



Mobile Accessibility – The Status of Accessibility in Mobile devices

The Accessible Technology Webinar Series is sponsored by the Great Lakes ADA Center and the Pacific ADA Center, both members of the ADA National Network.

The Session is Scheduled to begin at 1:00 pm CT
We will be testing sound quality periodically

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Webinar Features

- **Closed captioning** – click **CC** icon (located in the Audio/Video Panel) or control-F8 (command-F8) and adjust your screen.
- **Questions** - Highlight “Great Lakes” in the participant list and “right click” on your mouse to send a private message. Type your message into the chat area that appears. The question will be viewed by all moderators. (Keyboard - F6, Arrow up or down to locate “Great Lakes” and select to send a message)
- **Customize your view** – You can change the size and location of any of the panels (Chat, etc.) by hovering your mouse over the ☰ icon at the right of each panel and select “Detach Panel”. Each panel can be repositioned and resized.
- Please do not use emoticons or hand-raising features during this session

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iAccessibility



Speaker Paul Adam
[@PaulJAdam](https://twitter.com/PaulJAdam) on Twitter
Paul@PaulJAdam.com iMessage me too ;)
www.PaulJAdam.com

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Vision



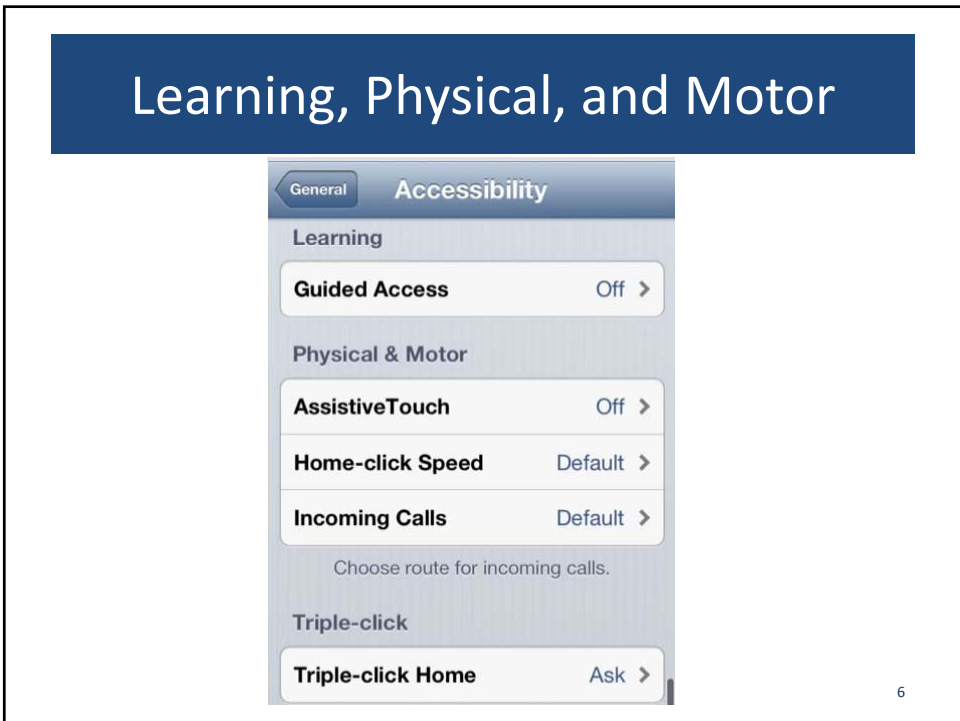
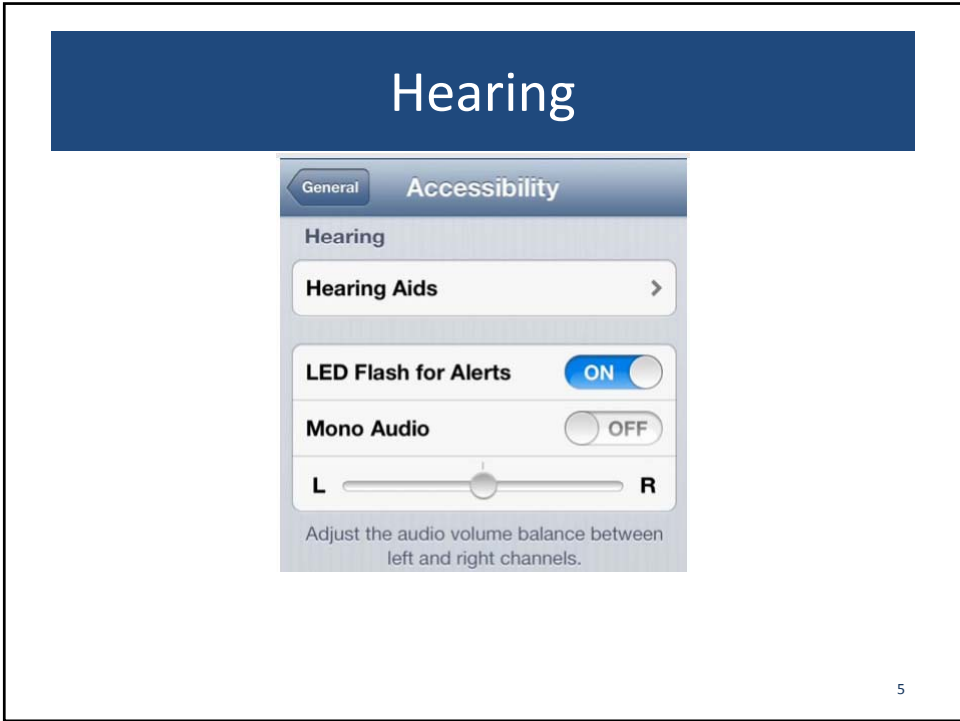
General Accessibility

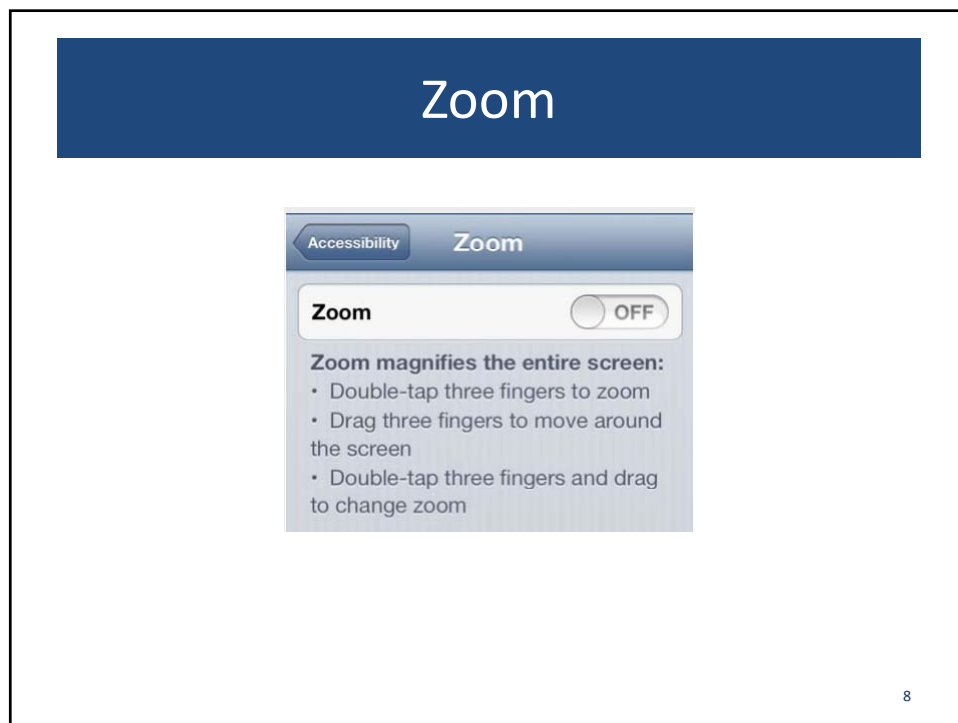
Vision

- VoiceOver Off >
- Zoom Off >
- Large Text Off >
- Invert Colors OFF
- Speak Selection On >
- Speak Auto-text OFF

Automatically speak auto-corrections and auto-capitalizations.

4





Zoom works together with VoiceOver



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Large Text

Accessibility Large Text

Off	
20pt	Abc
24pt	Abc
32pt	Abc ✓
40pt	Abc
48pt	Abc
56pt	Abc

View larger text in Mail, Contacts, Calendars, Messages, and Notes.



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Group:
<http://groups.google.com/group/techlunch/topics>

- [YouTube brings human-enabled closed captioning to live video for Google I/O](#) [1 Update]
- [in development...iPhone app Viswiz](#) [1 Update]

Topic: [YouTube](#)

Example of Large Text on iPad

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Invert Colors


High contrast capability. Can also be useful for nighttime reading.

AT&T 7:31 PM 73%

Very Affordable
 The VoiceOver screen reader is built into Mac OS X so you don't need to buy it separately. In fact, you can purchase an entire Mac mini computer — which includes VoiceOver and accessible applications such as Mail and web browsing — for less than the retail price of the most popular screen reader software for Windows. And, because VoiceOver is on every new Mac, you don't need to additional copies or licenses.

No Maintenance Fees
 Unlike other screen readers, there are no yearly maintenance fees for VoiceOver.

No Registration Keys
 With VoiceOver, there are no license or registration keys to enter, manage, or lose. You can get started immediately and you don't have to worry about getting locked out of your screen reader software.




AT&T 7:35 PM 72%

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No Maintenance Fees
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Speak Selection



Speak Selection **ON**

A Speak button will appear when you select text.

Dialects

Speaking Rate

Highlight Words **ON**

Highlight words as they are spoken.

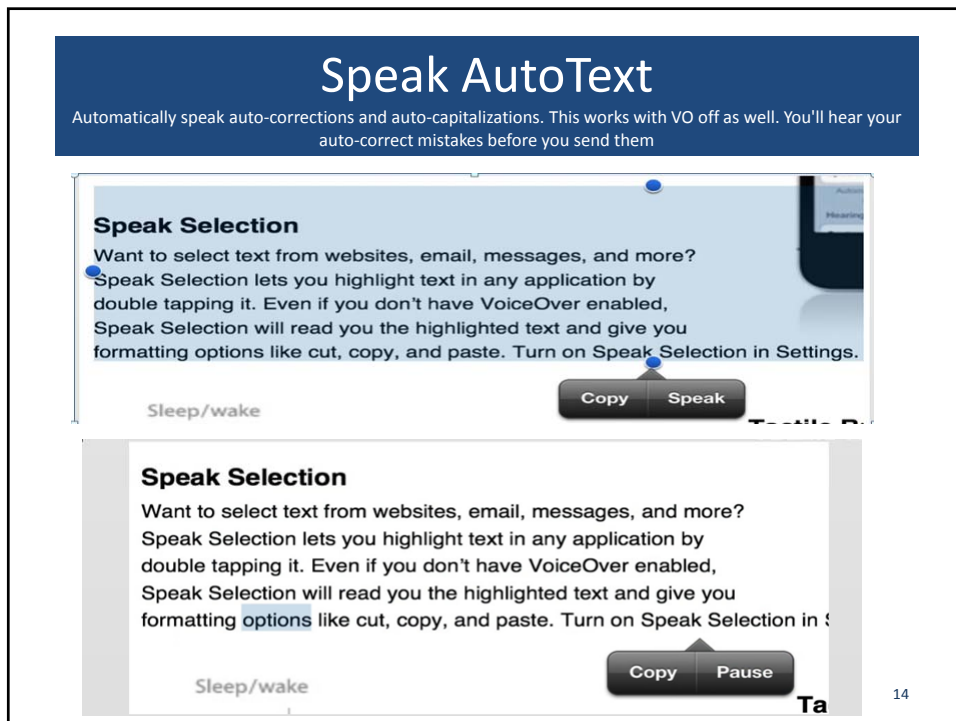
Speak Selection Dialects

- English
 - U.S. English ✓
 - Australian English
 - British English
 - Irish English
 - South African English
- Español
 - Español (España) ✓
 - Español (Mexico)
- Français
 - Français (France) ✓

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Speak AutoText

Automatically speak auto-corrections and auto-capitalizations. This works with VO off as well. You'll hear your auto-correct mistakes before you send them



Speak Selection

Want to select text from websites, email, messages, and more?

Speak Selection lets you highlight text in any application by double tapping it. Even if you don't have VoiceOver enabled, Speak Selection will read you the highlighted text and give you formatting options like cut, copy, and paste. Turn on Speak Selection in Settings.

Sleep/wake

Copy Speak

Speak Selection

Want to select text from websites, email, messages, and more?

Speak Selection lets you highlight text in any application by double tapping it. Even if you don't have VoiceOver enabled, Speak Selection will read you the highlighted text and give you formatting options like cut, copy, and paste. Turn on Speak Selection in Settings.

Sleep/wake

Copy Pause

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Hearing

General Accessibility

Hearing

Hearing Aids >

LED Flash for Alerts **ON**

Mono Audio **OFF**

L R

Adjust the audio volume balance between left and right channels.

Settings Sounds

Sounds and Vibration Patterns

- Ringtone Marimba >
- Text Tone Tri-tone >
- New Voicemail Tri-tone >
- New Mail Ding >
- Sent Mail Swoosh >
- Tweet Tweet >
- Facebook Post Swish >
- Calendar Alerts Alert >
- Reminder Alerts Alert >

Done Vibration Edit

Standard

- Alert
- Heartbeat
- Quick
- Rapid ✓
- S.O.S.
- Staccato
- Symphony

Custom

- Custom pattern one
- Create New Vibration >

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Hearing - Continued

Cancel New Vibration Save

Sounds Reminder Alerts Store

Vibration Custom pattern one >

Settings Videos

Start Playing Where Left Off >

Closed Captioning **ON**

▶ Play ■ Stop

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Guided Access

The first screenshot shows the 'Guided Access' settings in the Accessibility menu. It includes a toggle switch for 'Guided Access' (set to ON), a 'Set Passcode' button, and an 'Enable Screen Sleep' toggle (set to OFF). The second screenshot shows the 'Accessibility Options' menu with 'Guided Access' selected. The third screenshot shows the 'Guided Access' overlay on a social media profile page, with a red circle highlighting the 'Following' button.

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Setting Guided Access

The first screenshot shows the 'Set Passcode' screen with a numeric keypad. The second screenshot shows a notification: 'Guided Access is enabled. Triple-click the home button to exit.' The third screenshot shows the 'Guided Access' overlay on a social media profile page, with a red circle highlighting the 'Following' button.

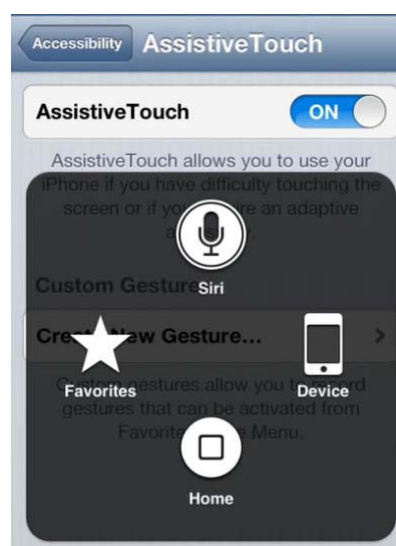
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Setting Guided Access – Cont.



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Physical and Motor



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AssistiveTouch



AssistiveTouch – Cont. 2



AssistiveTouch – Cont. 3

Accessibility Home-click Speed
Adjust the speed required to activate Double and Triple-click Home.

Default	
Slow	
Slowest	✓

Accessibility Incoming Calls

Default	✓
Headset	
Speaker	

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Triple-click Home

Apple recommends that all developers set this option for quick access to accessibility testing features.

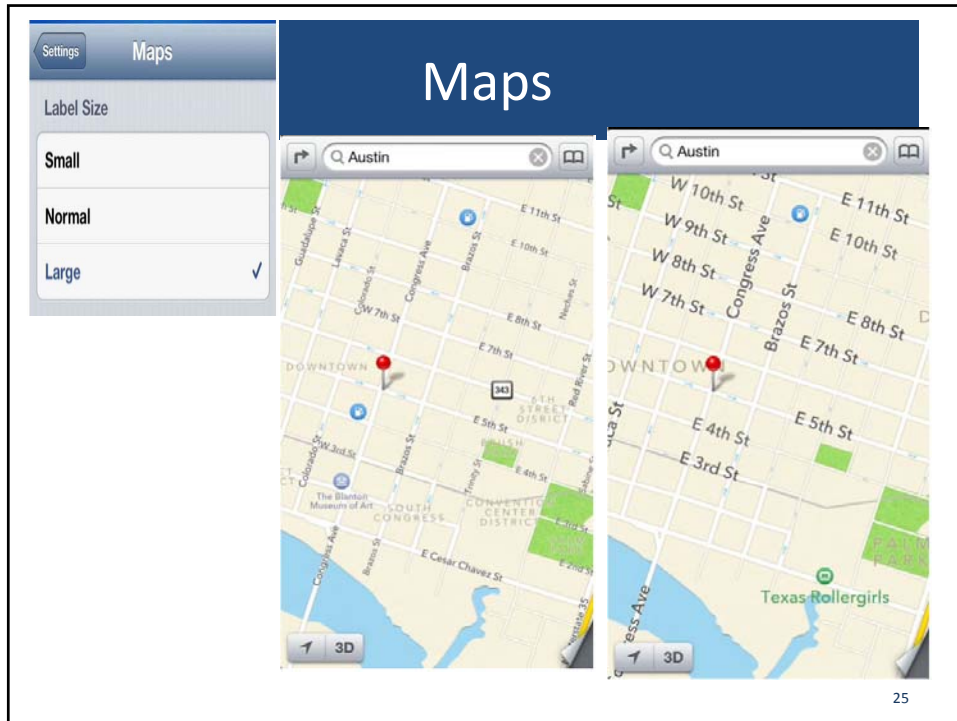
Accessibility Triple-Click
Triple-click the Home Button for:

VoiceOver	✓
Invert Colors	✓
Zoom	✓
AssistiveTouch	✓

Accessibility Options

- Guided Access
- VoiceOver
- Invert Colors
- Zoom ✓
- AssistiveTouch
- Cancel

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iOS Voice Commands



[iOS Voice Commands](#) Not for iPad

Hold down home button for a few seconds until it beeps then say a command. Hold headset button for iPhone earbuds.

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Siri Resources

- [Siri FAQ](#)
- <http://www.apple.com/iphone/features/siri.html>
- [Blind user shown in Apple Siri Promo video.](#)

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Siri Commands

- Setup a meeting at 9 am tomorrow
- Wake me up tomorrow at 6 am
- Remind me to organize my calendar when I get home
- What is the date this Saturday?
- How many days till Christmas
- Set a timer for 2 minutes
- Email Jackie
- Tell Jackie
- Directions to home
- Where can I get a good burger
- What time is it in San Francisco?
- Will it rain tomorrow?
- Where am I?
- Note that I spent 12 dollars on lunch
- How are the markets doing?
- Who was the 5th president of the united states?
- How many dollars is 45 euros?
- What is the population of Washington dc?
- What is the price of gasoline in Austin, tx?
- Tell me a Joke
- Knock Knock
- What do you look like

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Blind Photography

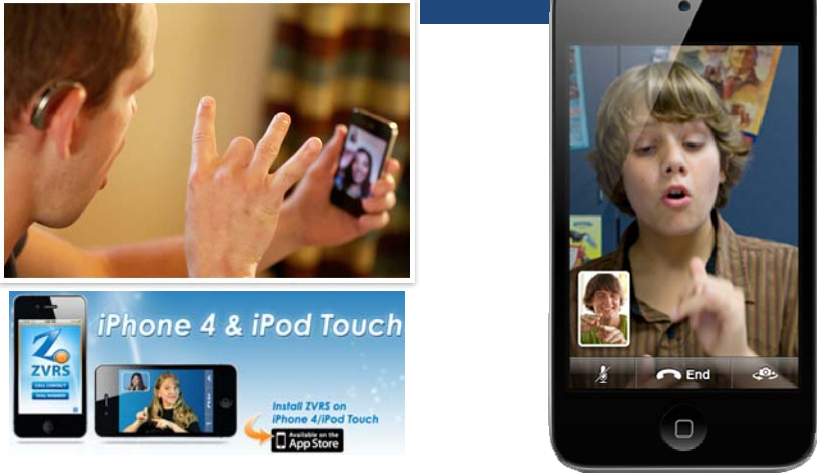
Number, size, and location of faces announced by VoiceOver.

Panorama photos also tell a VoiceOver user to "Slow Down", and "Move Up/Down"



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FaceTime



[ZVRS App](#) (Video Relay Services) Still waiting for Apple to advertise VoiceOver on TV. FaceTime only works over WiFi . For 3G video calls try [Skype](#) or [Fring](#). [Tango](#) is recommended for Accessibility

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Cognitive Accessibility

We all have problems remembering things. These included apps are great for cognitive accessibility!

Reminders

- Medication Reminders
- Bus Stop Exit Location Reminder
- Homework Deadlines

Calendar

- Meetings
- Appointments

Notes

- These all sync between iPads, iPhones, and Macs via iCloud.

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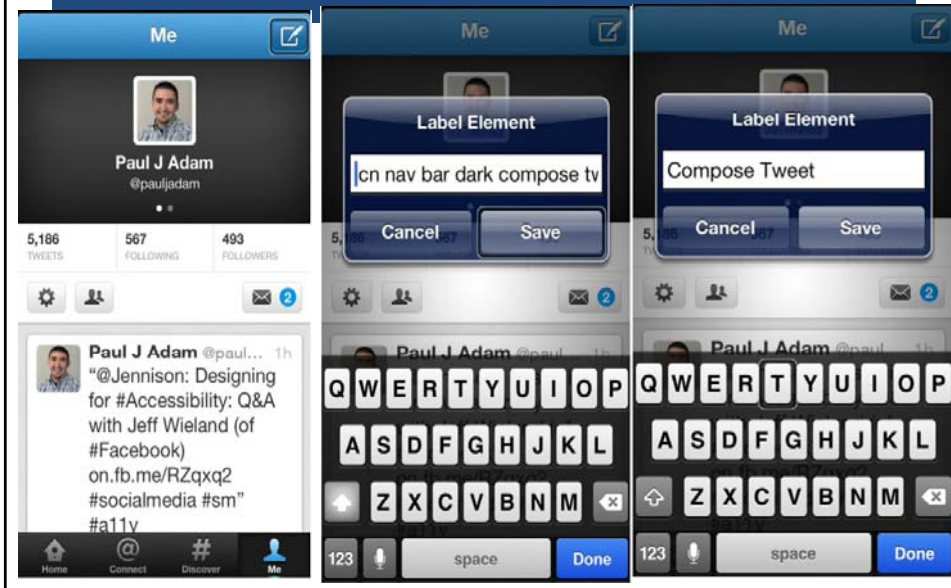
Item Chooser



Items selected in the item chooser also announce their screen location.

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Label Elements



New iOS 6 Accessibility Features

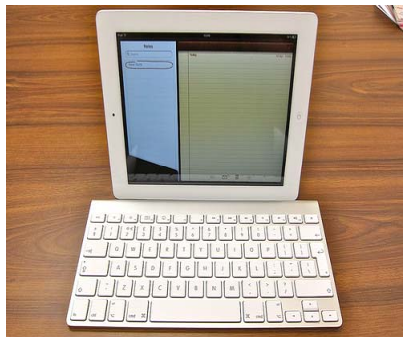
- Tap labels to set focus on explicitly connected inputs. Ever try to tap a tiny little radio button in iOS 5? Very hard! Now you can just tap the label giving users a large tap target.
- Highlight Selection
- Guided Access for Students with Autism
- Home-click Speed
- Made for iPhone Hearing Aids
- Custom Vibration Patterns for All Notifications
- VoiceOver and Zoom Work Together! & AssistiveTouch
- Accessibility Actions - rotor setting that allows easy access to custom gestures like swipe right to delete.

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Testing for Accessibility

Screen Curtain

To turn off the display while you use VoiceOver, triple-tap the screen with three fingers.



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Keyboard Commands

- [VoiceOver Keyboard Commands for iOS 4.1 and Later](#)
- [VoiceOver Commands / Keyboard Shortcuts](#)
- [Navigate using a Bluetooth Keyboard on your iOS Device](#)

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Gesture Commands

- **Drag over the screen.** Select and speak each item as you touch it.
- **Tap.** Speak the selected item.
- **Two-finger tap.** Stop speaking the current item.
- **Flick right or left.** Select the next or previous item.
- **Double tap.** Activate the selected item.
- **Two-finger flick up.** Read all accessible items from the top of the screen.
- **Two-finger flick down.** Read all accessible items from the current position.
- **Enter text on the keyboard.** Flick left or right to select the desired key, then double-tap to enter the character. Alternatively, you can drag your finger over the keyboard until the desired key is selected. Then, while holding the selected key with one finger, tap the screen with another finger to enter the character.
- Flick up or down to move the insertion point forward or backward in the text.
- **Scroll a list or area of the screen.** Flick up or down with three fingers.
- **Adjust a slider.** Flick up or down (with a single finger) to increase or decrease the setting.
- **Unlock iPhone.** Select the Unlock switch, then double-tap the screen.

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Testing Resources

Bookmarklets

- [Favelets for Checking Web Accessibility](#)

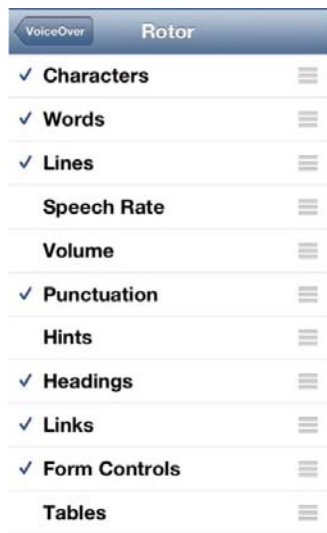
Before & After (Good & Bad) Testing Playgrounds

- [W3C's Before and After Demonstration](#)
- [Accessible University 2.0](#)

Use a Checklist

- [WCAG 2.0 Checklist](#)

Mobile Safari Accessibility



Web Rotor

The screenshot displays the VoiceOver Web Rotor interface. It features two panels, each with a 'VoiceOver' button and a 'Rotor' title. The left panel lists: Lists, Landmarks, Visited Links, Non-Visited Links, and Buttons. The right panel lists: Text Fields, Search Fields, Images, Static Text, In-page Links, Zoom (checked), Same Item, and Vertical Navigation. Each item has a three-line menu icon to its right.

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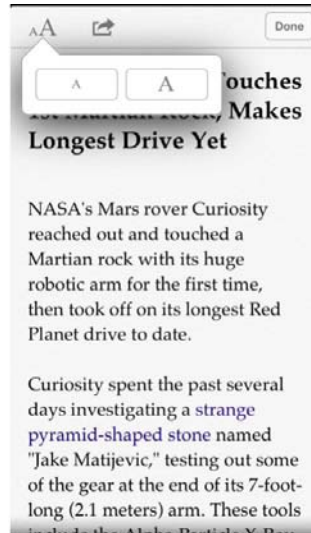
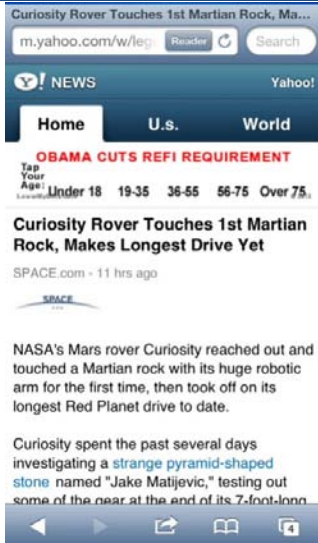
Navigate Images

[VoiceOver Web Rotor Video Demonstration](#)

The screenshot shows the 'VoiceOver Navigate Images' settings menu. It has a 'VoiceOver' button and a title. The menu contains three options: 'Always' (checked with a checkmark), 'With descriptions', and 'Never'.

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Reader



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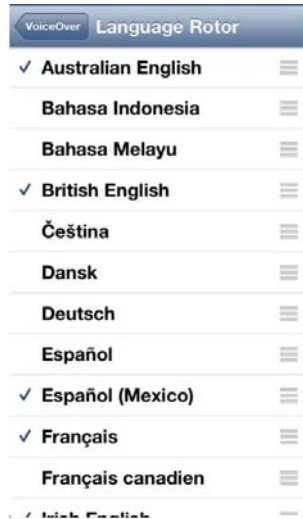
Readability



- [Readability Bookmarks for iOS](#)
- [Readability Native iOS App](#)

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Languages



- VoiceOver works in over 30 languages
- **Automatic Language Detection**
- [Languages with JAWS and MAGic on the Internet](#)
- [VoiceOver Automatic Language Detection Demonstration](#)
- **Learn a Foreign Language**
- You too can pass Spanish class!
- **Proofreading**
- VoiceOver also great for proofreading important emails or presentations, hint, hint

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Accessible Websites and Web View Apps

- **Accessible Websites and Web View Apps**
- Respect the Rotor!
- Label Your Forms! Use Fieldsets and Legends
- [Caption and Tag Your Tables with Row & Colum Headers](#)
- HTML5 Input Types Are Your Friends
- [Control CSS3 Speech Verbosity](#)
- WAI-ARIA is WAY Cool!
- FOCUS on Focus Management! Avoid tabindex=1+, learn the power of tabindex=0 and -1.
- Form Validation FTW!
- Mobilize and Optimize for Small Screens

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Simple Mobile & Screen Magnification Usability & Accessibility Enhancements

Place Label Above Input

By placing the label directly above the input you improve the experience for mobile and screen magnification users. When focus is in the input the label will no longer be cut off like in the below example of the Gmail sign up form where the label is placed to the left but cut off when viewed on an iPhone.



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Position Formatting Instructions Below Input with CSS

Zip Code

 5 Digits

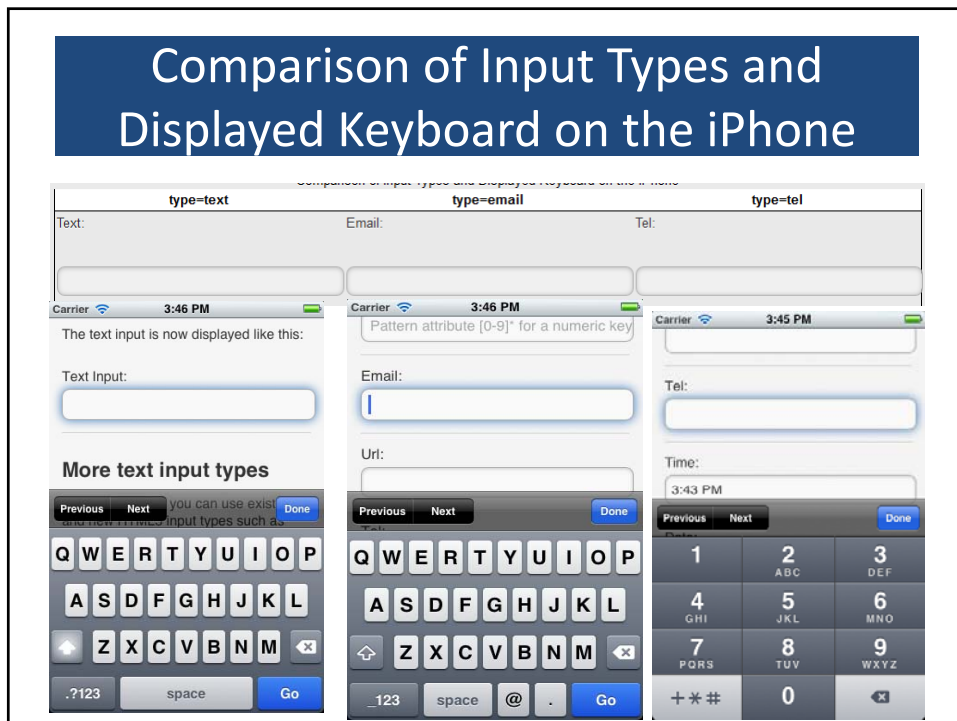
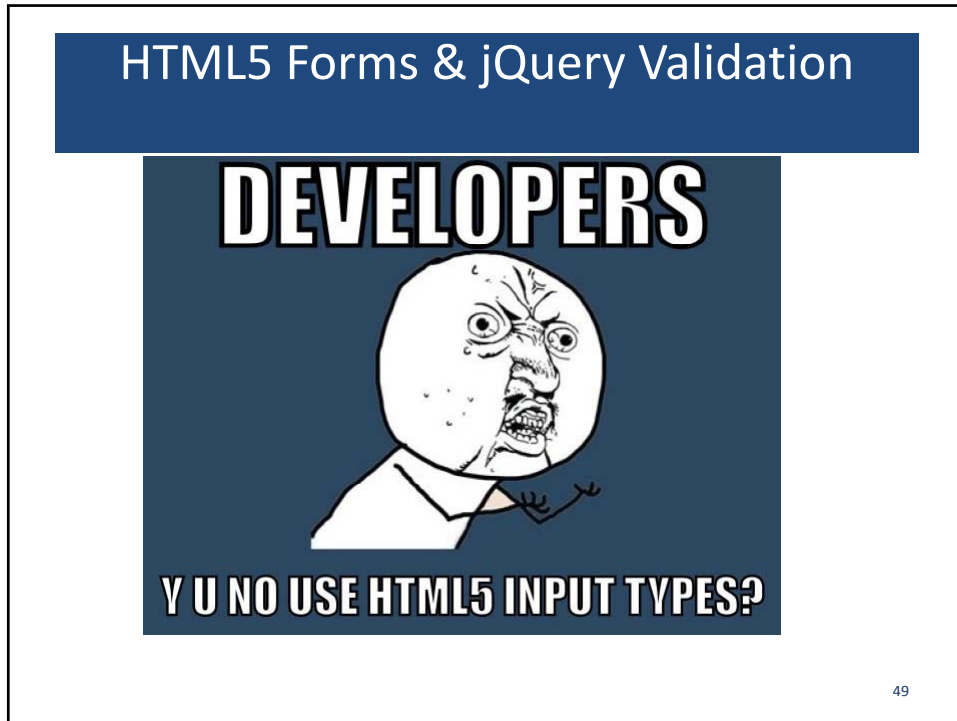
- Using CSS you can enclose formatting instructions in a span tag and position them directly under the input so they are still visible when zoomed in.

Phone *
 - * - *

- Hiding Labels Using CSS

You may want to visually hide some labels where the input might be obvious to most sighted users. We can use CSS positioning to do this. The code for this comes from the [WebAIM](#) article, [CSS in Action: Invisible Content Just for Screen Reader Users](#).

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Date Type Display

A screenshot of a web browser showing a form with fields for Password, Number, Email, Uri, Tel, Time, Date, Month, Week, and Datetime. A date picker is overlaid on the Date field, showing a calendar grid with the date April 5, 2012 selected.

A screenshot of an iPhone mobile application showing a form with fields for Date and Month. A date picker is overlaid on the Date field, showing a calendar grid with the date April 9, 2012 selected.

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iPhone Keyboard Comparison with Pattern Attribute

A screenshot of an iPhone mobile application showing a text field labeled "Zip Code 5 Digits". The keyboard is displayed, showing a numeric keypad with a "Done" button.


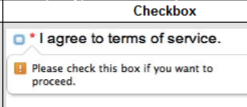
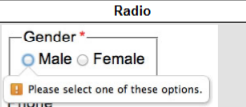

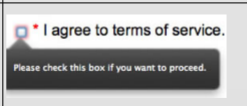
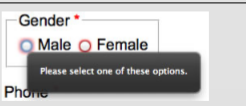
A screenshot of an iPhone mobile application showing a text field labeled "Zip Code 5 Digits". The keyboard is displayed, showing a standard QWERTY keyboard with a "Done" button.

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HTML5 Validation

- [Accessible Client-side Form Validation with HTML5](#) Does not work on iOS
- Different Input Types with the Required Attribute in Action on Mac OS X Lion

Screenshots of Different Input Types with the Required Attribute in Action on Mac OS X Lion

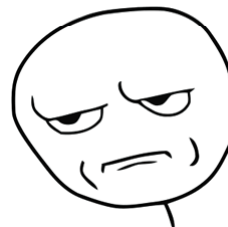
Browser	Text	Checkbox	Radio
Chrome			
Firefox			

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Enhancing Forms with ARIA

Mailing Address: Fields marked in **RED** are required.

First Name:
 Last Name:
 Address:
 Address 2:
 City:
 State: Please select ... Zip:
 Country: United States
 Email:
 Confirm Email:



aria-required="true"

The easiest enhancement is to add the `aria-required="true"` attribute to all required fields in your form.

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VoiceOver Caption Panel on OS X Lion

Below is a screenshot of the VoiceOver Caption Panel on OS X Lion which provides an excellent way to visualize ARIA/screen reader output if you're deaf or hard of hearing or don't want to annoy others in the room with your computer speaking everything out loud. I think it would be cool if iOS could do this as well!

First Name *

 Last Name *

 Email *

First Name * required
 edit text

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Aria-describedby

Don't worry about having the HTML5 required attribute and the `aria-required="true"` attribute and causing repetition. All the screen readers I've tested only speak required once. Here `aria-required` is your fallback for browsers who do not support HTML5 like Internet Explorer. This way screen readers which support ARIA will speak the ARIA attribute when used with IE and ignore the HTML5 attribute.

Password *

 Use 6-20 characters, at least 1 uppercase letter and 1 number.

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Aria Label

aria-label

- Only works in iOS if there is not a connected label. Otherwise, label overrides aria-label.

jQuery Validation

- [Accessible Client-side Form Validation with HTML5, WAI-ARIA, & the jQuery Validation Plugin](#)

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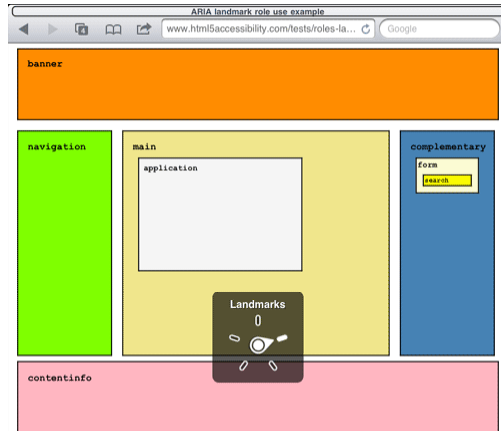


WAI-ARIA

- Roles
 - [Widget Roles](#)
 - [Sliders](#)
 - [Buttons](#)
- [Landmarks](#)
- [Navigation Roles](#)
- [States & Properties](#)
 - [aria-labelledby](#)
 - [aria-required="true"](#)
- [Live Regions](#)
- [Introduction to WAI ARIA](#)
- [Safari HTML Reference - Supported Accessibility Roles](#)
- [Table describing mapping of WAI-ARIA roles to accessibility APIs.](#)

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Web Rotor Navigating by Aria Landmarks



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Mobile Web Apps

jQuery Mobile



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jQuery Resources

- [Docs and Demos](#)
- [Form Element Gallery](#)

Sites That Behave Like Apps

- [Configuring Web Applications - Safari Web Content Guide](#)

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Audio and Video

- [HTML5rocks Audio + Video](#)
- [Safari HTML5 Audio and Video Guide](#)
- [Everything you need to know about HTML5 video and audio](#)

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YouTube App

Cancel **Search Options** Done

Today

This Week

This Month

Duration

All

Short ~4 minutes

Long ~20 minutes

Features

Closed Captions

The video player shows a video titled "Using VoiceOver with iBooks". The video content is a tablet displaying an iBooks page. At the bottom of the player, there is a progress bar and a "CC" icon. A red arrow points to the "CC" icon.

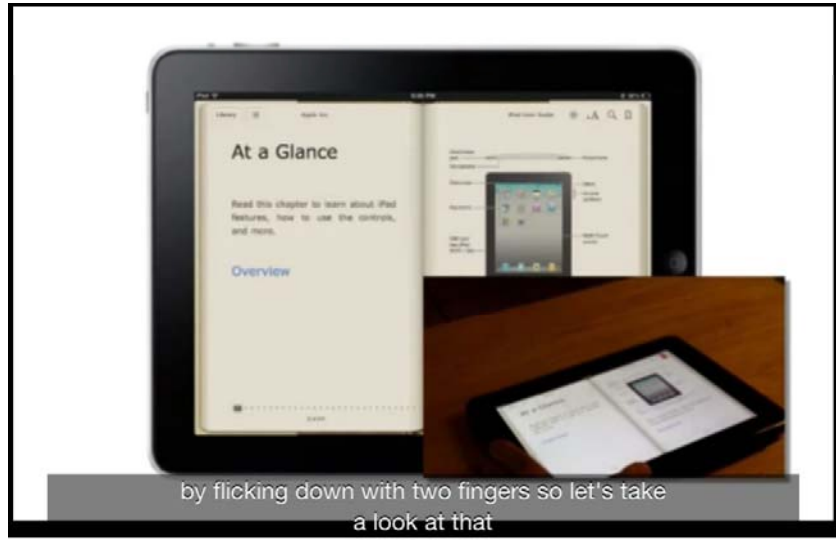
63

Selecting Subtitles

The screenshot shows the subtitle selection menu. At the top, there are "Cancel" and "Select" buttons. Below them, there are two options: "No subtitles" and "English".

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Flicking Down with Two Fingers



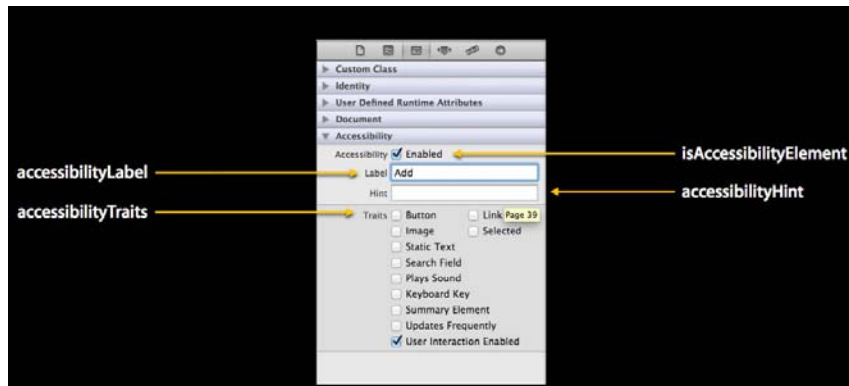
Native App Accessibility

“ supporting accessibility does not impact your ability to innovate and create beautiful iPhone applications ”

Apple Docs

- [Accessibility Programming Guide for iOS](#)
- [UIAccessibility Protocol Reference](#)
- [UIAccessibilityElement Class Reference](#)
- [UIAccessibilityContainer Protocol Reference](#)
- [UIAccessibilityFocus Protocol Reference](#)
- [UIAccessibilityAction Protocol Reference](#)

Interface Builder Accessibility Attributes



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The UI Accessibility programming interface defines the following attributes:

- **Label.** A short, localized word or phrase that succinctly describes the control or view, but does not identify the element's type. Examples are "Add" or "Play."
 - **Traits.** A combination of one or more individual traits, each of which describes a single aspect of an element's state, behavior, or usage. For example, an element that behaves like a keyboard key and that is currently selected can be characterized by the combination of the Keyboard Key and Selected traits.
 - **Hint.** A brief, localized phrase that describes the results of an action on an element. Examples are "Adds a title" or "Opens the shopping list."
 - **Frame.** The frame of the element in screen coordinates, which is given by the CGRect structure that specifies an element's screen location and size.
 - **Value.** The current value of an element, when the value is not represented by the label. For example, the label for a slider might be "Speed," but its current value might be "50%."
- (BOOL)isAccessibilityElement
 - (NSString *)accessibilityLabel
 - (UIAccessibilityTraits)accessibilityTraits
 - (CGRect)accessibilityFrame
 - (NSString *)accessibilityHint
 - (NSString *)accessibilityValue

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Make an image view accessible

- UIImageView *view = [[UIImageView alloc] initWithImage:image]; view.accessibilityLabel = @"Apple Logo";

@property BOOL isAccessibilityElement

- Return YES to make VoiceOver see this element
- Default is YES for UIKit controls

@property(copy) NSString *accessibilityLabel

- A textual representation of the element

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Best Practices

Use short, concise labels

- Good: "Add city"
- Bad: "Adds a city to the list of cities"

Don't include the type information in the label

- Good: "Remove city"
- Bad: "Remove city button"

@property(copy) NSString *accessibilityHint

- Optional
- Provides more information to aid VoiceOver users

@property UIAccessibilityTraits accessibilityTraits

- Defines behavior
- Bitmask of integers

[Enhance the Accessibility of Table Views](#)

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Testing with Accessibility Inspector in the iOS Simulator

Using Accessibility Inspector to Test Your Application



1

Grouping Accessibility Children

- @property BOOL shouldGroupAccessibilityChildren



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- Group items together to control the order VoiceOver visits elements
- UIAccessibilityTraits UIAccessibilityTraitHeader
 - New trait in order to mark elements as a header



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Check if Assistive Technology Running?

- Useful API for Accessibility Apps
 - BOOL UIAccessibilityIsVoiceOverRunning()
 - Is VoiceOver on?
 - (void)accessibilityElementDidBecomeFocused
 - Did VoiceOver focus move to an element?
 - UIAccessibilityAnnouncementNotification
 - Tell VoiceOver to speak something
 - /*
 - Assistive Technology
- Use UIAccessibilityIsVoiceOverRunning() to determine if VoiceOver is running.
Listen for UIAccessibilityVoiceOverStatusChanged to know when VoiceOver starts or stops.
- ```
*/
UIKit_EXTERN BOOL UIAccessibilityIsVoiceOverRunning() NS_AVAILABLE_IOS(4_0);
UIKit_EXTERN NSString *const UIAccessibilityVoiceOverStatusChanged NS_AVAILABLE_IOS(4_0);
```
- // Returns whether system audio is mixed down from stereo to mono.
    - UIKit\_EXTERN BOOL UIAccessibilityIsMonoAudioEnabled() NS\_AVAILABLE\_IOS(5\_0);
    - UIKit\_EXTERN NSString \*const UIAccessibilityMonoAudioStatusDidChangeNotification NS\_AVAILABLE\_IOS(5\_0);
  - // Returns whether the system preference for closed captioning is enabled.
    - UIKit\_EXTERN BOOL UIAccessibilityIsClosedCaptioningEnabled() NS\_AVAILABLE\_IOS(5\_0);
    - UIKit\_EXTERN NSString \*const UIAccessibilityClosedCaptioningStatusDidChangeNotification NS\_AVAILABLE\_IOS(5\_0);
  - // Returns whether the system preference for invert colors is enabled.
    - UIKit\_EXTERN BOOL UIAccessibilityIsInvertColorsEnabled() NS\_AVAILABLE\_IOS(6\_0);
    - UIKit\_EXTERN NSString \*const UIAccessibilityInvertColorsStatusDidChangeNotification NS\_AVAILABLE\_IOS(6\_0);
  - // Returns whether the app is running under Guided Access mode.
    - UIKit\_EXTERN BOOL UIAccessibilityIsGuidedAccessEnabled() NS\_AVAILABLE\_IOS(6\_0);
    - UIKit\_EXTERN NSString \*const UIAccessibilityGuidedAccessStatusDidChangeNotification NS\_AVAILABLE\_IOS(6\_0);

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## Accessibility Notifications

- Tell VoiceOver something happened
  - When a few items change, VoiceOver should “update”  
`UIAccessibilityPostNotification(  
 UIAccessibilityLayoutChangedNotification, nil);`
  - When the screen changes, VoiceOver should “reset”  
`UIAccessibilityPostNotification(  
 UIAccessibilityScreenChangedNotification, nil);`

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## State

- Informs whether the receiving view should be considered modal by accessibility. If YES, then elements outside this view will be ignored. Only elements inside this view will be exposed.  
 default == NO  
 \*/  
`@property(n nonatomic) BOOL accessibilityViewsModal  
 NS_AVAILABLE_IOS(5_0);`
- `@property BOOL accessibilityElementsHidden`
  - Tells VoiceOver to ignore all elements contained within
- `@property CGPoint accessibilityActivationPoint`
  - The point where VoiceOver will simulate a touch event
- `(BOOL)accessibilityPerformEscape`
  - Allows VoiceOver to cancel or exit a modal state

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## iOS 6 new stuff

- New VoiceOver API
  - (BOOL)accessibilityPerformMagicTap
    - Control what happens when user does two-finger double-tap
- /\*
 

Implement accessibilityPerformMagicTap on an element, or the application, in order to provide a context-sensitive action. For example, a music player can implement this to start and stop playback, or a recording app could start and stop recording. Return YES to indicate that the action was handled. default == NO

```
*/
- (BOOL)accessibilityPerformMagicTap NS_AVAILABLE_IOS(6_0);
```

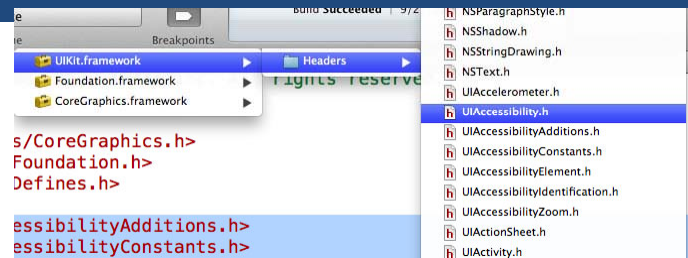
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## Move VoiceOver focus

- Use the element as the argument when posting
  - UIAccessibilityLayoutChangedNotification or UIAccessibilityScreenChangeNotification
  - UIButton \*moveToButton = ...
  - UIAccessibilityPostNotification(
    - UIAccessibilityScreenChangedNotification,
    - moveToButton);

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## Read the header files!



```
#import <UIKit/UIAccessibilityAdditions.h>
#import <UIKit/UIAccessibilityConstants.h>
#import <UIKit/UIAccessibilityElement.h>
#import <UIKit/UIAccessibilityIdentification.h>
#import <UIKit/UIAccessibilityZoom.h>
```

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## UIAccessibility

- UIAccessibility is implemented on all standard UIKit views and controls so that assistive applications can present them to users with disabilities.

Custom items in a user interface should override aspects of UIAccessibility to supply details where the default value is incomplete.

For example, a UIImageView subclass may need to override accessibilityLabel, but it does not need to override accessibilityFrame.

A completely custom subclass of UIView might need to override all of the UIAccessibility methods except accessibilityFrame.

```
*/
@interface NSObject (UIAccessibility)
```

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## Accessibility Traits

Traits are combined in a mask to help assistive applications understand the meaning and intended use of a particular accessibility element.

UIKit applies appropriate traits to all standard controls, however the following traits may be used in conjunction with custom controls.

When setting accessibility traits, combine custom traits with [super accessibilityTraits]. An incorrect combination of custom traits will cause accessibility clients to incorrectly interpret the element. Use common sense when combining traits.

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## typedef uint64\_t UIAccessibilityTraits

```
// Used when the element has no traits.
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitNone;
// Used when the element should be treated as a button.
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitButton;
// Used when the element should be treated as a link.
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitLink;
// Used when an element acts as a header for a content section (e.g. the title
of a navigation bar).
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitHeader
NS_AVAILABLE_IOS(6_0);
// Used when the text field element should also be treated as a search field.
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitSearchField;
// Used when the element should be treated as an image. Can be combined
with button or link, for example.
UIKIT_EXTERN UIAccessibilityTraits UIAccessibilityTraitImage;
```

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## Direct Interaction

Using direct interaction

```
@implementation PianoView
- (id)initWithFrame:(CGRect)frame {
...
KeyView *aKey = [KeyView new];
aKey.isAccessibilityElement = YES;
aKey.accessibilityLabel = @"A";
... }
- (UIAccessibilityTraits)accessibilityTraits {
return
UIAccessibilityTraitAllowsDirectInteraction;
}
- (BOOL)isAccessibilityElement {
return YES; }
```



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## Drag & Drop



Using announcements

```
#define Post UIAccessibilityPostNotification
- (void)continueTracking:(id)touch {
if (isNearEdge(touch))
Post(UIAccessibilityAnnouncementNotification,
@"Nearing %@ border",
borderLabel(touch));
if (isEmptySpace(touch))
Post(UIAccessibilityAnnouncementNotification,
@"On empty space. Lift finger to cancel");
if (isOnDifferentIcon(touch))
Post(UIAccessibilityAnnouncementNotification,
@"On top of Artists. Lift finger to replace");
}
```

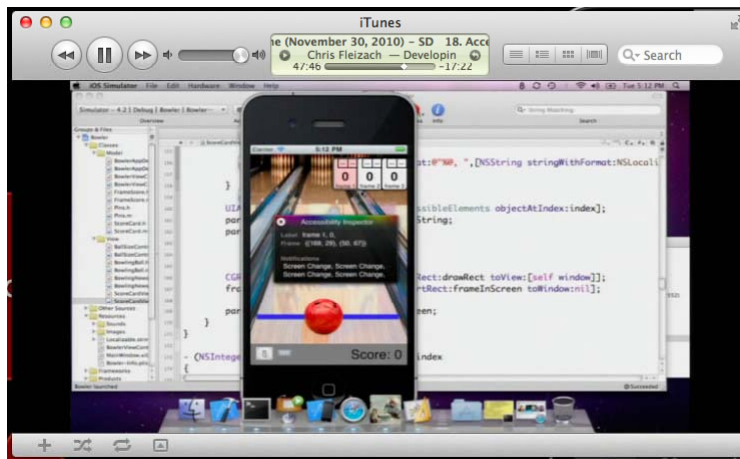
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## Apple's Accessibility Videos & Tutorials

- [Apple Developer Center Videos](#)
- [WWDC2012](#)
- Accessibility for iOS - Raising the Bar  
[View in iTunes](#)  
[Presentation Slides](#)
- Improving Accessibility in Books  
[View in iTunes](#)  
[Presentation Slides](#)
- [WWDC2011](#)
- Combining Web Accessibility and Automation on iOS  
[View in iTunes](#)  
[Presentation Slides](#)
- iOS Accessibility - Making great accessible apps  
[View in iTunes](#)  
[Presentation Slides](#)
- [WWDC2010](#)
- Accessibility on iPhone OS  
[View in iTunes](#)  
[Presentation Slides](#)
- **Safari Development Resources**
- [Improving Accessibility in Web Applications](#)

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## Stanford Fall 2010



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## Resources

[Developing Apps for iOS Accessibility On IOS Make an app for everyone View In iTunes](#)

### **Accessibility Inspirational Video**

[Developers in Action - Making a difference. One app at a time.](#)

Per Busch

Ariadne GPS app

Speech Language Pathology

### **Apple Accessibility Developer Mailing List**

[Accessibility-dev](#)

**Email Apple at [accessibility@apple.com](mailto:accessibility@apple.com)**

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## App Wins

- [VisionSim](#)
- [LookTel Money Reader](#)
- [EyeNote](#)
- [oMoby](#)
- [Red Laser](#)
- [VizWiz](#)
- [iPhone / iPad Apps for Magnification and Vision Support](#)

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## iTunes

- Closed captions and audio descriptions that the user can turn on or off as needed.
- Open subtitles and descriptions that are available to everyone watching or listening.
- Closed subtitles for adding multiple language tracks to video files.
- Accessible PDFs.

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## Audio Options



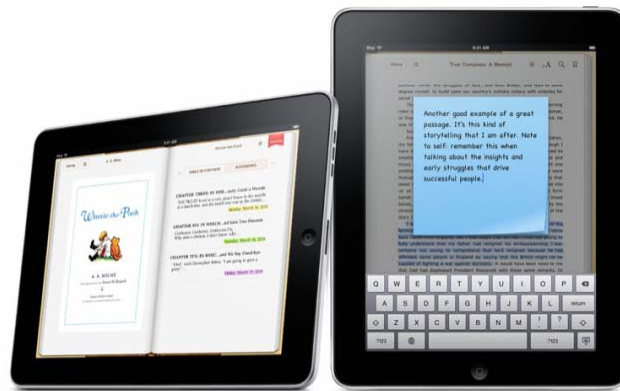
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## Video Resources

- [Creating Accessible iTunes U Content Videos in iTunes](#)
- [Creating Accessible iTunes U Content PDF](#)
- [Example Video with Closed Captions and Closed Descriptions](#)

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## iBooks



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## Creating ePubs



- [Creating ePub files with Pages](#)

A table of contents is automatically generated, which allows readers to jump quickly to any chapter title, heading, or subheading in the book. Review your document to be certain that appropriate paragraph styles are applied to all chapters, titles, headings, and subheadings in your document.

Then open the Document inspector and click TOC (table of contents). Select all of the paragraph styles that you want to appear in the TOC, and then click Update.

Reformat any images, shapes, or other objects in your document to make them inline objects.

- [How to make your own epub books for iBooks](#)

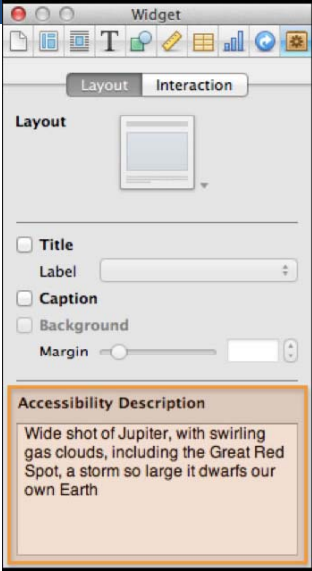
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## Adding Alt Text to iBook ePubs

- [Making Image in ePub Documents for the iPad Accessible](#)
- Export to ePub from [Pages for Mac](#).
- Expand with [Stuffit Expander](#).
- Find .xhtml files.
- Edit with Dreamweaver.
- Add Alt text.
- Convert back to ePub with [Calibre](#).

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# iBooks Author



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# AppleTV

*“ Apple TV with VoiceOver is amazing! I have never had independent access to so many movies and television programs. Thank you, #apple ”*



<http://twitter.com/#!/TaiBlas/status/9809514329022464>

[Apple TV \(2nd generation\): Apple Continues to Set the Accessibility Standard](#)

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## Caption your iTunes Content

[http://www.youtube.com/watch?feature=player\\_embedded&v=zd4\\_nHPYpNw](http://www.youtube.com/watch?feature=player_embedded&v=zd4_nHPYpNw)



- [Searching for Closed Captioned Content in iTunes U](#)
- Search Tech-Ease 4 All in iTunes for some CC content.
- [VoiceOver in action on Apple TV 2nd gen and activating captions.](#)

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## Questions?

Speaker Paul Adam  
[@PaulJAdam](https://twitter.com/PaulJAdam) on Twitter  
[Paul@PaulJAdam.com](mailto:Paul@PaulJAdam.com) iMessage me too ;)  
[www.PaulJAdam.com](http://www.PaulJAdam.com)

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**Thank you for participating!**

**NEXT SESSION IS MARCH 21, 2013  
ACCESSIBILITY TESTING IN ENTERPRISES BIG AND SMALL**

This session was recorded and will be  
archived in two days at

<http://www.ada-audio.org/Webinar/AccessibleTechnology/>

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