

Accessibility in Android

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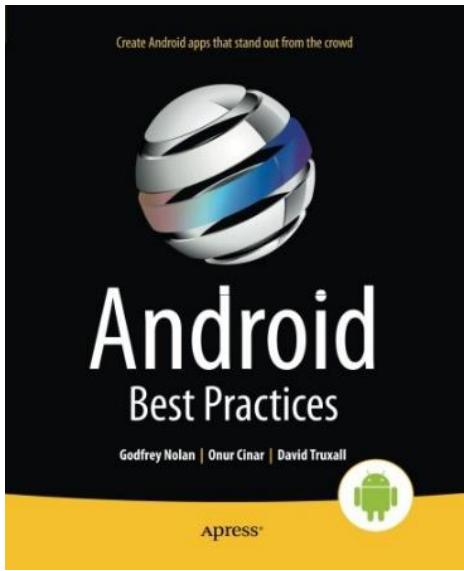
<http://bit.ly/accessdroid>

Online Users with Disabilities

Age 15 to 64

10,044,380

About Me



spnsurvivors.org



<https://davidtruxall.com>

<http://bit.ly/accessdroid>

Agenda

1. Learn about Accessibility
2. Learn how to address it in our apps
3. Understand Section 508
4. Discover tools to help us

Accessibility

Being inclusive of all users despite any
physical limitations the user may have

Why do I need to do this?

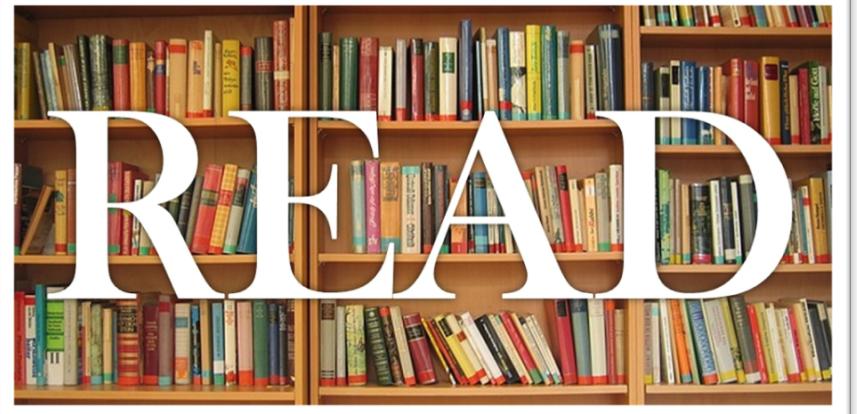


Side Benefits

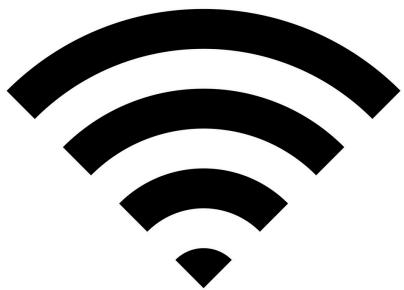
Generally, if you find a way to improve the user experience for visually impaired users, that improvement will also benefit sighted users.

Matt Gemmell

Others Benefiting



NEW!



Language Linguaggio язы́к
Глóсса Język بولى:
 לשְׁנָא Langage Lenguaje
 ভাষা língua 言語
भाषा Ngôn ngữ اللغة
Linguagem Wika 언어
Sprache 语言 언어 Bahasa Bahasa



Implementing Accessibility

Challenge assumptions about users

Hurdles

Cost

Devices

Training

Android versions

Accessibility Laws

**Telecommunications
Act**
Section 255

1996

Civil Rights Act

1964

**Americans with
Disabilities Act**

1990

**Rehabilitation Act
Section 504 and 508**

1973

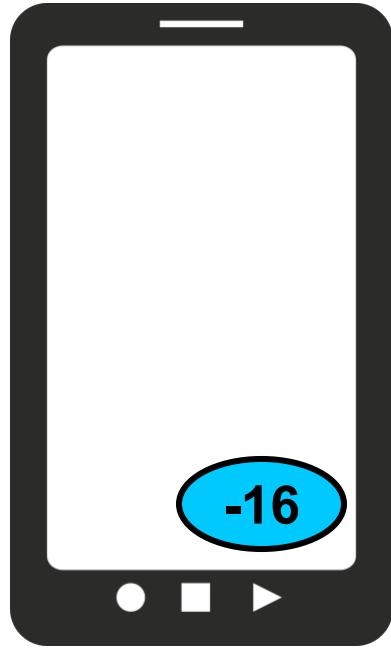
**Public Law 105-220
Rehabilitation Act
Amendments**

1998

Section 508 Rules



!=



Web Content Accessibility Guidelines (WCAG) 2.0



<https://www.w3.org/TR/mobile-accessibility-mapping/>

Android Assistive Technologies

Keyboard Support

TalkBack

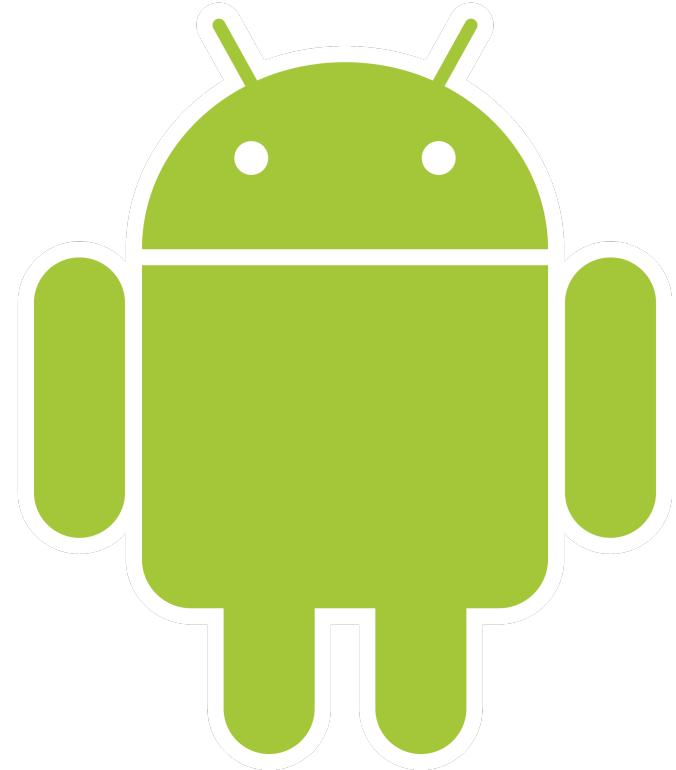
Switch Access

Magnification

Text Sizing and Contrast

Captions

Accessibility Services

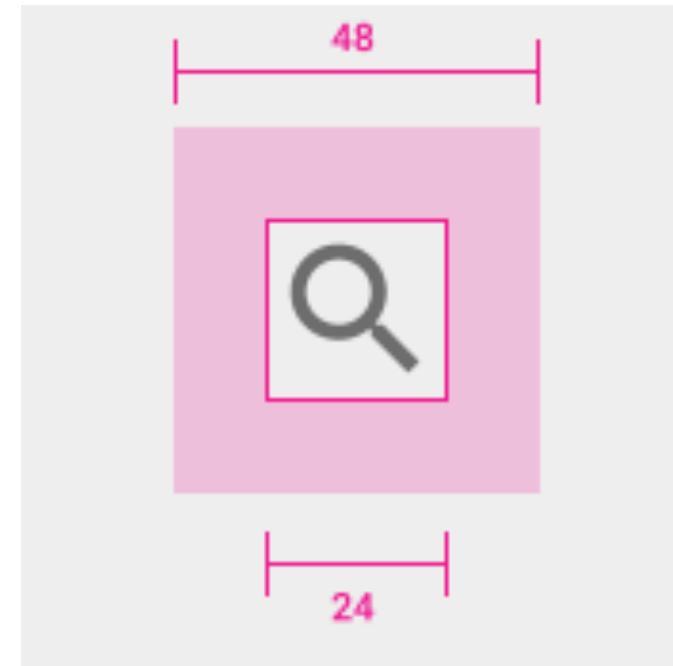


Devices



Design - Tap Targets

48 x 48 dp



Large Text

14pt bold or 18pt and up

Small Text

Everything else

AA

3:1

4.5:1

AAA

4.5.1

7.1

Design - Color Contrast

21

3.1 6.7 1.2

9.9

10.8

6.8 3.1 6.4 5.3

5.7 3.7 2.1

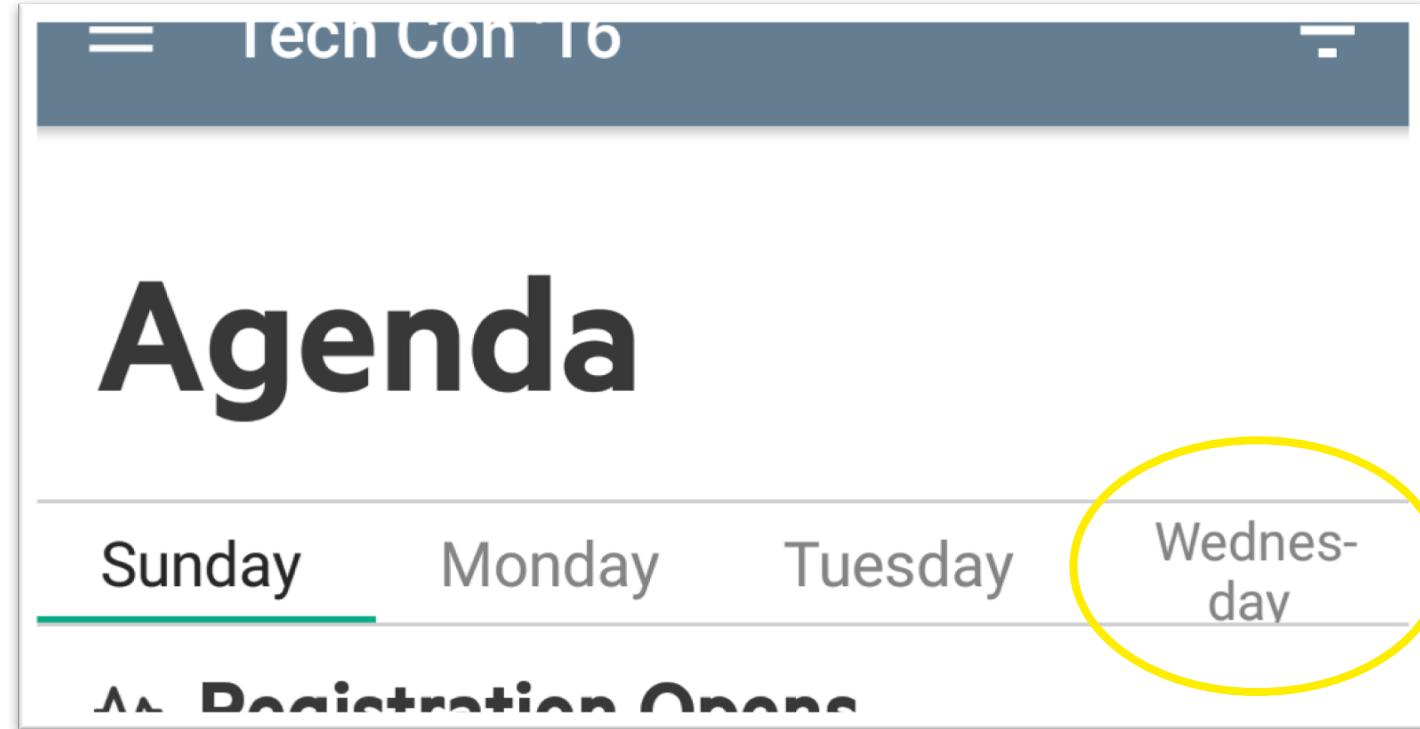
Small Text 4.5:1

Large Text 3:1

Design - Text Size

Support Large Text Accessibility Setting

Don't enforce a single font size



Content – Text Descriptions

Good



“Show/hide navigation menu”

Bad



“Side drawer”

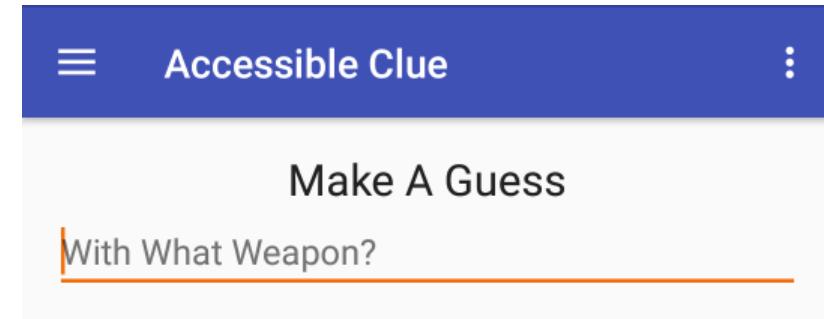
Content - Forms

Good



A screenshot of a mobile application interface showing a "Accessible Clue" card. The card has a blue header bar with three horizontal dots on the left and three vertical dots on the right. Below the header, the text "Make A Guess" is centered. Underneath it, the question "With What Weapon?" is displayed, followed by a long orange-outlined input field.

Not so good



A screenshot of a mobile application interface showing a "Accessible Clue" card. The card has a blue header bar with three horizontal dots on the left and three vertical dots on the right. Below the header, the text "Make A Guess" is centered. Underneath it, the question "With What Weapon?" is displayed, followed by a short orange-outlined input field.

Demo

Keyboard Support

TalkBack

Switch Access

Themes

Focusable RecyclerView

Keyboard



Android Review

Set Theme for each Activity and Drawables

@attr/selectableItemBackground

padding

setContentDescription

labelFor

508 Rules for Software

I am not a lawyer!

These are my interpretations of the rules

508 Rules for Software

1194.21 (a) When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.

Make sure your app works correctly using only a keyboard

508 Rules for Software

1194.21 (b) Applications shall not disrupt or disable activated features of other products that are identified as accessibility features, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.

**Use the built-in accessibility functionality
Don't create your own**

508 Rules for Software

1194.21 (c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.

Make controls focusable, control the tab order

508 Rules for Software

1194.21 (d) Sufficient information about a user interface element including the identity, operation and state of the element shall be available to assistive technology. When an image represents a program element, the information conveyed by the image must also be available in text.

Images and icons need a text equivalent

Set ContentDescriptions

508 Rules for Software

1194.21 (e) When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned to those images shall be consistent throughout an application's performance.

Stick to the standard icon set, be consistent

508 Rules for Software

1194.21 (f) Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.

**Test with TalkBack
Set TalkBack related attributes**

508 Rules for Software

1194.21 (g) Applications shall not override user selected contrast and color selections and other individual display attributes.

Do not force font sizes or colors in code

Make layouts adaptable to different font sizes

508 Rules for Software

1194.21 (h) When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.

Provide a text-based description of any animation

Does not apply to video – different rules for video

508 Rules for Software

1194.21 (i) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

Use icons, sound, vibration, text change in addition to color

508 Rules for Software

1194.21 (j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.

Provide multiple themes – Not required

508 Rules for Software

1194.21 (k) Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.

No flashing or blinking text

508 Rules for Software

1194.21 (l) When electronic forms are used, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

Set the tab order, associate labels to fields

508 Changes for 2018



17

WCAG - Content

Descriptive Headings and Labels

Audio Control

Text descriptions of sensory items

Multiple Routes to Content

WCAG - Content

White Space as Formatting

W E L C O M E

Columns or Tables

WCAG - Errors

Error Suggestions

Error Prevention (Legal, Financial)

- Reversible
- Checked
- Confirmed

WCAG – Navigation

Consistent

Identifiable

Clear Purpose

Focus Order

WCAG – Gestures

Keyboard Alternative

Simple

Onscreen Indicators

Updates for Oreo

Accessibility Volume

Accessibility Services Shortcut

Testing for Accessibility

Input Devices

Accessibility Scanner

Unit/UI Tests

Lint Rules

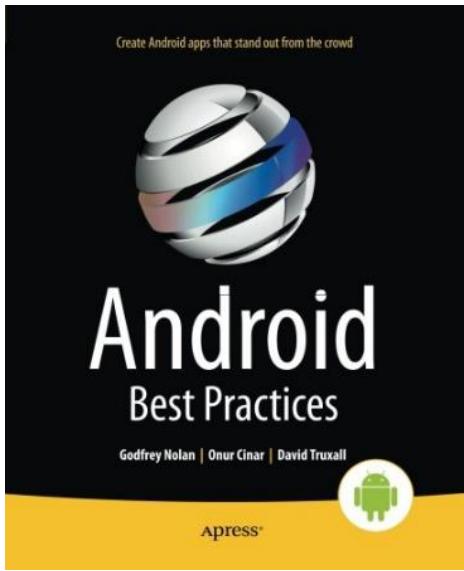
Demo

Accessibility Scanner

Unit/UI Tests

Lint Rules

Shameless Plug



spnsurvivors.org



<https://davidtruxall.com>

<http://bit.ly/accessdroid>

Resources

<http://bit.ly/accessdroid>