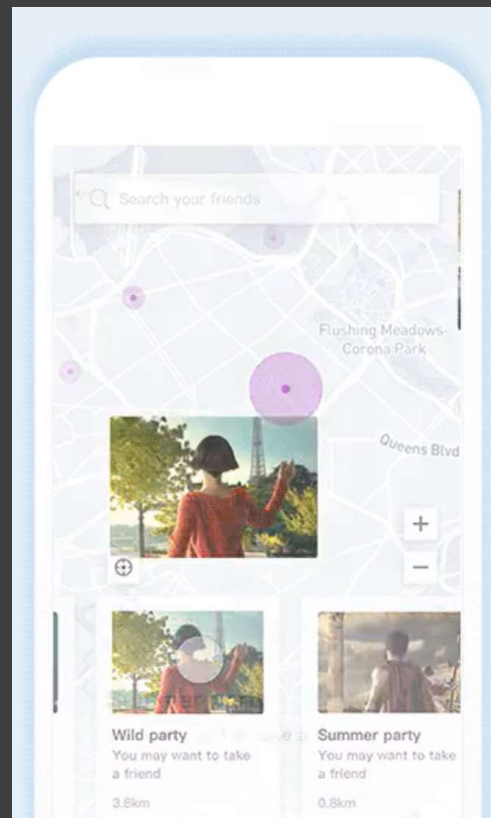
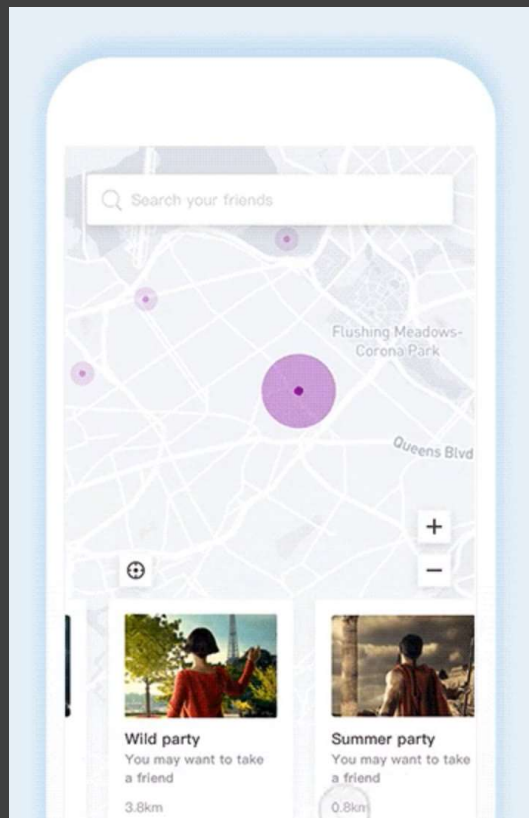
Feedback

Submit →

Sending ⋮



Orientation



The best of both worlds



Give your users control over
animation with a **toggle** or **setting**



TOGGLE ANIMATION

[Home](#)

[Getting Started](#)

[About](#)

Fira Code Google API Demo

FIRA CODE VARIABLE

Using the Google API to access variable fonts.

[Fira Code](#) by Multiple Designers is Open source.

Code by [Mandy Michael](#) available on [Codepen](#)

www.variablefonts.dev

Respect your user's OS or browser settings for **reduced** motion



Home

Find a setting

Ease of Access

Vision

Display

Cursor & pointer

Magnifier

Colour filters

High contrast

Narrator

Hearing

Audio

Closed captions

Interaction

Speech

Display

Make everything bigger

Change the size of apps and text on the main display

200% (Recommended) ▾

[Change the size of apps and text on other displays](#)

[Change the size and colour of your cursor and mouse pointer](#)

Make everything brighter

Change the brightness of your built-in display

☀️  60 %

[Change the brightness automatically or use night light](#)

Simplify and personalise Windows

Show animations in Windows

On

Show transparency in Windows



Off

Automatically hide scroll bars in Windows

On

Show notifications for

5 seconds ▾

 [Get help](#)
 [Give feedback](#)

Media queries

```
/* Type query */
```

```
@media screen and (min-width: 900px) {}
```

```
/* User preference query */
```

```
@media (prefers-reduced-motion: reduce) {}
```



Section menu



Overview

Accounts

Year to Date

Settings

Help

Page name



Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition. Organically grow the holistic world view of disruptive innovation via workplace diversity and empowerment.

#	First	Last	Handle
1	Mark	Otto	@mdo
2	Jacob	Thornton	@fat
3	Larry	the Bird	@twitter

Capitalize on low hanging fruit to identify a ballpark value added activity to beta test. Override the digital divide with additional clickthroughs from DevOps. Nanotechnology immersion along the information highway will close the loop on focusing solely on the bottom line.

Prefers reduced motion

```
.modal-dialog {  
  transition: transform 1s ease-out;}  
  
.modal-zoom .modal-dialog {  
  transform: scale(0.1);  
}  
  
@media (prefers-reduced-motion: reduce) {  
  .modal-zoom .modal-dialog {  
    transition: none;  
  }  
}
```



Section menu



- Overview
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Support

IE	Edge *	Firefox	Chrome	Safari	iOS Safari *	Opera Mini *	Chrome for Android
					12.4		
	18	72	79		13.1		
11	80	73	80	13	13.3	all	80
		74	81	TP			
		75	82				
			83				

Source: www.caniuse.com



Don't flash too quickly



How quickly?

1. WELCOME TO BIGASSMESSAGE.COM

2. MESSAGE STYLE
A11Y 4 ALL BASIC
 MAGIC
 HEART
 YEEZY

▶PREVIEW ▶SAVE ▶?

3. SELECT & COPY URL

▶NEW STICKERS
COMING SOON!

▶SCREEN SAVERS FOR MAC



www.bigassmessage.com

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1. WELCOME TO BIGASSMESSAGE.COM

2.

MESSAGE	STYLE	
A11Y 4 ALL	BASIC	
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▶PREVIEW ▶SAVE ▶?

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COMING SOON!

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www.bigassmessage.com

Flash speed

Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.

WCAG SC 2.3.1



Flash speed

Web pages do not contain anything that flashes more than three times in any one second period, ~~or the flash is below the general flash and red flash thresholds.~~

WCAG SC 2.3.1



Hide things for **everyone**,
not just mouse users





Page name



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9 Page name



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Manage tabindexes

```
function makeUnfocusable(where) {  
  // find all the focusable elements  
  const focusableThings = where.querySelectorAll(focusableElements)  
  
}
```



Manage tabindexes

```
function makeUnfocusable(where) {  
  // find all the focusable elements  
  const focusableThings = where.querySelectorAll(focusableElements)  
  // turn them into an array  
  focusableThings = Array.prototype.slice.call(focusableThings)  
  
}
```



Manage tabindexes

```
function makeUnfocusable(where) {  
  // find all the focusable elements  
  const focusableThings = where.querySelectorAll(focusableElements)  
  // turn them into an array  
  focusableThings = Array.prototype.slice.call(focusableThings)  
  // loop through the array to change their tabindex values  
  focusableThings.forEach(function(thing) {  
    thing.setAttribute('tabindex', '-1')  
  })  
}
```



Adding display: none ...

```
// animate closed by adding a CSS class  
sbSidebar.classList.add('closed-sidebar')
```



Adding display: none ...

```
// animate closed by adding a CSS class
sbSidebar.classList.add('closed-sidebar')
// update button content, ARIA, etc
updateButtonState(sbToggler)
```



Adding display: none ...

```
// animate closed by adding a CSS class
sbSidebar.classList.add('closed-sidebar')
// update button content, ARIA, etc
updateButtonState(sbToggler)
// add display: none via a CSS class
sbSidebar.classList.add('hidden-all')
```

```
.hidden-all { display: none; }
```



Adding display: none ...

```
// animate closed by adding a CSS class
sbSidebar.classList.add('closed-sidebar')
// update button content, ARIA, etc
updateButtonState(sbToggler)
// add display: none via a function
sbSidebar.addEventListener('transitionend', hideMe(sbContent))

function hideMe(me) {
  me.classList.add('hidden-all')
}
.hidden-all { display: none;}
```



Removing display: none

```
// remove display: none ASAP
sbContent.classList.remove('hidden-all')
// animate open
sbSidebar.classList.toggle('closed-sidebar')
// update button
updateButtonState(sbToggler)
```



Accessible Animations

- Give your users control with a toggle or setting
- Respect settings for reduced motion
- No more than 3 flashes per second
- Make sure hidden content is hidden from everyone



Let's chat



Slides: <http://bit.ly/mawa2020>

Twitter: @stringy

 @Intopia

 Intopia

 intopia.digital

 hello@intopia.digital