

iPhone 4

What's New for Software Developers

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Legal Info

- iPhone and iPad is a trademarks of Apple Inc.
- Servin is a trademark of Servin Corporation.

Opening Remarks

- Welcome!
- Thank you!
- My Promise To You
 - Show what's new for software developers in iOS 4.0
- My teaching style
 - Show a few slides
 - Do lots of live demos
 - Questions at anytime are great!

Norman McEntire's WebEx Recordings

<http://servin.com>

- **Norman McEntire's WebEx recordings** are available for purchase and use 24x7 --- learn the skills when you need it!
- Register and learn anytime - 24x7!
- Steam or Download – Your choice!
- These are coding sessions where you'll see Norman WRITE CODE and use the new features!
 - Your absolute fastest path to mastering new iOS 4 Features!

Norman McEntire's Kindle Books

<http://amazon.com>

- Books available on [Amazon Kindle](#) and [Amazon Kindle Reader](#) (iPhone, PC, Mac, Blackberry)
 - iPhone [Objective-C 2.0](#) Programming Exercises
 - iPhone [Database](#) Programming Exercises: SQLite
 - iPhone [Camera](#) Programming Exercises
 - iPhone [External Accessory](#) Programming Exercises
 - iPhone Flashlight Programming Tutorial
 - iPhone 3 Programming Templates Explained

Norman McEntire's iPhone Apps

25+ iPhone Apps

- Technology Professionals
 - [Device Info Plus](#)
 - Device ID Info, Font Info, CPU Info, Network Info, and more!
 - [Accelerometer Fun](#)
 - Display, record, and export accelerometer info
 - [Process Log](#)
 - Display list of processes
- Health/Fitness
 - [Weight Log Simple](#) – keep log of your weight
 - [Sleep Log Simple](#) – keep log of your sleep
- Games and Entertainment
 - [Touch Fast](#) – how fast can you touch the screen?
 - [Simon Says Face Up](#) – can you do as Simon says?

Norman McEntire's UCSD Extension Courses

- These courses are taught by Norman McEntire and fill up quickly (summer session was full) so register early
 - **Introduction to Objective-C**
 - Fall 2010: Sep 27 – Nov 22, Mondays 6pm - 9pm
 - **iPhone Programming: Touch, Sound, and More!**
 - Fall 2010: Sep 30 – Dec 9, Thursdays 6pm – 9pm
 - **Google's Android**
 - Fall 2010: Sep 25 – Oct 30 , Saturdays 9am - 1:30pm

Norman McEntire's Previous SDSIC Presentations

- These SDSIC presentations are available on <http://servin.com>
 - 2010-06-01
 - iPad: What's New for Software Developers
 - 2010-03-09
 - Mobile Apps 2010: iPhone and Android
 - 2009-07-13
 - iPhone OS 3.0: What's New for Software Developers
 - 2009-04-02
 - iPhone Programming: Touch, Sound, and More!

Let's Get Started!

Demo 1

Explore **iOS 4.0 SDK**

Demo 1 – Key Concepts

- Every iOS release provides new features for software developers
 - 1500 **New** APIs in iOS 4.0!
- Use these four steps to explore new releases
 - Step 1. Look for **New Frameworks**
 - Step 2. Look for **New Header File Additions** to existing Frameworks
 - Step 3. Look for **New Language Features**
 - Step 3. Look for **New Project Templates**

Demo 1 – Part 1

Explore **New Frameworks**

Demo 1/Part 1a – Frameworks

iOS 3.2 (27 Frameworks)

iOS 3.2 Frameworks:

/Developer/Platforms/iPhoneOS.platform/Developer/SDKs/iPhoneOS3.2.sdk/System/Library/Frameworks

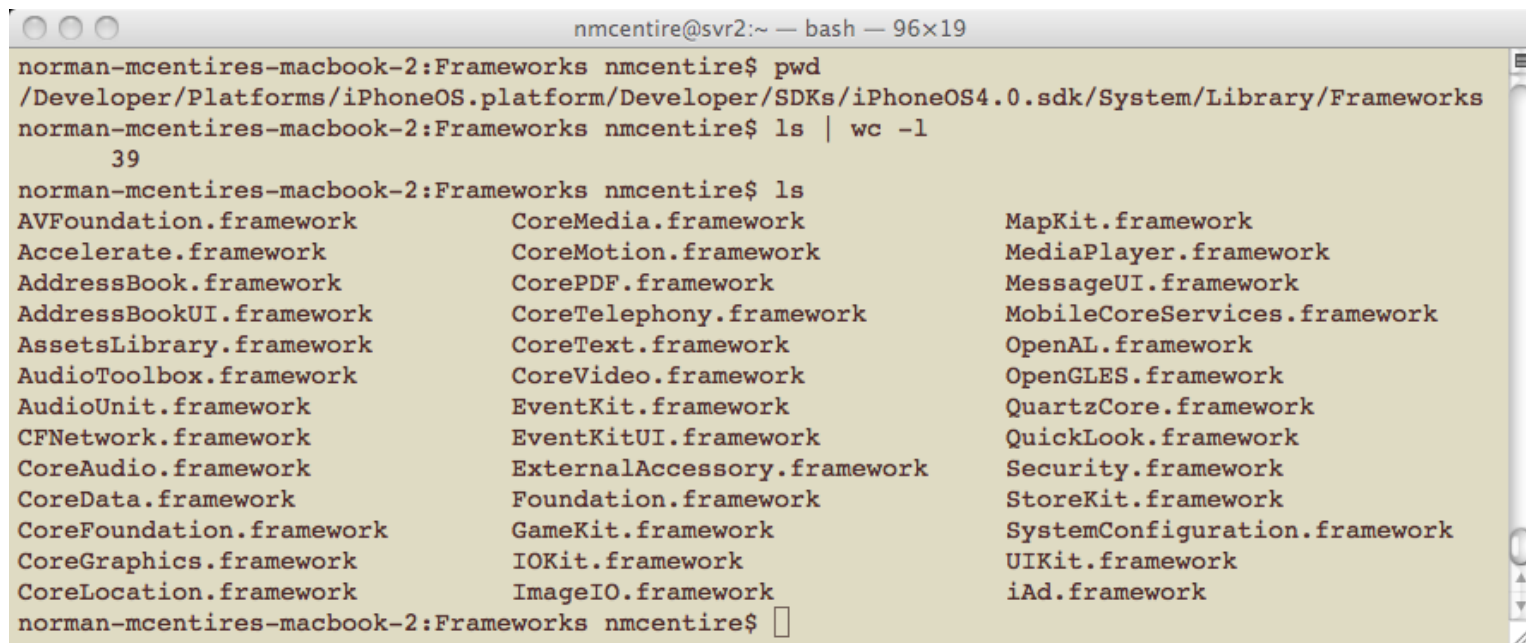
```
nmcentire@svr2:~ — bash — 96x18
norman-mcentires-macbook-2:Frameworks nmcentire$ pwd
/Developer/Platforms/iPhoneOS.platform/Developer/SDKs/iPhoneOS3.2.sdk/System/Library/Frameworks
norman-mcentires-macbook-2:Frameworks nmcentire$ ls | wc -l
27
norman-mcentires-macbook-2:Frameworks nmcentire$ ls
AVFoundation.framework      CoreGraphics.framework      MessageUI.framework
AddressBook.framework       CoreLocation.framework      MobileCoreServices.framework
AddressBookUI.framework     CoreText.framework          OpenAL.framework
AudioToolbox.framework      ExternalAccessory.framework  OpenGL.framework
AudioUnit.framework         Foundation.framework         QuartzCore.framework
CFNetwork.framework         GameKit.framework           Security.framework
CoreAudio.framework         IOKit.framework            StoreKit.framework
CoreData.framework         MapKit.framework            SystemConfiguration.framework
CoreFoundation.framework   MediaPlayer.framework        UIKit.framework
norman-mcentires-macbook-2:Frameworks nmcentire$
```

Demo 1/Part 1b – Frameworks

iOS 4.0 (39 Frameworks)

iOS 4.0 Frameworks

/Developer/Platforms/iPhoneOS.platform/Developer/SDKs/iPhoneOS4.0.sdk/System/Library/Frameworks



```
nmcentire@svr2:~ — bash — 96x19
norman-mcentires-macbook-2:Frameworks nmcentire$ pwd
/Developer/Platforms/iPhoneOS.platform/Developer/SDKs/iPhoneOS4.0.sdk/System/Library/Frameworks
norman-mcentires-macbook-2:Frameworks nmcentire$ ls | wc -l
39
norman-mcentires-macbook-2:Frameworks nmcentire$ ls
AVFoundation.framework      CoreMedia.framework         MapKit.framework
Accelerate.framework        CoreMotion.framework        MediaPlayer.framework
AddressBook.framework       CorePDF.framework           MessageUI.framework
AddressBookUI.framework     CoreTelephony.framework     MobileCoreServices.framework
AssetsLibrary.framework     CoreText.framework          OpenAL.framework
AudioToolbox.framework      CoreVideo.framework         OpenGL.framework
AudioUnit.framework         EventKit.framework          QuartzCore.framework
CFNetwork.framework         EventKitUI.framework        QuickLook.framework
CoreAudio.framework         ExternalAccessory.framework Security.framework
CoreData.framework          Foundation.framework        StoreKit.framework
CoreFoundation.framework    GameKit.framework           SystemConfiguration.framework
CoreGraphics.framework      IOKit.framework            UIKit.framework
CoreLocation.framework     ImageIO.framework          iAd.framework
norman-mcentires-macbook-2:Frameworks nmcentire$
```

iOS 4.0 Frameworks

- 1. AVFoundation.framework
- 2. Accelerate.framework – NEW
- 3. AddressBook.framework
- 4. AddressBookUI.framework
- 5. AssetsLibrary.framework – NEW
- 6. AudioToolbox.framework
- 7. AudioUnit.framework
- 8. CFNetwork.framework

iOS 4.0 Frameworks

- 9. CoreAudio.framework
- 10. CoreData.framework
- 11. CoreFoundation.framework
- 12. CoreGraphics.framework
- 13. CoreLocation.framework
- 14. CoreMedia.framework – NEW
- 15. CoreMotion.framework – NEW
- 16. CorePDF.framework – NEW W/O HEADER!

iOS 4.0 Frameworks

- 17. CoreTelephony.framework – NEW
- 18. CoreText.framework – (added w/iPad 3.2)
- 19. CoreVideo.framework – NEW
- 20. EventKit.framework – NEW
- 21. EventKitUI.framework – NEW
- 22. ExternalAccessory.framework
- 23. Foundation.framework
- 24. GameKit.framework

iOS 4.0 Frameworks

- 25. IOKit.framework – W/O HEADER
- 26. ImageIO.framework – NEW
- 27. MapKit.framework
- 28. MediaPlayer.framework
- 29. MessageUI.framework
- 30. MobileCoreServices.framework
- 31. OpenAL.framework
- 32. OpenGL ES.framework

iOS 4.0 Frameworks

- 33. QuartzCore.framework
- 34. QuickLook.framework – NEW
- 35. Security.framework
- 36. StoreKit.framework
- 37. SystemConfiguration.framework
- 38. UIKit.framework
- 39. iAd.framework - NEW

IOS Framework Layers

- Apple arranges the Frameworks into Layers
 - Cocoa Touch Layer – 7 Frameworks
 - Media Layer – 12 Frameworks
 - Core Services Layer – 14 Frameworks
 - Core OS Layer – 4 Frameworks

Cocoa Touch Layer 7 Frameworks

- 1. Address Book UI
- 2. Event Kit UI – NEW
 - Create/Edit/Display Calendar Events
- 3. Game Kit UI
- 4. iAd – NEW
 - Display ads in your app
- 5. Map Kit
- 6. MessageUI
- 7. UIKit

Media Layer

12 Frameworks

- 1. Assets Library – NEW
 - Access pictures/videos managed by Photos App
- 2. Audio Toolbox
- 3. Audio Unit
- 4. AV Foundation
- 5. Core Audio
- 6. Core Graphics
- 7. Core Text

Media Layer

12 Frameworks

- 8. Core Video
- 9. ImageIO – NEW
 - Read/Write Image Files
- 10. Media Player
- 11. OpenGL ES
- 12. Quartz Core

Core Services Layer

14 Frameworks

- 1. Address Book
- 2. CFNetwork
- 3. Core Data
- 4. Core Foundation
- 5. Core Location
- 6. Core Media - NEW
- 7. Core Motion – NEW
- 8. Core Telephony – NEW

Core Services Layer

14 Frameworks

- 9. Event Kit – NEW
 - Access/Modify Calendar Event Info
- 10. Foundation
- 11. Mobile Core Services
- 12. Quick Look – NEW
 - Display items in formats external to your app
- 13. Store Kit
- 14. System Configuration

Core OS Layer

4 Frameworks – 1 New

- 1. Accelerate – NEW
 - C APIs for vector and matrix math, digital signal processing, large number handling, image processing
- 2. External Accessory
- 3. Security
- 4. System

Demo 1 – Part 2

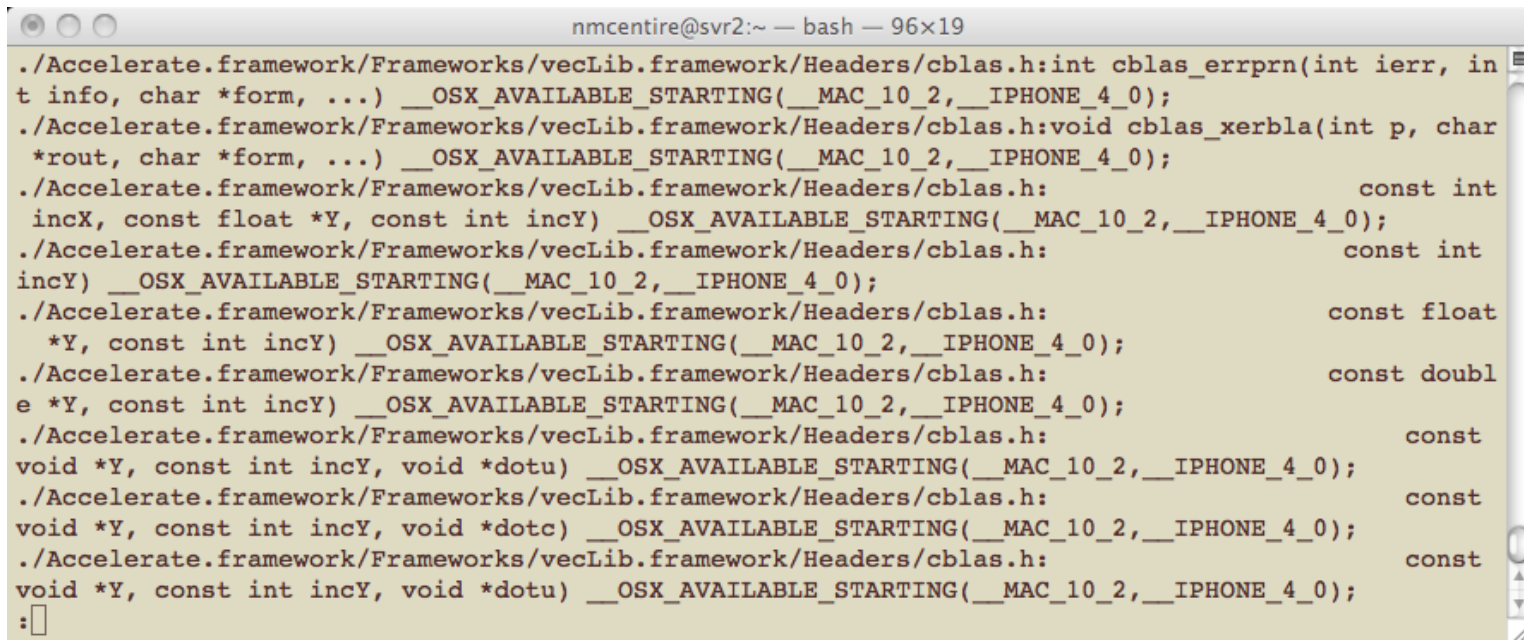
Explore **New Header File Additions**

Demo 1/Part 2 – New Header File Additions

iOS 4 New Header File Info (New `__IPHONE_4_0`)

From top-level of Framework Header files, do a **recursive grep** on the pattern `__IPHONE_4_0`

```
$ cd /Developer/Platforms/iPhoneOS.platform/Developer/SDKs/iPhoneOS4.0.sdk/System/Library/Frameworks
$ grep -r __IPHONE_4_0 . | less
```



```
nmcentire@svr2:~ — bash — 96x19
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:int cblas_errprn(int ierr, in
t info, char *form, ...) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:void cblas_xerbla(int p, char
*rout, char *form, ...) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const int
incX, const float *Y, const int incY) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const int
incY) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const float
*Y, const int incY) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const doubl
e *Y, const int incY) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const
void *Y, const int incY, void *dotu) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const
void *Y, const int incY, void *dotc) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
./Accelerate.framework/Frameworks/vecLib.framework/Headers/cblas.h:const
void *Y, const int incY, void *dotu) __OSX_AVAILABLE_STARTING(__MAC_10_2,__IPHONE_4_0);
:█
```

Demo 1 – Part 3

Explore **New Language Features**

Objective-C **Blocks**

- iOS 4 Introduces **Blocks** as alternative to using Delegates
- Blocks are similar to...
 - Java Anonymous Classes
 - Example: Android Java OnClickListener callback
 - JavaScript Anonymous Functions
 - Example: Google Geocoder API callback

Java Anonymous Class (Objective-C Blocks are Similar)

- Example Android Java code used as OnClickListener – used as **callback** when button clicked
- Code Segment
 - ```
button.setOnClickListener(new OnClickListener() {
 public void onClick(View v) {
 ...
 }
});
```

# JavaScript Anonymous Function (Objective-C Blocks are Similar)

- Example JavaScript code used by Google Geocoder – used as callback when Geocoder completes asyn operation
- Code Segment
  - ```
navigator.geolocation.getCurrentPosition(  
    function(position) {  
        ...  
    });
```


Accelerometer Example

Delegate vs Blocks

- Access to the Accelerometer makes good example to compare/contrast delegates and blocks
- Delegate Example (iOS 2.x/3.x)
 - UIAccelerometer
 - UIAccelerometerDelegate
- Blocks
 - CMCoreMotionManager
 - CMAccelerometerHandler

Core Motion for Accelerometer using Blocks – Notice the ^

- Declaration Ex: CMAccelerometerHandler
 - typedef void (^CMAccelerometerHandler) (CMAccelerometerData *accelerometerData, NSError *error)
- Implementation Example
 - [mm startAccelerometerUpdatesToQueue:...withHandler:^(CMAccelerometerData *data, NSError *error) { ... }];
 - Key observation: Blocks contain the **callback** code

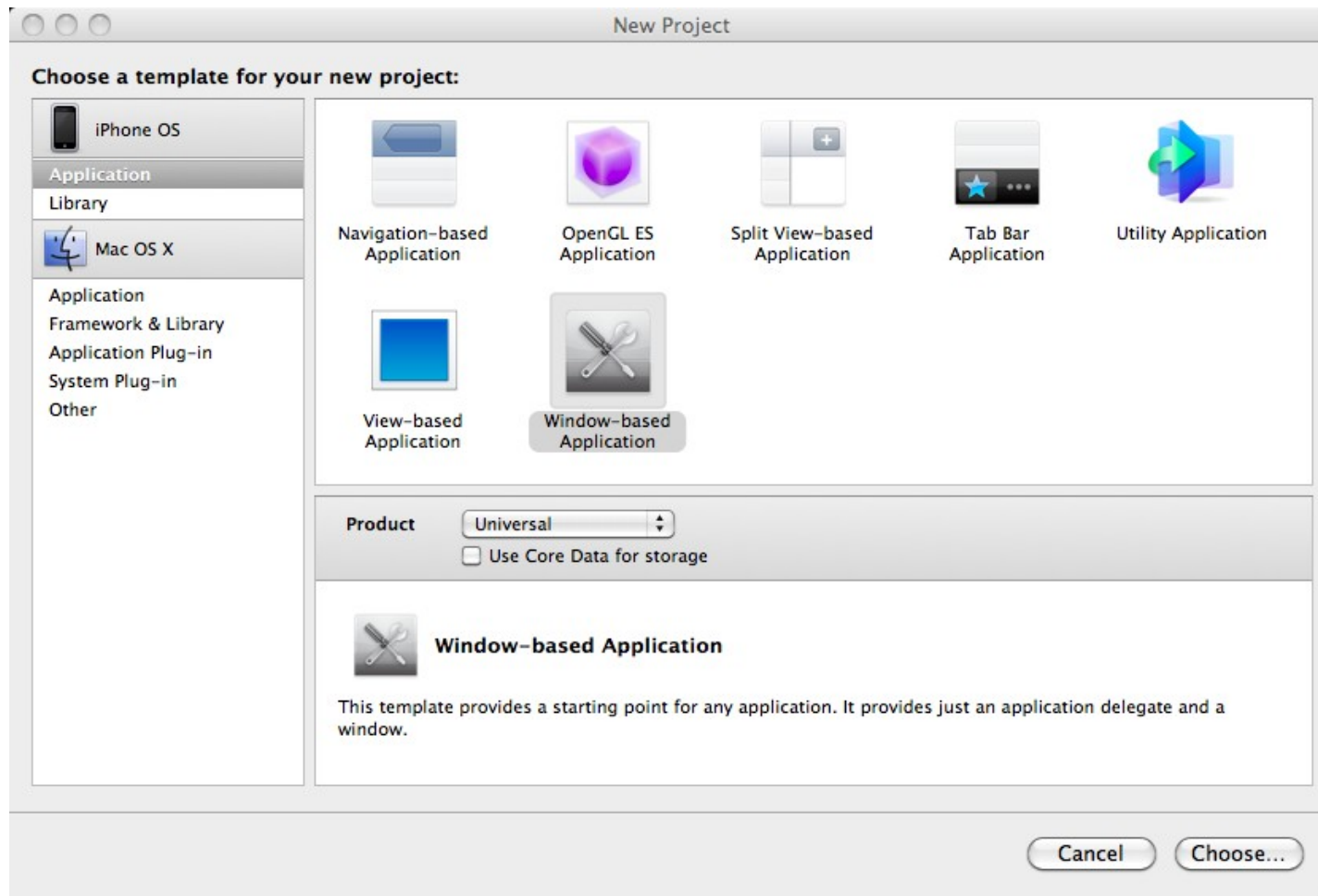
Demo 1 – Part 4

Explore **New Project Templates**

(No New Project Templates for iOS 4)

Demo 1/Part 3 – Project Templates

No New Project Templates for iOS 4

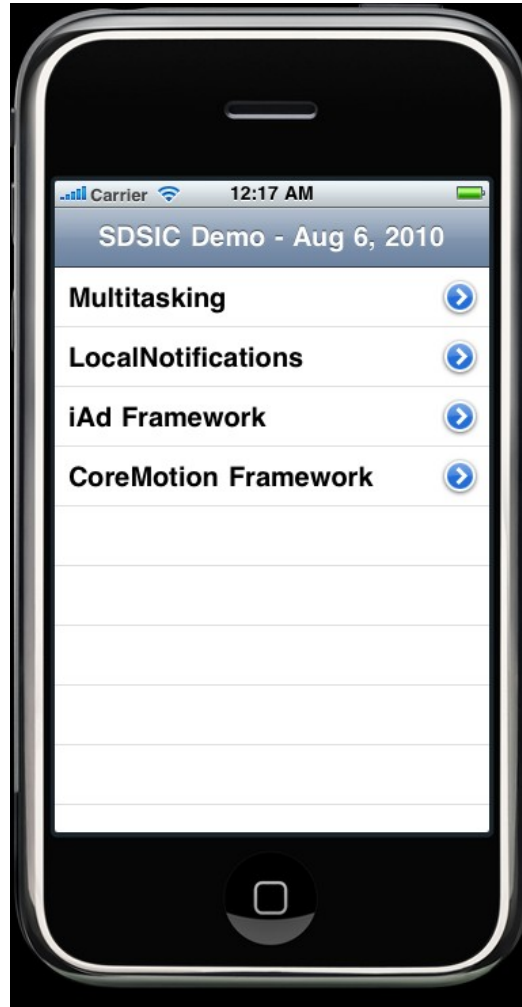


Demo 2

Explore **iOS 4 Multitasking**

Time for Live Demos!

SDSIC Demo App



Thank You!