Good Karma & Web Accessibility

Help make the web better for all people everywhere, and reap the SEO, UX, and DI benefits.

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Good Karma & Web Accessibility

The Web is fundamentally designed to work for all people, whatever their hardware, software, language, culture, location, or physical or mental ability.
hardware
software
language, culture
location
physical or mental ability

- Deaf
- Blind / Limited Sight
- Amputation
- Arthritis
- Spinal cord injury
- Coordination
- Dyslexia
- Autism
- A.D.D. / A.D.H.D.
- Memory & Recall
- Literacy Level
- Language Barriers
Good Karma

• When the Web meets this accessibility goal, it is accessible to people with a diverse range of hearing, movement, sight, and cognitive ability.
Reap the Unexpected Benefits!

• Search Engine Optimization (SEO)
• Better user experience (UX)
• Mobile / device independence
• Avoid costly and embarrassing legal issues
• Attract a new untapped audience!
• Good karma!
Simulated Disabilities

• You and your visitors experience temporary artificial disabilities on a daily basis.

  – Distractions – A.D.D.?
  – Sunlight - Impaired Vision?
  – Movement - Tremors/ Arthritis?
  – Noisy rooms - Hearing loss?
DEMOS!

• Hearing impairment
  – https://youtu.be/5Krz-dyD-UQ?t=3m50s

• Visual impairments
  – Goggles

• Motor skill impairments (tremors)
Cataracts

Macular Degeneration

Glaucoma

Retinitis Pigmentosa
Accessibility Levels

The evolution of accessibility standards:

1. General Accessibility
2. 508 Compliance
3. WCAG 1.0
4. WCAG 2.0
   • WAI-ARIA
Accessible

To make a site more accessible you do not need to meet a specific level of compliance.

- Try to reduce barriers
- Make whatever improvements you can
- Make life easier for your visitors

It’s still good karma.
508 Compliance

- It was amended in 1998 to include websites.
- It requires Federal agencies to purchase technology that is accessible to people with disabilities.
- *It does not apply to the private sector, nor does it impose requirements on the recipients of federal funding.*
- Meeting WCAG 1.0 basically makes you 508 compliant.
WCAG 1.0

Organized by accessibility guidelines

- 14 guidelines and 65 checkpoints
- Each checkpoint has been assigned a priority level (1-3):
  - Priority 1 (A) **must**
  - Priority 2 (AA) **should**
  - Priority 3 (AAA) **may**
<table>
<thead>
<tr>
<th>Guideline</th>
<th>508</th>
<th>WCAG 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text Equivalent</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Image Maps (client &amp; server-side)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Auditory description</td>
<td></td>
<td>x</td>
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<tr>
<td>Synchronized multi-media</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Color</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Natural Language</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Complex Tables</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Style Sheets</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Dynamic Content</td>
<td></td>
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<tr>
<td>Scripting</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Screen Flicker</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Text only pages as last resort</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Frames requirements</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Clear Language</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Forms</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Skip navigation</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
WCAG 1.0 vs. WCAG 2.0

- WCAG 2.0 is slightly more strict
- The biggest difference is emphasis
- Some items that were Priority 2 or 3 are now Priority 1 (must) in WCAG 2.0
- In WCAG 2.0 they organized each Guideline into a Principle.
DEAD MOUSE ON YOUR DESK

YOU EARNED IT
WCAG 2.0

Web Content Accessibility Guidelines by overriding principles:

• **Perceivable:**
  Content is available to the senses (sight, hearing, and/or touch)

• **Operable:**
  Interface forms, controls, and navigation are operable

• **Understandable:**
  Content and interface are understandable

• **Robust:**
  Content can be used reliably by a wide variety of user agents, including assistive technologies
PRINCIPLE #1

PERCEIVABLE
The Use of Color

• Color can not be required to understand:
  – the information on your page,
  – indicating an action,
  – prompting a response,
  – or distinguishing a visual element.

• However, color must be **perceivable**.
Why?
Designing for Color-blindness

Normal

Protanopia (red-green)

Monochromacy (very rare)
Contrast Ratio

• **Definition:** a measurement of the visual difference between two colors, expressed mathematically (not subjectively).

• **Example:** Foreground text vs Background color

• Good color contrast design ensures visibility and legibility under a wide range of lighting conditions, screens, device settings, and visual acuity.
WCAG Contrast Ratio Requirements

- Font-size 17px or less requires 4.5:1 ratio
- Font-size 18px or more requires 3:1 ratio
- `.Link text` vs. body text requires 3:1 or use an underline

PASS

FAIL

FAIL
Sample Contrast Ratios

1. Can you read me now? 1.5:1 #D4D4D4
2. Can you read me now? 2.0:1 #B3B3B3
3. Can you read me now? 2.5:1 #B3B3B3
4. Can you read me now? 3.0:1 #949494
5. Can you read me now? 3.5:1 #888888
6. Can you read me now? 4.0:1 #808080
7. Can you read me now? 4.5:1 #777777
8. Can you read me now? 7.0:1 #5A5A5A
9. Can you read me now? 20:1 #000000
Front-end Developer
STOP THE PRESENTATION

THAT RED DOT HAS RETURNED
Concept of Affordance

• Definition: a situation where an object’s sensory characteristics intuitively imply its functionality and use.

• Buttons and links are there to help people take the correct steps to accomplish their goal.

• Their goal is your goal... why make it hard on your visitors?
Skeuomorphic vs. Flat Design Traps

iOS 4 (2010) vs. iOS 7 (2014)
Flat Design 2.0

Skeuomorphic

Flat

Flat 2.0
Links and the Use of Color

It is not safe to use color alone.

• Hover states are dead
• Link colors and their hover states should be consistent and persistent
• Text should be a different color than links.
• This is a **failure**. This is a **success**.
• **Underlines** help
Font Sizes

Keep font sizes larger
• Helps with reading comprehension
• Helps with clicking links
• Helps people with limited eyesight
• And you...
  Have you ever used your phone while walking?
I CAT READ

THE FINE PRINT ANYMORE
ANOTHER GRAPHIC DESIGNER THOUGHT I WOULD LOVE IT IF THE TEXT ON THIS MEME WAS SO SMALL I WOULD NEED TO WEAR MY BI-FOCALS TO READ IT

YOU GOTTA BE KITTEN ME
Ambiguous Links
(#3 Complaint)

• Bad:
  – “More”
  – “Read more”
  – “Learn more”
  – “Click here” NEVER DO THIS

• Good:
  – “More news”
  – “Read full article”
  – “Learn more about cancer”
  – “Click here to read more about Cancer”
Multimedia

Provide text equivalents:

• Audio and videos require CC or a transcript
• Images require Alt attribute (#4 Complaint)
• Flash requires text equivalent
• iframes need a title attribute
Live Text

• Never put text in images when it could be live text.

  Unless it is a meme.

• People do this a lot on rotating banners. They are already hard enough to read.
PRINCIPLE #2

OPERABLE
Touch Screens

• 40px is roughly the size of the tip of your index finger.
• Make your menu items, buttons, and links large enough to use.
  – Improves usability on desktop for everyone
  – Helps people without fine motor skills
  – Helps while you are walking and browsing a website
Keyboard Accessibility

• Every interaction on a site should be possible with the “tab”, “spacebar” and “enter” button

• “Skip over” nav to main content
Help Users Navigate and Find Content

• Information scent
  – People might not enter your site on the homepage.
  – On any device people should always be able to answer:
    • Where am I?
    • How did I get here?
    • How do I get to where I want to go?

• Give users enough time to read and use content
• Allow users to turn off unnecessary animation
• Remove unexpected Screen changes
  (#5 complaint)
I WAS THINKING ABOUT ADDING A ROTATING BANNER ON MY WEBSITE

NO
PRINCIPLE #3

UNDERSTANDABLE
PRINCIPLE #3

DON'T MAKE ME THINK
Don’t Make Me Think.

• Text
  – Write it simple.
  – Provide summaries for large sections of text.
  – E.S.L.

• Visuals
  – Design it simple.
  – Be consistent.
  – Follow design patterns, don’t invent new ones.
Don’t Make Me Think.

• Make forms easy to understand
  – Provide labels for form elements
  – Provide help text

• “To err is human”
  – Form Error Prevention
  – Help people recover from errors
WAI-ARIA

Web Accessibility Initiative - Accessible Rich Internet Applications

WAI-ARIA Roles
• role="banner" – name of the site, title and/or logo
• role="navigation" or <nav> tag
• role="main" – main content
• role="search" – assign to the element containing the site search
• role="application"

• User interface components developed with Ajax, JavaScript, and related technologies
PRINCIPLE #4

ROBUST
<p> is for Paragraphs</p>

Search engines and screen readers use HTML to understand your content.

- `<p>` for paragraphs
- `<ol>` `<ul>` for lists
- `<h1>` `<h2>` `<h3>` is for headings
- Tables ONLY for data. No exceptions
HTML5 Page Structure

HTML5 element tags
• `<nav>` – navigation
• `<article>` – main content
• `<aside>` – supporting content
• `<section>` – content that goes together
• `<div>` – everything else
Styles

• Verify that zooming in and out on a page does not break the layout.

• If you disable CSS, the site should still make sense.
Best Practices = Future Proofing

• Maximize compatibility with current and future user tools
• Google Translate / Multilingual Sites
• Screen readers
• Web services and feeds
• Site Migration
6 of the top 12 Complaints from people using assistive technologies have Very Easy Fixes

1. Flash - The presence of inaccessible Flash content
2. CAPTCHA
3. Ambiguous Links - or buttons that do not make sense
4. Images with missing or improper descriptions (alt text)
5. Screens or parts of screens that change unexpectedly
6. Complex or difficult forms
7. Poor or Lack of keyboard accessibility
8. Missing or improper headings
9. Too many links or navigation items
10. Complex data tables
11. Inaccessible or missing search functionality
12. Lack of "skip to main content" or "skip navigation" links
DEMOS!
Mouseless Navigation Demo

HAS TO USE KEYBOARD

ATE ALL THE MICE
WAVE Testing Demo

• How to read results

• Errors vs. false positives
False positive?

3:1
Screen Reader Demo

Screen readers come with every major Operating system now.

- VoiceOver - OS X
- NVDA - Windows
- Talk Back - Android
- VoiceOver - iOS

It's not just JAWS anymore!
Reap the Good Karma of Web Accessibility!

- Search Engine Optimization (SEO)
- Better user experience (UX)
- Mobile / device independence
- Avoiding legal issues
- Attracting an untapped audience
- Good karma!
Final Remarks

• Early in the project, require the design to meet required Contrast Ratios.

• Request that they meet a WCAG level

• Request that they do a WAVE test as proof.

• Ask them to provide a short summary of the report that explains which WAVE errors are actually false positives.
Checklists & Quick References

Checklists:
• http://webaim.org/resources/evalquickref/
• http://webaim.org/resources/designers/
• http://alistapart.com/blog/post/easy-color-contrast-testing

Screen Readers:
• OSX and iOS users already have a screen reader bundled with the operating system: http://webaim.org/articles/voiceover/
• Online Testing http://webanywhere.cs.washington.edu/wa.php

More about Assistive Technologies
• http://webaim.org/projects/screenreadersurvey4/
• http://www.w3.org/WAI/intro/people-use-web/browsing
GOOD JOB GUYS - I'M GIVING YOU A RAISE

3 DEAD BIRDS
Thank You

• Contact us at Duke Web Services if you have questions of need help.

• Ask me a question! joel.crawford@duke.edu

• Follow us on twitter: @DukeWebServices