



# Accessibility - A Whole New World - Web and Mobile Introduction

08/28/2018  
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Human Computer Interaction Researcher and User Interface Design Consultant since the 1980's

Invited expert for the World Wide Web Consortium (W3C) Web Content Accessibility Group (WCAG) Workgroup's Mobile Accessibility and Low Vision Accessibility Taskforces

Over 5 years of experience as a Web and Mobile App Accessibility Expert

Over 20 years of QA and Requirements and Testing management experience

Contributor to WCAG's Mobile Accessibility: How WCAG 2.0 and Other W3C/WAI Guidelines Apply to Mobile located at: <http://w3c.github.io/Mobile-A11y-TF-Note/>

Currently on assignment at Humana, Louisville, KY

Audited and remediated over 1000 websites and mobile applications

Have trained hundreds of designers, developers and testers on how to use screen readers and other manual tools for testing accessibility

Recently joined the University of North Carolina at Charlotte (UNCC) as an adjunct professor to do formal curriculum development and teaching on accessibility and help build their accessibility program



# Accessibility is about all of us

## People with Disabilities: Statistics

	World Wide	USA(2010)
Total Population	6.8 Billion	304 Million
Disabled	1 Billion (15%)	58 Million (19%)

**However, disabilities are no longer confined to traditional People with Disabilities. It also applies to others.**

- **Aging**
- **Temporary disabilities**
- **Nonnative language speakers & low literacy**

# Why we test for Accessibility

So that those with disabilities can use IT

- Worldwide – 1 billion people with disabilities
- USA – 58 million people with disabilities

It is the law

USA

- Title III of the Americans with Disabilities Act (ADA)
- Section 508
- Section 503

International

- All developed countries have laws that support the same concepts.  
Typically based on WCAG 2.0 guidelines

Guidelines

- WCAG 2.0

Drivers

- Increased legal action by the Dept. of Justice for violators of Title III
- Increase in digital devices especially mobile

## **Blind or Low- Vision**

- Support for font resizing
- We have also considered form and other Alert warning positioning
- Form field and link/button descriptions and instructions
- Support for screen reader reading other parts of the page for more information
- Focus outlines visually noticeable (some companies turn them off)
- Reading states of expand and collapse panels and tabs
- Consider other link, button and form field instructions to assist in understand and simplicity
- Design for timeout duration resets within apps (for Cognitive users also)

## **Hearing Impaired**

- Consider captions and text equivalents for video and audio players and material
- Sound turnoff of video/audio players (no autostart)
- Support for keyboard controls on video/audio players

## **Ambulatory/Dexterity (low level of motor skills)**

- Make form field labels put focus within form input/select fields
- Considered page design for item selection and scrolling considerations
- Keyboard control for all items (not mouse use only)

## **Cognitive**

- Put pause buttons on our carousels
- Recommend against more than 4 words in a row in ALL CAPS
- Consider other link, button and form field instructions to assist in understand and simplicity

## **Mobile Users**

- Screen rotation
- Font resizing
- Touch target size
- Everything announces correctly

## **Web Users**

- Alt text for images when appropriate
- Tabbing order
- Focus indication
- Placement of visible labels
- Announcing of other information seen and not seen
- Know when links open dialogs or new pages
- Consistent navigation and identification

## Designers

- Color contrast
- Use of Images
- Use of any control that only puts contents below the control
- No special tabbing order requirements
- Need Skip to content links
- Need Search fields
- Need visible labels for all input fields
- Consistent navigation and identification
- Proper extra instructions if needed

## Developers

- Understand how to code and test for accessibility
- Know how to properly group radio buttons and check boxes
- Know when to use layout tables and how to code them
- Know how to return focus to last place if it moved for a dialog or other newly displayed content
- Know how to properly code error messages to announce by screen readers
- Know how to add other labeling for screen reader only users
- How to provide proper focus indication



# Know what you are going to test – Top 14



- Short page title to identify the subject, site, resource
- Skip to main content should be first link on page
- Other “skip to” areas helpful as well
- Aria and HTML5 landmarks are used correctly
- Page no bigger than 10K
- Do not auto refresh any page
- Accessibility policy/goal on your site approved by legal

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- Tables need caption or summary elements (may be hidden with css)
- Identify table headers using <th> with scope=”col”
- Identify table rows using first cell <td> with scope=”row”
- Headers should never be empty (if needed use &nbsp;)
- Avoid using tables for layout purposes
- Avoid nesting tables (spanned cells or multiple levels of header cells)



- Link text and titles should be simple and easy to read (title should not duplicate label)
- Titles for links/buttons that open new windows and dialogs: say so!
- Avoid duplicate link text

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- All functionality is accessible via keyboard as well as mouse
- Tabbing order follows natural reading order without forced tabindex numbering
- Visual focus borders are high contrast to make focus obvious
- No keyboard trap (user can’t tab to rest of page/app)



- Form field labels placed before or above fields
- Selecting labels puts focus on input field
- Focus on field announces label, title or other text
- Use aria-required=”true” when field is required
- Asterisk (\*) for required is also explained in form area
- Radio buttons are grouped correctly

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- Errors, alerts and dialog should be immediately read by screen reader
- Use role=”alert” or ”dialog” in first div
- Error alerts highlight and tell which fields need fixing
- Aria-live=”assertive” is default and not needed in code. Other live values would need to be coded for
- Timeout alerts for session ending can be extended



- Images have alt text alt=”description” unless they are decorative (don’t add info to the content) use alt=””
- Avoid using images of text: use CSS to style
- If images or files need a plug-in to function on the page put a link to the appropriate plug-in

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- Fonts can be resized quickly and easily to 200%
- Font size is not hard coded
- Consider readability with no fonts smaller than displayed at 8 pt
- Avoid ALL CAPS for more than 4 words (note screen readers read two letter caps as abbreviations: does US = U.S. or us?)



- Heading numbering is descending with no missed or skipped values
- Always start with H1

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- Zoom supported for image and text
- For mobile, zoom available when screen readers are turned on



- Avoid Autoplay of video and audio
- Provide transcripts for all recorded audio
- Have closed caption feature on player controls

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- Complies with PDF/UA, which requires full support for screen readers, keyboard navigation, form field label reading and most other items typical of an accessible webpage
- All other docs should be able to be read by screen readers as well
- If not immediately available provide on request within 48 hours



- Color should not be the only means of conveying information or action
- Color contrast ratio of 4.5:1 for web, 7:1 for mobile
- Use <abbr> tag to define abbreviations

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- Mobile web/app has all respective web accessible items
- Mobile specific may add a few other items like support for gestures, role and title of Button/Links and rotation of the screen
- For mobile, slide in menus are read over underlying page items

## **Tabbing Order** - <https://www.panerabread.com/en-us/home.html>

- Tab through start of page and notice how it does not follow logical reading
- Social media buttons open in new windows but do not announce that

## **Start Planning link on home page** - <https://catering.panerabread.com/#!/>

- Notice it loads in new window
- Sign In | Register and Browse Our Menu links are skipped

## **Start Your order link on catering page** -

- Notice it loads in new window and may display dialog and does not announce that fact

## **Sign In dialog** -

- No instructions for what \* means, or is it for password also?
- Dialog X is not keyboard selectable
- Sign In with blank fields error messages not announced
  - Color not the only means of communicating information or error

## **DOJ pushing for more stringent compliancy in the public and private sector**

- Rules for compliance to ADA to be applied to websites as “public access”

## **Section 508 Refresh now aligns with WCAG 2.0**

- Went live January 2018

## **Mobile Accessibility from WCAG**

- Guidelines and companion to WCAG 2.0 for mobile just released for public review first of March 2015
- New WCAG 2.1 has several mobile specific guidelines

## **European Union Legislation**

- New European Standard will help to make ICT products and services accessible for all
  - Source: [http://www.cencenelec.eu/news/press\\_releases/Pages/PR-2014-03.aspx](http://www.cencenelec.eu/news/press_releases/Pages/PR-2014-03.aspx)

### **Many major companies now have Chief Accessibility Officers**

- AT&T: Christopher Rice
- IBM: Frances West
- Microsoft: Robert Sinclair
- Yahoo: Larry Goldberg
- University of Colorado: Dan Jones

### **Gartner industry advice**

- Companies Should Deploy Technologies to Address IT Accessibility
  - Source: <http://www.gartner.com/newsroom/id/2638315>
  - More detailed analysis is available in the report "Market Trends: New Technologies Benefit Employees and People With Disabilities." The report is available on Gartner's website at <http://www.gartner.com/document/2593617?ref=QuickSearch&sthkw=disabilities%20AND%20technologies>.
- New U.S. Government Rules Will Require IT Leaders to Consider How IT Infrastructure Can Help Promote Employment Opportunities for People with Disabilities (Section 503)
  - Source: <http://www.gartner.com/newsroom/id/2680815>
  - Similar Source: <https://www.gartner.com/doc/2679515>

## Leading Articles

- WSJ: Accessibility Claims Expected Over Websites: 10-15-14
  - Source: <http://online.wsj.com/articles/accessibility-claims-expected-over-websites-1413411990>
- DOJ Pushes for Better Blind Access to Websites: 12-17-14
  - Source: <http://blogs.wsj.com/riskandcompliance/2014/12/17/u-s-justice-dept-pushes-for-better-blind-access-to-websites/>
- Proposed Accessibility Standards for Federal Government Websites Highlights Double Standard Justice Department Seeks to Impose on Public Accommodations: 2-23-15
  - Source: <http://www.adatitleiii.com/2015/02/proposed-accessibility-standards-for-federal-government-websites-highlights-double-standard-justice-department-seeks-to-impose-on-public-accommodations/>
- NPR Report that DOJ Will Release Website Regulations This Month Requires Clarification: 3-9-15
  - Source: <http://www.adatitleiii.com/>

# IT Accessibility Drivers and Trends – Part 4

## **IBM Announces new mobile app accessibility tool**

- 3-4-15: IBM (NYSE: [IBM](#)) researchers have created a new tool for iOS and Android™ mobile applications expected to potentially benefit as many as one billion people with disabilities worldwide, including those who are vision and hearing impaired, as well as the elderly. The new [Mobile Accessibility Checker](#) is an automated test to help strengthen the accessibility features of mobile applications.
  - Source: <http://www-03.ibm.com/press/us/en/pressrelease/46232.wss>

## **Verizon's legal department drives program to make 25 of their websites Accessible**

- Hiring core team and building practice from scratch
- 3 year minimal project

## **Blue Cross and Blue Shield of North Carolina (BCBSNC) Accessible websites redesign project**

- Just hired Accessibility Lead and other positions

## **Harvard and MIT Face Lawsuit for Lack of Online Captioning**

- Suit requests action and not money and could require all universities to follow in like manner
  - Source: <http://campustechnology.com/articles/2015/02/12/harvard-and-mit-face-lawsuit-for-lack-of-online-captioning.aspx>

# Accessibility-related Complaints / Legal Inquiries on the Rise



jetBlue



# Accessibility-related Jobs on the Rise

Companies hiring Accessibility skilled people:

TIAA-CREF

Wells Fargo

Bank of America

Time-Warner Cable

BlueCross/BlueShield

JP Morgan

Verizon

Humana

Google

Amazon

Twitter

Verizon

Many Universities and Colleges



## Settings for iOS

- Turn on/off VoiceOver
  - Accessibility short cut
    - Set triple click Home button for VO
      - » On/Off toggled via press Home key 3 times
    - Rotor setting for Typing Mode
      - » Only can be set in text window
      - » Allows for slide and release on keyboard letter
- Read from top gesture
  - Two finger swipe up
- Read from current gesture
  - Two finger swipe down

## Settings for Android

- Turn on/off TalkBack
  - Vision>Accessibility short cut: on
    - On: hold down power button and follow instructions
      - » Or: In Accessibility Settings turn on Direct Access for On/Off toggled via press Home key 3 times
- Set Talkback gestures
  - Single tap side: read from top
  - Double tap side: read from current
    - I've found the swipe gestures don't work well on Android
  - Accessibility short cut: on
  - Talkback Settings (while found in Vision under Talkback requires Talkback to be turned on first then return and check box)
    - Rapid key input: on
      - » Allows for slide and release on keyboard letter
    - Developer Settings>Display speech output; checked

If you have any questions, feel free to ask them now or contact Alan at [alands289@gmail.com](mailto:alands289@gmail.com) or [asmit604@uncc.edu](mailto:asmit604@uncc.edu)

Best WCAG 2.0 resource: <https://www.w3.org/WAI/WCAG20/quickref/>