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Mobile Site and Native App Accessibility Testing Methodology

Gian Wild

AccessibilityOz, Melbourne, Victoria, Australia

ABSTRACT

The W3C Web Content Accessibility Guidelines, Version 2.0 was released in 2008, prior to the universality of mobile devices that we see today. As a result it does not provide comprehensive testing for accessibility on systems that are displayed on those devices. The update to these guidelines, Version 2.1, does not adequately cover these requirements. Two methodologies have been created by a committee of accessibility specialists that cover the accessibility testing requirements for Mobile Sites and Native Apps. These guidelines have five steps: 1, Identify Devices; 2 (for Mobile Sites) Identify site types and variations, or 2 (for Native Apps) Define application functionality; 3, Test Critical issues; 4, Test mobile-specific issues; and 5, Test assistive technologies and mobile features.

Keywords: Human factors, Accessibility, Accessibility testing, Wcag, En301549, Web accessibility, Disability, People with disabilities, Assistive technologies

INTRODUCTION

Unfortunately, when developing WCAG2, the W3C WCAG Working Group did not envision the current world where mobile is almost ubiquitous. For example, on a mobile device there is no continual access to a keyboard (unless someone is using it as an add-on to the device – or using a Blackberry Classic!). WCAG2 requires that all content be accessible to the keyboard interface, but it does not require that all content be accessible to a mouse or to a touchscreen user, which is essential on a mobile device. WCAG2.1 does include some mobile accessibility requirements but does not go far enough (Wild, 2015) (Alajarmeh, 2022).

The ICT Accessibility Testing Symposium has developed a methodology for evaluating the accessibility of mobile websites. This methodology is an amalgamation of accepted mobile site accessibility testing standards from around the world, including additional developments from the ICT Accessibility Testing Symposium's Mobile Site and Native App Sub-Committee.

WCAG2 success criteria are applicable to mobile sites; however, not all aspects of mobile site accessibility are specifically covered by WCAG2. It was the opinion of the committee that merely conforming WCAG2 (or WCAG 2.1) would not provide for a fully accessible experience for users with disabilities.

ABOUT THE DOCUMENTS

Please note that this methodology does not include those issues already included in WCAG2; however, it does include issues identified in WCAG2.1. This guide was written with the intent to clarify the unique needs of users with disabilities who use mobile websites and to raise the bar for the web development community. This is a work-in-progress, and, as such, the committee does not make a claim that conforming to these requirements will ensure that your mobile site is fully accessible to all users.

Gian Wild chaired the Mobile Site Sub-Committee to develop a set of Mobile Site and Native App Accessibility Testing Guidelines that are available under Creative Commons. These guidelines are meant to be used in conjunction with WCAG2 (and WCAG2.1) to ensure that sites are accessible to people with disabilities using mobile and tablet devices. There are two sets of documents: one for Mobile Sites and one for Native Apps. These are available on the AccessibilityOz website (ICT Mobile Site and Native App Sub-Committee, 2023).

OVERVIEW OF THE MOBILE SITE METHODOLOGY

There are two overview documents:

- Mobile Site Accessibility Testing Methodology (Word, 5.48 MB)
- About Mobile Site Testing – Devices, assistive technologies, site types, variations of a page and capturing errors (Word, 23.4 MB)

The steps for Mobile Site accessibility are:

1. Identify devices: the committee recommends testing with iPhone (Safari), iPad (Safari) and Android (Chrome), but also consider alternative devices such as an Android tablet, especially if this is indicated in analytics or expected usage.
2. Identify site type and variations: identify whether the site is a desktop site (one view whether on a desktop or mobile device), responsive site (resize as the screen size changes) or m.dot site (a completely separate site for mobile devices). Where the site is a responsive site, identify all the different variations of the page.
3. Test critical issues: test for any traps on the website (exit trap, swipe/scroll trap and layer trap).
4. Test mobile issues: test cases are broken into the following categories: Alternatives, Display, Actionable items, Navigational aids, Audio and video, Forms and Mobile/desktop interaction.
5. Test mobile assistive technology and feature support.

MOBILE SITE METHODOLOGY

There are three sets of test case documents, which detail how to test a particular requirement in the methodology, why it is important and example passes of the requirement:

- Mobile Site Accessibility Testing Methodology – Critical test cases (Word, 22.3 MB)
- Mobile Site Accessibility Testing Methodology – Test cases (Word, 90.77 MB)
- Mobile Site Accessibility Testing Methodology – Test cases for assistive technologies and mobile features (Word, 48.14 MB)

The following are the test cases for Mobile Site Methodology:

- Critical
  - Exit trap
  - Swipe/scroll trap
  - Layer trap
- Alternatives
  - Motion, interaction and gesture
  - Touch gestures
  - Geolocation
  - Change of state
  - Audio cues
  - Status messages
  - Abbreviations
  - Summary of content
  - Ambiguous text
- Display
  - Three flashes
  - Change on request
  - Target size
  - Inactive space
  - Fixed size containers
  - Justified text
  - Color contrast
  - Orientation
  - Animation
  - Pinch zoom
  - Reflow
- Actionable items
  - Content on hover, focus or input
  - Native UI
  - Descriptive text links
  - Non-keyboard options
  - Infinite scrolling
  - Color alone
  - Removal of touch

- Navigational aids
  - Visual indicators
  - Character key shortcuts
  - Descriptive headings
  - Inactivity timeout
  - Navigation features
  - ARIA
- Audio and video
  - Transcript
  - Closed captions
  - Live audio and video
- Forms
  - CAPTCHA
  - Context-sensitive help
  - Error prevention
  - Positioned field labels
  - Visible field labels
  - Accessible name
  - Form and keyboard interaction
  - HTML5
- Mobile/desktop interaction
  - Consistency
  - Linking between types of a site
- Assistive technology testing: iOS
  - VoiceOver
  - Keyboard
  - Switch
  - Zoom
  - Reduce Motion
  - Invert Colors
  - Grayscale
  - Reader View and increase text size
- Assistive technology testing: Android
  - TalkBack
  - Keyboard
  - Switch
  - Magnification
  - Remove Animations
  - Color Inversion
  - Grayscale
  - Color correction
  - Increase display size

- Increase text size with Android Chrome
- Simplified view

OVERVIEW OF NATIVE APP METHODOLOGY

The steps for Native App accessibility are:

1. Identify devices: as per mobile site accessibility.
2. Define application functionality: identify the purpose of the native app and detail the required user journeys and test for common elements such as:
    - Navigation – menus, header, footer
    - Landing screen(s)
    - Emergency sections and content
    - Login flows
    - Settings
    - Account and profile
    - Contact Us
    - Real-time updates (eBay, Uber)
    - Privacy policy, Terms and Conditions
    - Interactional functionality (adding items to a shopping cart, payment details, live chat, selections for a product in a catalogue, scanning a barcode, VR, QR code)
    - Help section
    - Widgets (calendars, date pickers)
    - Third-party integrations (geo-locational maps)
    - High-traffic areas
3. Test critical issues: test for any traps in the native app (exit trap, swipe/scroll trap and layer trap, text-to-speech trap, headset trap).
4. Test mobile issues: test cases are broken into the following categories: Alternatives, Display, Actionable items, Navigational aids, Audio and video and Forms.
5. Test mobile assistive technology and feature support.

There are two overview documents:

- Native App Accessibility Testing Methodology (Word, 2.05 MB)
- About Native App Testing – Devices, assistive technologies and capturing errors (Word, 2.06 MB)

NATIVE APP METHODOLOGY

There are three sets of test cases documents, which detail how to test a particular requirement in the methodology, why it is important and example passes of the requirement:

- Native App Accessibility Testing Methodology – Critical test cases (Word, 37.13 MB)

- Native App Accessibility Testing Methodology – Test cases (Word, 101.94 MB)
- Native App Accessibility Testing Methodology – Test cases for assistive technologies and mobile features (Word, 77.9 MB)

The following are the test cases for Mobile Site Methodology:

- Critical
  - Exit trap
  - Swipe/scroll trap
  - Layer trap
  - Text-to-speech trap
  - Headset trap
- Alternatives
  - Motion, interaction and gesture
  - Touch gestures
  - Geolocation
  - Change of state
  - Audio cues
  - Status messages
  - Abbreviations
  - Summary of content
  - Ambiguous text
- Display
  - Three flashes
  - Change on request
  - Target size
  - Inactive space
  - Fixed size containers
  - Justified text
  - Color contrast
  - Orientation
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  - Non-keyboard options
  - Infinite scrolling
  - Color alone
  - Removal of touch
- Navigational aids
  - Visual indicators
  - Character key shortcuts

  - Descriptive headings
  - Inactivity timeout
  - Navigation features
- Audio and video
  - Transcript
  - Closed captions
  - Live audio and video
- Forms
  - CAPTCHA
  - Context-sensitive help
  - Error prevention
  - Positioned field labels
  - Visible field labels
  - Accessible name
  - Form and keyboard interaction
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  - VoiceOver
  - Keyboard
  - Switch
  - Zoom
  - Reduce Motion
  - Invert Colors
  - Grayscale
- Assistive technology testing: Android
  - TalkBack
  - Keyboard
  - Switch
  - Magnification
  - Remove Animations
  - Color Inversion
  - Grayscale
  - Color correction
  - Increase display size
  - Increase font size

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