

Designing & Creating Accessible Web Pages

Rachel Appel

<http://rachelappel.com>

rachel@rachelappel.com

Agenda

- Creating Accessible Content
- Designing Accessible Site Layouts
- Coding Accessible Webpages
- Tools for Accessible Development

Your website can't reach 1.4
billion users worldwide.

1.4 Billion Users

- About 20% of the world population have accessibility needs
- Yet accessibility is almost always overlooked by developers/authors
- 62.8 million Americans and 1.4 billion people worldwide require assistive technology.
- Many simply cannot use popular webpages at all as they are not accessible
- You must design for accessibility to really reach ALL of your customers

In the USA...

- Among adult computer users in the United States:
 - 1 in 4 has a vision difficulty
 - 1 in 4 has a dexterity difficulty
 - 1 in 5 has a hearing difficulty
- 35% of US entrepreneurs are dyslexic (20% in the UK)

Research by Forrester

"Among US computer users in 2003 ranging from 18 to 64, 57% (74.2 million) are likely to directly or indirectly benefit from the use of accessible technology due to difficulties and impairments that may impact computer use."

Why Accessibility?

- Human ability, traits, and perceptions run across a spectrum.
- That effects how people interact with technology

- Visual
- Auditory
- Motor/Dexterity
- Cognitive

What can we do?

Make Better
Websites and Apps

Make Better
Assistive Technology

Impacts on Accessibility

Which would have a bigger impact on accessibility?



Which of the following do you think would have a bigger impact on improvements to web accessibility?

Response	# of Respondents	% of Respondents
Better (more accessible) web sites	1166	81.3%
Better assistive technology	268	18.7%

Over time, more respondents have answered "better web sites" to this question - 68.6% of respondents in October 2009, 75.8% in December 2010, and now 81.3% in January 2014. This change perhaps reflects improvements to assistive technology. It certainly indicates that users expect site authors to address accessibility.

source: <http://webaim.org/projects/screenreadersurvey5/#demographics>

Visual Differences

- Low Vision
- Blindness
- Color blindness
- Color Contrast Sensitivity

DEMO

- Color Oracle

Auditory Differences

- Low Hearing
- Deafness
- Background noise interference

Motor/Dexterity Differences

- Traumatic Injuries
- Spinal cord injury
- Loss or damage of limb(s)
- Diseases and Congenital Conditions
- Cerebral palsy
- Muscular dystrophy
- Multiple sclerosis
- ALS (Lou Gehrig's Disease)
- Arthritis
- Parkinson's disease
- Essential tremor

Cognitive Differences

- Dyslexia
- ADHD, ADD
- Autism spectrum
- Injuries
- Visual Comprehension
- Learning disabilities
- Seizures

Assistive Technology

You're already using it



Academy Engraved LET: The quick brown fox jumped over the lazy dog.
ALGERIAN CONDENSED LET: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.
Arriba Arriba LET: The quick brown fox jumped over the lazy dog.
Avant Garde Mono ITCTT: The quick brown fox jumped over the lazy dog.

PORTAGOITC TT: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.

Blackmoor LET: The quick brown fox jumped over the lazy dog.

BancoITC TT:

BRAGANZA SCI

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BODONI SVTY I

Cabaret L

Jazz LET: 1

HAZEL LET:

Mona Lisa S

Jenson Old

PRINCETON

Savoye L

Santa Fe

SYNCHRO LET: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.

Souvenir Mono ITCTT: The quick brown fox jumped over the lazy dog.

Shatter LET: The quick brown fox jumped over the lazy dog.

Type Embellishments One LET:        

TembleITC TT: The quick brown fox jumped over the lazy dog.

University Roman Bold LET: The quick brown fox jumped over the lazy dog.

SiggylTC TT: The quick brown fox jumped over the lazy dog.



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Assistive Technology

- Screen Narrators
- Braille Readers
- Mouth stick
- Head wand
- Single-switch access
- Sip and puff switch
- Oversized trackball mouse
- Adaptive keyboard
- Eye tracking glasses
- Voice recognition software



Screen Narrators

- NVDA
- Web Anywhere
- Browser Specific Narrators
 - Spoken Web [IE]
 - ChromeVis [Chrome]
 - ChromeVox [Chrome]
 - Apple VoiceOver

MIT Finger Reader
Experimental
Technology

Creating Accessible Content

- Fonts should be large, clear, and without unnecessary décor
- Organize content into distinct sections with clear headings
- Colors should have high contrast
- Label fields and elements clearly
- Movies and animations should provide captions or transcripts

<http://rachelappel.com/designing-and-programming-accessible-websites-and-apps>

Contrast Sensitivity

Contrast Sensitivity

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Contrast Sensitivity

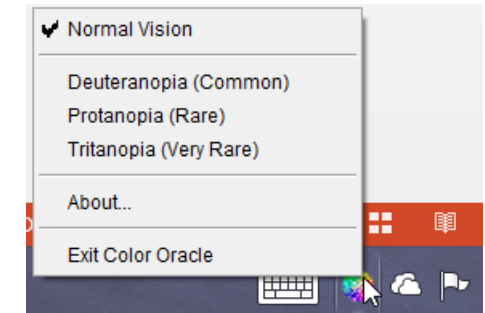
Contrast Sensitivity

Accessibility Color Wheel Tool

<http://gmazzocato.altervista.org/colorwheel/wheel.php>

Color Oracle

<http://colororacle.org/>



MSDN Designing with Color

<http://msdn.microsoft.com/en-us/library/aa511283.aspx>



Designing Accessible Web Pages

- Use a consistent and clear navigation scheme
- Use a consistent and clear page layout and structure
- Organize content into distinct sections with clear headings
- JUST SAY NO to advertising popups!
 - They make it **impossible** for screen readers to work correctly
 - **Users immediately leave your site. They cannot use it.**
 - They're annoying to able bodied users

Coding Accessible Web Pages

The Section 508
Checklist at
WebAIM

<http://webaim.org/standards/508/checklist>

WebAIM WAVE Tool

<http://wave.webaim.org>



http%3A%2F%2Frachelappel.com

Styles No Styles Contrast

Details

Contrast Errors (12)

12 X Very Low Contrast



Does not account for background images, gradients, etc. Ensure fall-back contrast is defined in case images or CSS3 do not display.

Contrast Tools

Foreground color:

0000ff

lighter | darker

Background color:

ffffff

lighter | darker

Contrast Ratio: 8.6:1

Normal Text: Sample

AA: Pass

AAA: Pass

Large Text: Sample

AA: Pass

AAA: Pass

Rachel Appel



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I'm Speaking
Use Code: CHSPK01

Visual Studio LIVE
MAY 5-8 | CHICAGO, IL

Designing and Programming Accessible Websites Apps



Mar 12 2014 1:53 PM



0 Comments

All too often, popular websites and apps fail to design for access unknowingly resulting in a huge loss of potential customers who cannot consume or access the site. This is all too often due ... [more](#)

Code in the Cloud Using Visual Studio Online

Tags: Visual Studio Online, Azure, Visual Studio



Feb 24 2014 3:02 PM



2 Comments

Visual Studio has added a new member to the family. Visual Studio Online, currently going by code name Monaco, is an online code editor. That's online, in the browser, where you write code. The ...

Browser Compatibility Testing with Modern.IE Tool

Tags: Developer Tools, Virtualization, Cross Browsers



Feb 6 2014 11:57 AM



0 Comments

Details

Filter: Full

Errors (1)

- 1 X Missing or uninformative page title



Alerts (7)

- 1 X Redundant alternative text



- 5 X Suspicious link text



- 1 X Redundant link



Features (9)

- 9 X Linked image with alternative text



Structural Elements (7)

- 5 X Heading level 1

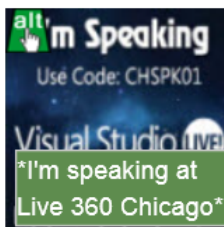
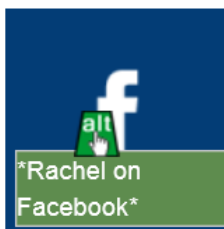
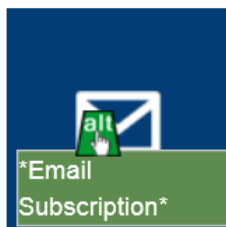
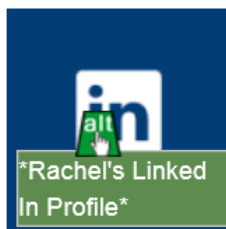


- 2 X Unordered list

The following apply to the entire page:



Rachel Appel



h1 Designing and Programming Accessible Websites and Apps

Mar 12 2014 1:53 PM 0 Comments

All too often, popular websites and apps fail to design for accessibility, unknowingly resulting in a huge loss of potential customers who cannot consume or access the site. This is all too often due ... more



h1 Code in the Cloud Using Visual Studio Online

Tags: Visual Studio Online, Azure, Visual Studio

Feb 24 2014 3:02 PM 2 Comments

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h1 Browser Compatibility Testing with Modern.IE Tools

DEMO

- WebAIM Wave tool

Coding Accessible Web Pages

- Design & code with a "Mobile First" mission.
- HTML & ARIA
- Use skip links
- Must be keyboard and alternative input friendly
- Avoid strobing, flickering, or flashing effects and images
- Avoid crazy JavaScript popups

Skip Links

```
.offscreen {  
    position:absolute;  
    left:-10000px;  
    top:auto;  
    width:1px;  
    height:1px;  
    overflow:hidden;  
}
```

DMEO

- Skip links

<http://webaim.org/techniques/skipnav/>

Coding Accessible Web Pages

- Use semantic tags over aria if one exists

WAI-ARIA

- Web Accessibility Initiative Accessible Rich Internet Applications
- W3C protocol
- Addresses missing semantics in dynamic apps

ARIA

- Roles
 - What an element does (its function or purpose)
- States
 - What condition an element is in (e.g., enabled/disabled, on/off)
- Properties
 - Characteristics of element (e.g., required)
- All these enable assistive technologies to work better

ARIA Roles

- application
- banner
- complementary
- contentinfo
- form
- main
- navigation (nav)
- search

ARIA States & Properties

aria-checked

aria-disabled

aria-atomic

aria-busy (state)

aria-controls

aria-describedby

aria-disabled (state)

aria-dropeffect

aria-flowto

aria-grabbed (state)

aria-haspopup

aria-hidden (state)

aria-invalid (state)

aria-label

aria-labelledby

aria-live

aria-owns

aria-relevant

DEMO

- ARIA

Coding Accessible HTML Forms

- Accessible Forms
 - Labels
 - Tab Order
 - No Focus
 - Required
 - Buttons, Links
- ARIA

Coding Accessible HTML Forms

```
<fieldset>  
  <!-- fields -->  
  <legend>  
    <!-- group checkboxes, radios -->  
  </legend>  
  <!-- fields -->  
</fieldset>
```

Coding Accessible HTML Forms

```
<label for= "fullName">Full Name</label>
```

```
<input id= "fullName" type="text" />
```

```
<span class="required">[Required]</span>
```

Coding Accessible HTML Forms

```
<label for="fullName">Full Name</label>
```

```
<input id="fullName" aria-required="true" type="text" />
```

```
<span class="required">[Required]</span>
```

DEMO

- Accessible Forms

WebAIM Developer Tools

- WebAIM WAVE scanner
[<http://wave.webaim.org>]
- Web Content Accessibility Guidelines
[<http://webaim.org/standards/wcag/checklist>]
- Section 508 Checklist
[<http://webaim.org/standards/508/checklist>]
- Color Contrast Tool
[<http://webaim.org/resources/contrastchecker>]

Resources

- <http://apodder.org/blog/NVDA-quick-start.html>
- <http://usabilitygeek.com/10-free-screen-reader-blind-visually-impaired-users/>

Accessibility Statistics / References

- A study in 2009 by Cass Business School found that around 20% of UK entrepreneurs and 35% of US entrepreneurs are dyslexic (<http://www.ncbi.nlm.nih.gov/pubmed/19378286>)
- 8% of males in the US suffer from some form of color blindness
- 7% of working age adults have a severe dexterity difficulty
- 4%-5% of people in the US, UK and Canada suffer from difficulty hearing. Incidence increases sharply in over-60s, with more than 20% of over-75s affected.
- Among adult computer users in the United States:
 - 1 in 4 has a vision difficulty
 - 1 in 4 has a dexterity difficulty
 - 1 in 5 has a hearing difficulty
 - 35% of US entrepreneurs are dyslexic (20% in the UK)
- <http://www.microsoft.com/enable/research/de>
- <http://webaim.org/articles/userperspective/fault.aspx>