



What's New in Cocoa Touch

Chris Parker
UIKit Framework Engineer



WWDC 2009



April 2010

iOS 4

WWDC 2010



iPad

iPhone OS 3.2

- Larger screen
- Rotates to all orientations
- Non-fullscreen UI elements
- Document sharing

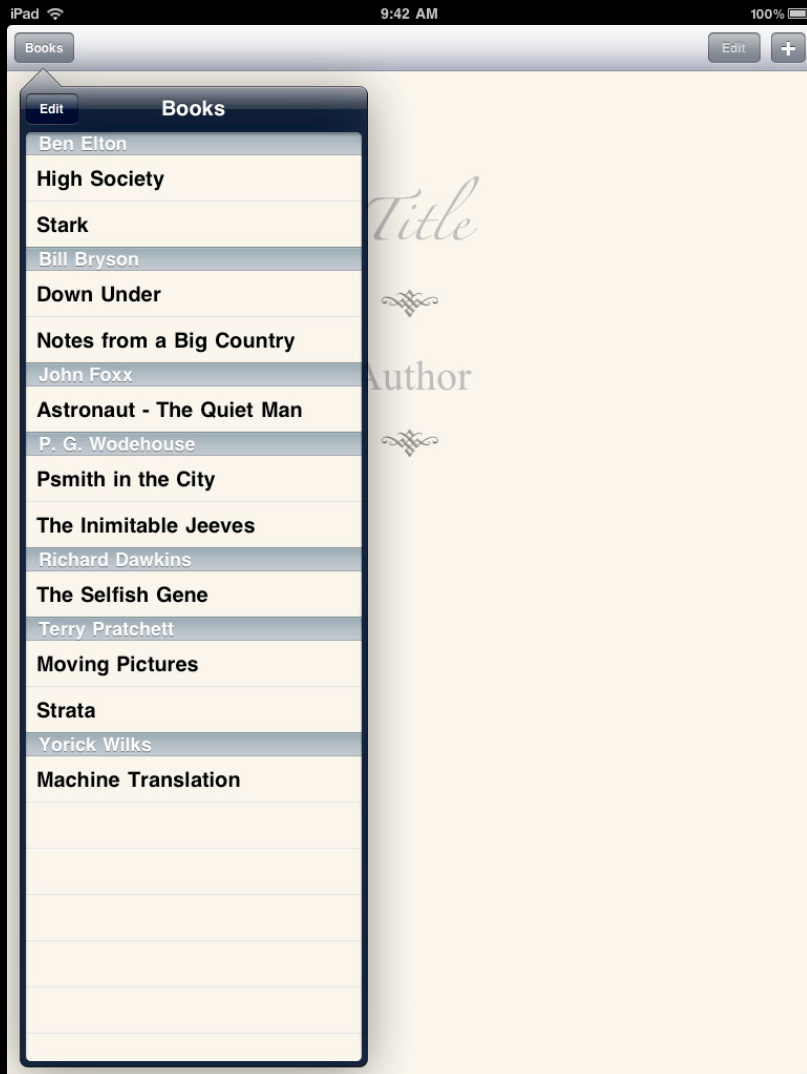
iPhone

iOS 4

- Multitasking
- HiDPI



iPhone OS 3.2



UIPopoverController

- Non-fullscreen
- Transient

UIPopoverController

Creation and properties

- Creation

```
- (id)initWithContentViewController:(UIViewController *)vc;
```

- Properties

```
@property (nonatomic, retain) UIViewController *contentViewController;  
@property (nonatomic) CGSize popoverContentSize;  
@property (nonatomic, copy) NSArray *passthroughViews;
```

UIPopoverController

Creation and properties

- Creation

```
- (id)initWithContentViewController:(UIViewController *)vc;
```

- Properties

```
@property (nonatomic, retain) UIViewController *contentViewController;  
@property (nonatomic) CGSize popoverContentSize;  
@property (nonatomic, copy) NSArray *passthroughViews;
```

UIPopoverController

Presentation and dismissal

- Presenting

- (void)presentPopoverFromRect:(CGRect)rect
 inView:(UIView *)view
 permittedArrowDirections:(UIPopoverArrowDirection)directions
 animated:(BOOL)animated;
- (void)presentPopoverFromBarButtonItem:(UIBarButtonItem *)item
 permittedArrowDirections:(UIPopoverArrowDirection)dir
 animated:(BOOL)animated;

- Dismissing

- (void)dismissPopoverAnimated:(BOOL)animated;

UIPopoverController

Presentation and dismissal

- Presenting

- (void)presentPopoverFromRect:(CGRect)rect
 inView:(UIView *)view
 permittedArrowDirections:(UIPopoverArrowDirection)directions
 animated:(BOOL)animated;
- (void)presentPopoverFromBarButtonItem:(UIBarButtonItem *)item
 permittedArrowDirections:(UIPopoverArrowDirection)dir
 animated:(BOOL)animated;

- Dismissing

- (void)dismissPopoverAnimated:(BOOL)animated;

UIPopoverController

UIViewController additions

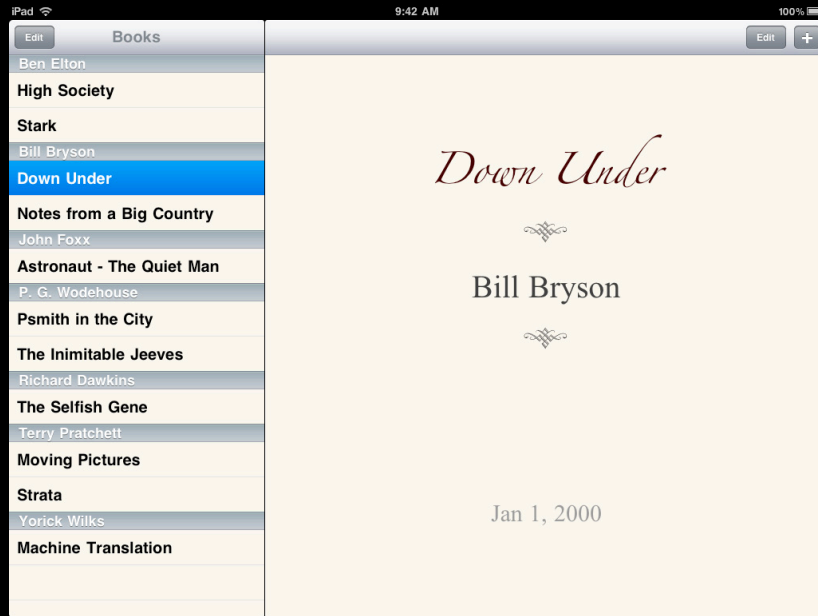
- Content size

```
@property (nonatomic,readwrite) CGSize contentSizeForViewInPopover;
```

- Modality

```
@property (readwrite,getter=isModalInPopover) BOOL modalInPopover;
```

UISplitViewController



- Full screen
- Two view controllers displayed
- Manages a UIPopoverController
- Master/detail views

UISplitViewController

Creation and properties

- Creation
 - NIB via IB
- Properties

```
@property(n nonatomic, copy) NSArray *viewControllers;  
@property(n nonatomic, assign) id <UISplitViewControllerDelegate> delegate;
```

UISplitViewController

UISplitViewControllerDelegate protocol

- (void)splitViewController:(UISplitViewController*)svc
willHideViewController:(UIViewController *)viewController
withBarButtonItem:(UIBarButtonItem*)barButtonItem
forPopoverController:(UIPopoverController*)pc;
- (void)splitViewController:(UISplitViewController*)svc
willShowViewController:(UIViewController *)viewController
invalidatingBarButtonItem:(UIBarButtonItem *)barButtonItem;
- (void)splitViewController:(UISplitViewController*)svc
popoverController:(UIPopoverController*)pc
willPresentViewController:(UIViewController *)viewController;

UISplitViewController

UISplitViewControllerDelegate protocol

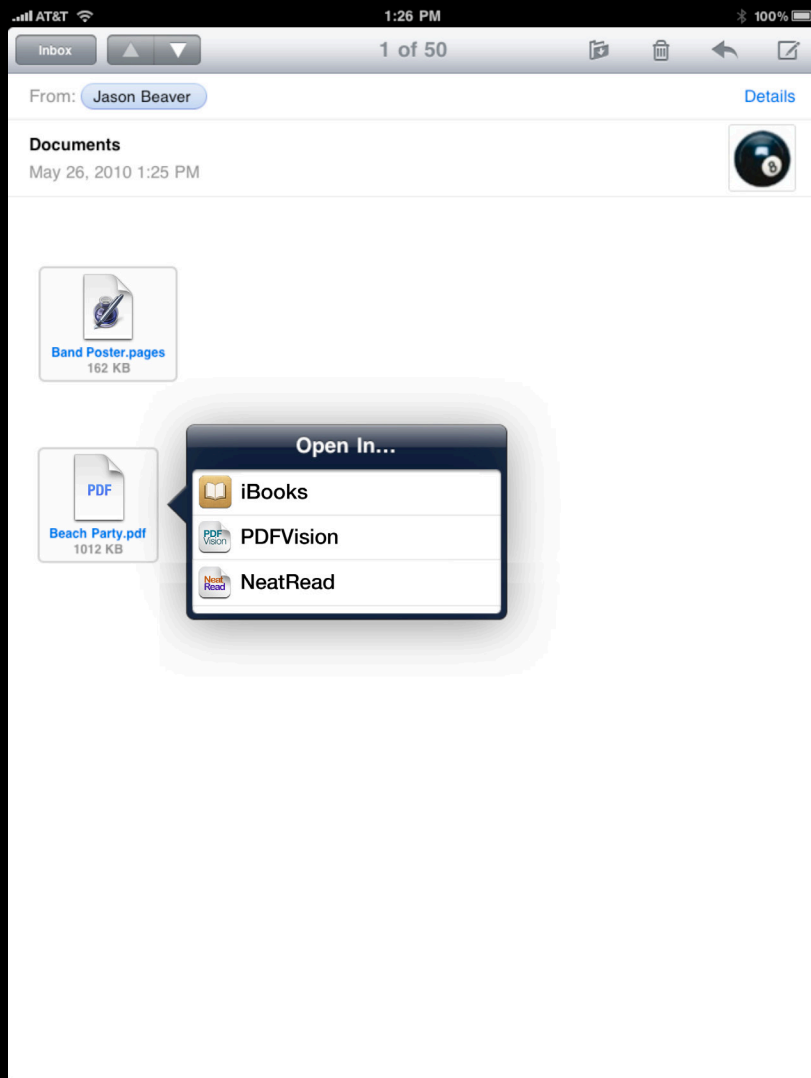
- (void)splitViewController:(UISplitViewController*)svc
willHideViewController:(UIViewController *)viewController
withBarButtonItem:(UIBarButtonItem*)barButtonItem
forPopoverController:(UIPopoverController*)pc;
- (void)splitViewController:(UISplitViewController*)svc
willShowViewController:(UIViewController *)viewController
invalidatingBarButtonItem:(UIBarButtonItem *)barButtonItem;
- (void)splitViewController:(UISplitViewController*)svc
popoverController:(UIPopoverController*)pc
willPresentViewController:(UIViewController *)viewController;

UISplitViewController

UISplitViewControllerDelegate protocol

- (void)splitViewController:(UISplitViewController*)svc
willHideViewController:(UIViewController *)viewController
withBarButtonItem:(UIBarButtonItem*)barButtonItem
forPopoverController:(UIPopoverController*)pc;
- (void)splitViewController:(UISplitViewController*)svc
willShowViewController:(UIViewController *)viewController
invalidatingBarButtonItem:(UIBarButtonItem *)barButtonItem;
- (void)splitViewController:(UISplitViewController*)svc
popoverController:(UIPopoverController*)pc
willPresentViewController:(UIViewController *)viewController;

Demo



UIDocumentInteraction Controller

- Document interchange
- Uses UTIs
- UI for opening documents
- UI for previewing documents

UIDocumentInteractionController

Creation and properties

- Creation

```
+ (UIDocumentInteractionController *)interactionControllerWithURL:(NSURL *)url;
```

- Properties

```
@property(retain) NSURL *URL;  
@property(nonatomic,copy) NSString *UTI;  
@property(copy) NSString *name;  
@property(nonatomic,readonly) NSArray *icons;  
@property(nonatomic,retain) id annotation;
```

UIDocumentInteractionController

Creation and properties

- Creation

```
+ (UIDocumentInteractionController *)interactionControllerWithURL:(NSURL *)url;
```

- Properties

```
@property(retain) NSURL *URL;  
@property(nonatomic,copy) NSString *UTI;  
@property(copy) NSString *name;  
@property(nonatomic,readonly) NSArray *icons;  
@property(nonatomic,retain) id annotation;
```

UIDocumentInteractionController

Options menu

- Presentation

- (BOOL)presentOptionsMenuFromRect:(CGRect)rect
 inView:(UIView *)view
 animated:(BOOL)animated;
- (BOOL)presentOptionsMenuFromBarButtonItem:(UIBarButtonItem *)item
 animated:(BOOL)animated;

- Dismiss

- (void)dismissMenuAnimated:(BOOL)animated;

UIDocumentInteractionController

Options menu

- Presentation

- (BOOL)presentOptionsMenuFromRect:(CGRect)rect
 inView:(UIView *)view
 animated:(BOOL)animated;
- (BOOL)presentOptionsMenuFromBarButtonItem:(UIBarButtonItem *)item
 animated:(BOOL)animated;

- Dismiss

- (void)dismissMenuAnimated:(BOOL)animated;

UIDocumentInteractionController

Preview menu

- Presentation

- (BOOL)presentPreviewAnimated:(BOOL)animated;

- Dismiss

- (void)dismissPreviewAnimated:(BOOL)animated;

UIDocumentInteractionController

Preview menu

- Presentation

- (BOOL)presentPreviewAnimated:(BOOL)animated;

- Dismiss

- (void)dismissPreviewAnimated:(BOOL)animated;

UIGestureRecognizer

Actions for gestures

- Swipe
- Rotation
- Long press
- Pinch
- Tap
- Pan

UIGestureRecognizer

Creation and properties

- Creation

 - (id) initWithTarget:(id)target action:(SEL)action;

- Properties

```
@property(nonatomic, readonly) UIGestureRecognizerState state;  
@property(nonatomic, assign) id delegate;  
@property(nonatomic, getter=isEnabled) BOOL enabled;  
@property(nonatomic, readonly) UIView *view;  
@property(nonatomic) BOOL cancelsTouchesInView;
```

UIGestureRecognizer

Creation and properties

- Creation

- (id)initWithTarget:(id)target action:(SEL)action;

- Properties

- @property(nonatomic, readonly) UIGestureRecognizerState **state**;
 - @property(nonatomic, assign) id **delegate**;
 - @property(nonatomic, getter=isEnabled) BOOL **enabled**;
 - @property(nonatomic, readonly) UIView ***view**;
 - @property(nonatomic) BOOL **cancelTouchesInView**;

UIGestureRecognizer

Attaching and delegation

- On UIView

- (void)addGestureRecognizer:(UIGestureRecognizer*)gestureRecognizer;
- (void)removeGestureRecognizer:(UIGestureRecognizer*)recognizer;

- Delegate methods

- (BOOL)gestureRecognizerShouldBegin:(UIGestureRecognizer *)gr;
- (BOOL)gestureRecognizer:(UIGestureRecognizer *)gestureRecognizer
shouldRecognizeSimultaneouslyWithGestureRecognizer:
 (UIGestureRecognizer *)otherGestureRecognizer;
- (BOOL)gestureRecognizer:(UIGestureRecognizer *)gestureRecognizer
shouldReceiveTouch:(UITouch *)touch;

UIGestureRecognizer

Attaching and delegation

- On UIView

- (void)addGestureRecognizer:(UIGestureRecognizer*)gestureRecognizer;
- (void)removeGestureRecognizer:(UIGestureRecognizer*)recognizer;

- Delegate methods

- (BOOL)gestureRecognizerShouldBegin:(UIGestureRecognizer *)gr;
- (BOOL)gestureRecognizer:(UIGestureRecognizer *)gestureRecognizer
shouldRecognizeSimultaneouslyWithGestureRecognizer:
(UIGestureRecognizer *)otherGestureRecognizer;
- (BOOL)gestureRecognizer:(UIGestureRecognizer *)gestureRecognizer
shouldReceiveTouch:(UITouch *)touch;

UIScreen

Multiple screens

```
+ (NSArray *)screens;
```

- Modes

```
@property(n nonatomic, readonly, copy) NSArray *availableModes;  
@property(n nonatomic, retain) UIScreenMode *currentMode;
```

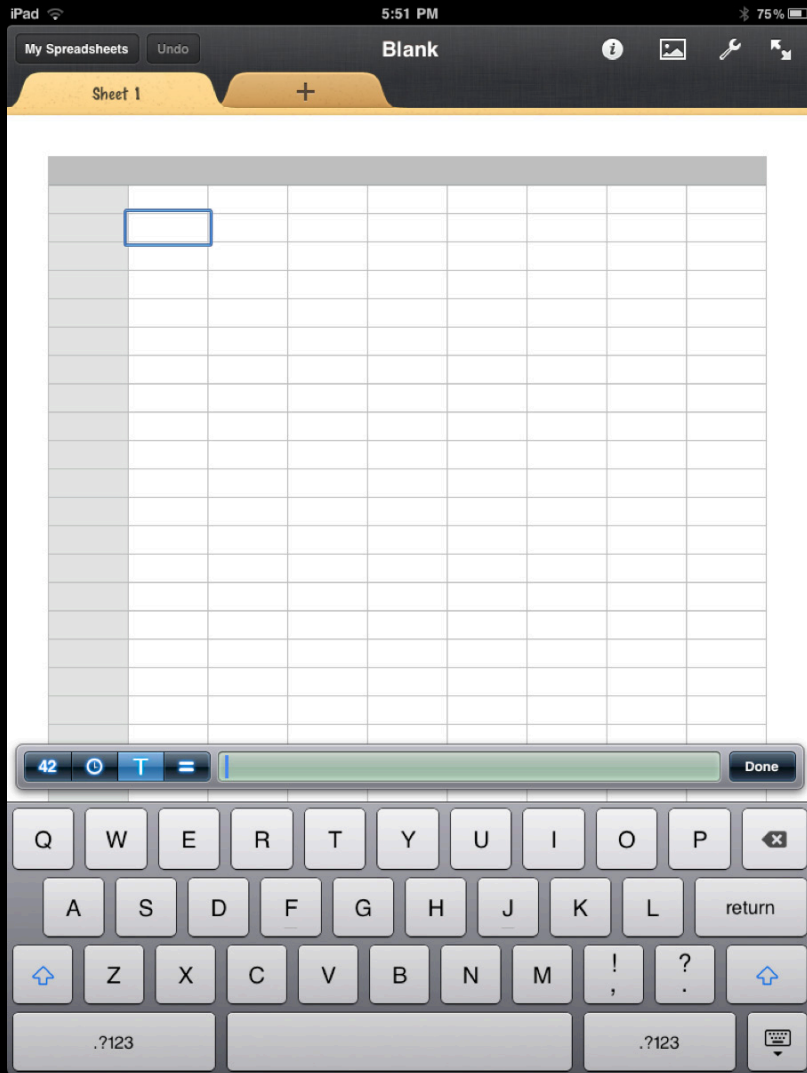

UIScreen

Multiple screens

```
+ (NSArray *)screens;
```

- Modes

```
@property(n nonatomic, readonly, copy) NSArray *availableModes;  
@property(n nonatomic, retain) UIScreenMode *currentMode;
```



Custom Input Views

Keyboards and accessories

- Accessory views
- Custom keyboards
- First responder

UIResponder

Input view handling

```
@property (readonly, retain) UIView *inputView;  
@property (readonly, retain) UIView *inputAccessoryView;
```

Text Input Demo

UIMenuController

Custom menu items



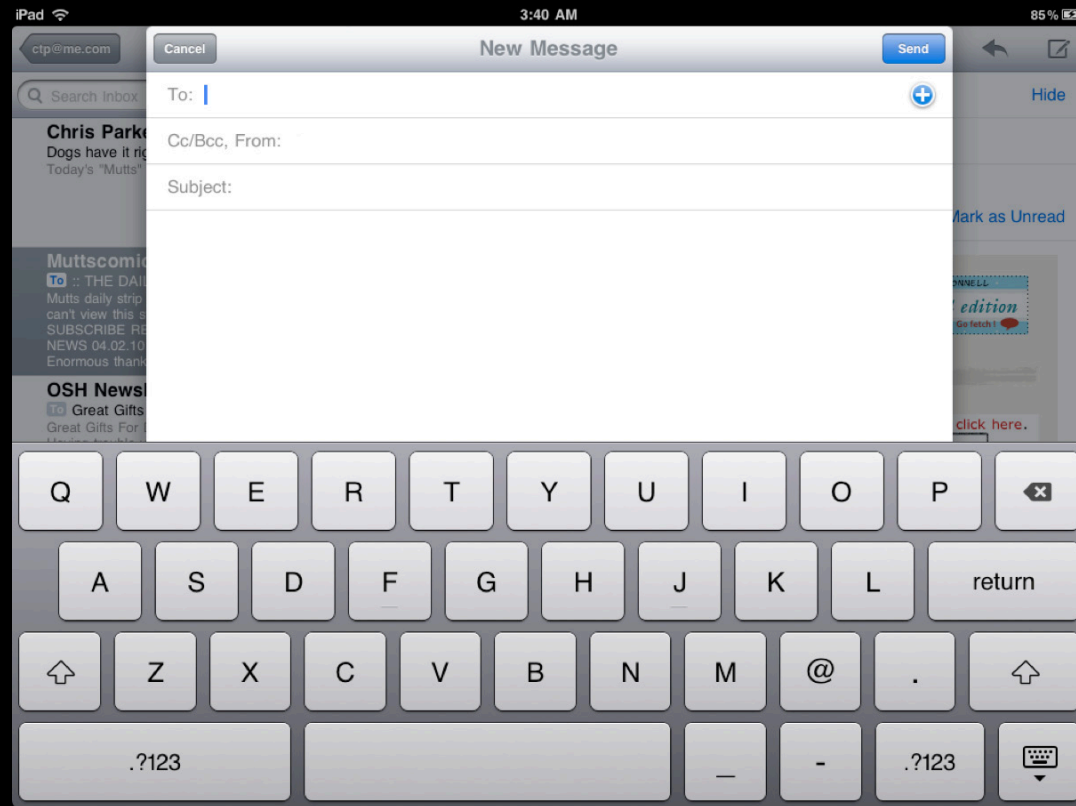
- Add your own items
 - Title
 - Action selector
- New delete: item

Modal Presentation

```
typedef enum {  
    UIModalPresentationFullScreen = 0,  
#if __IPHONE_OS_VERSION_MAX_ALLOWED >= __IPHONE_3_2  
    UIModalPresentationPageSheet,  
    UIModalPresentationFormSheet,  
    UIModalPresentationCurrentContext,  
#endif  
} UIModalPresentationStyle;
```

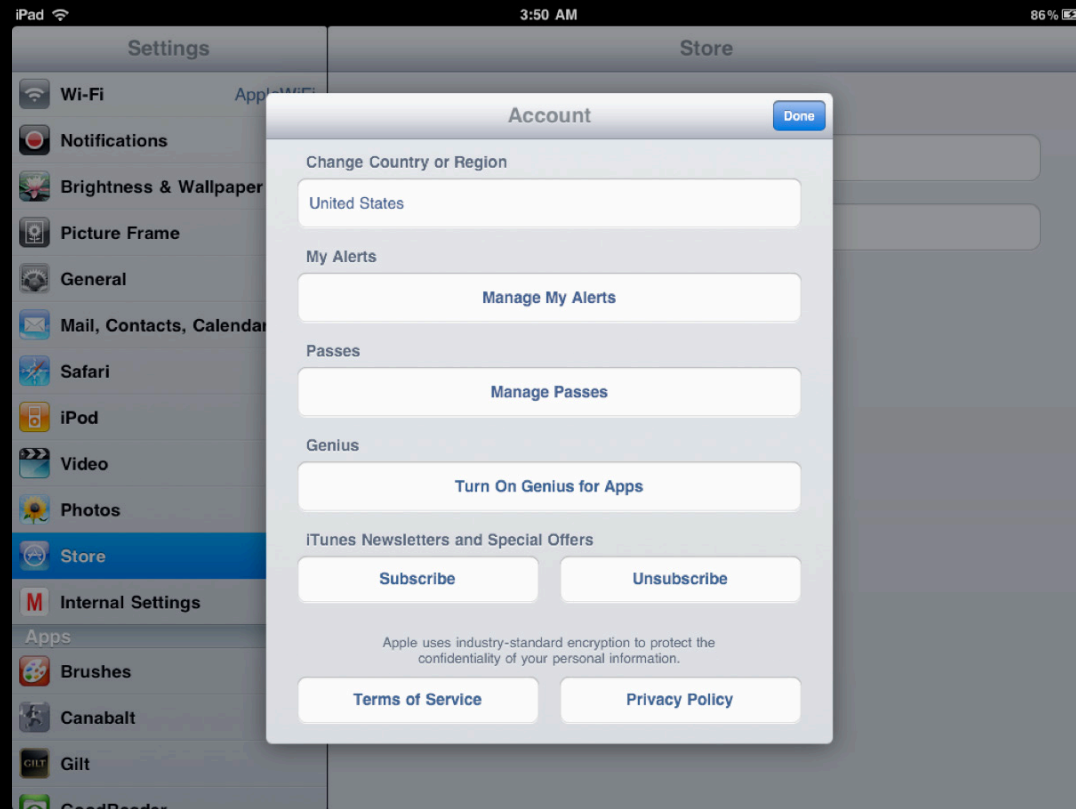
Modal Presentation

Page sheet



Modal Presentation

Form sheet



Regular Expressions

String searching

- New NSStringCompareOption

`NSRegularExpressionSearch`

- Use with `rangeOfString:option:... methods`

- (NSRange) `rangeOfString:(NSString *)aString options:(NSStringCompareOptions)mask;`
- (NSRange) `rangeOfString:(NSString *)aString options:(NSStringCompareOptions)mask range:(NSRange)searchRange;`
- (NSRange) `rangeOfString:(NSString *)aString options:(NSStringCompareOptions)mask range:(NSRange)searchRange locale:(NSLocale *)locale;`

NSRegularExpression

Full matching and configuration

- Creating

```
+ (NSRegularExpression *)regularExpressionWithPattern:(NSString *)ptn
    options:(NSRegularExpressionOptions)options
    error:(NSError **)error;
```

- Enumerating Matches

```
- (void)enumerateMatchesInString:(NSString *)string
    options:(NSMatchingOptions)options
    range:(NSRange)range
    usingBlock:(void (^)(NSTextCheckingResult *result,
        NSMatchingFlags flags, BOOL *stop))block;
```

iOS 4

Multitasking

Multitasking

Application classes

- UIBackgroundModes key
 - Audio
 - Location
 - VoIP

Multitasking

Application lifecycle

```
typedef enum {  
    UIApplicationStateActive,  
    UIApplicationStateInactive,  
    UIApplicationStateBackground  
} UIApplicationState;
```

Multitasking

Application lifecycle

```
typedef enum {  
    UIApplicationStateActive,  
    UIApplicationStateInactive,  
    UIApplicationStateBackground  
} UIApplicationState;
```

- Launching

```
- (void)application:(UIApplication *)application  
    didFinishLaunchingWithOptions:(NSDictionary *)launchOptions;  
- (void)applicationDidBecomeActive:(UIApplication *)application;
```

Multitasking

Application lifecycle

```
typedef enum {  
    UIApplicationStateActive,  
    UIApplicationStateInactive,  
    UIApplicationStateBackground  
} UIApplicationState;
```

- Going to the background

```
- (void)applicationWillResignActive:(UIApplication *)application;  
- (void)applicationDidEnterBackground:(UIApplication *)application;
```


Multitasking

Application lifecycle

```
typedef enum {  
    UIApplicationStateActive,  
    UIApplicationStateInactive,  
    UIApplicationStateBackground  
} UIApplicationState;
```

- Returning to the foreground

```
- (void)applicationWillEnterForeground:(UIApplication *)application;  
- (void)applicationDidBecomeActive:(UIApplication *)application;
```

Multitasking

Wait! I'm almost done...

- (UIBackgroundTaskIdentifier)
 beginBackgroundTaskWithExpirationHandler:(void(^)(void))handler;
- (void)endBackgroundTask:(UIBackgroundTaskIdentifier)identifier;

- Finishing a download
- Sending “goodbye packets” to network servers

Multitasking

Local notifications

- UILocalNotification class
 - Set fire dates
 - Repeat intervals
 - Application icon badging

Adopting Multitasking on iPhone OS, Part 1

Presidio
Tuesday 11:30AM

Adopting Multitasking on iPhone OS, Part 2

Mission
Tuesday 3:15PM

High Resolution

1 point \neq 1 pixel

Pixels



iPhone 3GS
320x480 pixels



iPhone 4
640x960 pixels

Points



iPhone 3GS
320x480 points



iPhone 4
320x480 points

Points and Scales

UIKit classes and HiDPI

- UIScreen
 - `-bounds` is in points
 - `-scale` is an float
- UIImage
 - `-size` is in points
 - `-scale` is always non-zero

Images

Splash!

SplashText.png

Splash!

SplashText@2x.png

```
+ (UIImage *)imageNamed:(NSString *)name;
```

UIGraphicsBeginImageContextWithOptions

Scale changes

```
void UIGraphicsBeginImageContextWithOptions(CGSize size,  
                                           BOOL opaque,  
                                           CGFloat scale);
```

Thread safe in iOS 4 !

...But Wait, There's More!

UIEvent

Remote event subtypes

```
typedef enum {
    UIEventSubtypeNone                = 0,
    UIEventSubtypeMotionShake         = 1,

    // for UIEventTypeRemoteControl, available in iPhone OS 4.0
    UIEventSubtypeRemoteControlPlay   = 100,
    UIEventSubtypeRemoteControlPause  = 101,
    UIEventSubtypeRemoteControlStop   = 102,
    UIEventSubtypeRemoteControlTogglePlayPause = 103,
    UIEventSubtypeRemoteControlNextTrack = 104,
    UIEventSubtypeRemoteControlPreviousTrack = 105,
    UIEventSubtypeRemoteControlBeginSeekingBackward = 106,
    UIEventSubtypeRemoteControlEndSeekingBackward = 107,
    UIEventSubtypeRemoteControlBeginSeekingForward = 108,
    UIEventSubtypeRemoteControlEndSeekingForward = 109,
} UIEventSubtype;
```

UIView

Animations

```
+ (void)animateWithDuration:(NSTimeInterval)duration
    delay:(NSTimeInterval)delay
    options:(UIViewAnimationOptions)options
    animations:(void (^)(void))animations
    completion:(void (^)(BOOL finished))completion;

+ (void)animateWithDuration:(NSTimeInterval)duration
    animations:(void (^)(void))animations
    completion:(void (^)(BOOL finished))completion;

+ (void)animateWithDuration:(NSTimeInterval)duration
    animations:(void (^)(void))animations;
```

UIView

View transitions

```
+ (void)transitionWithView:(UIView *)view
    duration:(NSTimeInterval)duration
    options:(UIViewAnimationOptions)options
    animations:(void (^)(void))animations
    completion:(void (^)(BOOL finished))completion;

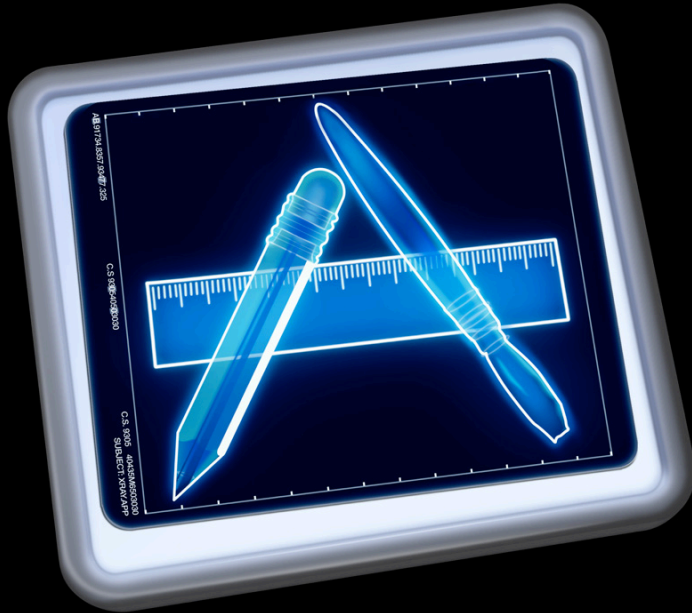
+ (void)transitionFromView:(UIView *)fromView
    toView:(UIView *)toView
    duration:(NSTimeInterval)duration
    options:(UIViewAnimationOptions)options
    completion:(void (^)(BOOL finished))completion;
```

New Frameworks

UIAutomation

UI testing

- Instruments plugin
- JavaScript-based
- Check runtime behavior



Automating User Interface Testing with Instruments

Marina
Wednesday 2:00PM

AssetsLibrary

User content

- Pictures
- Music



Incorporating the Camera and Photo Library in Your App

Presidio
Thursday 9:00AM

AVFoundation

Advanced media handling



- Video playback
- Video recording
- Layers

EventKit

Calendars



- Event searching
- Record change notifications
- Edit and create events
 - Local
 - Server

Calendar Integration with Event Kit

Mission
Thursday 4:30PM



iAd

Advertising

- Loading and presenting ads
- Responding to events
- Placement and size
- Testing

Game Center

Social gaming network



- Developer preview in iOS 4
- Achievements
- Friends
- Finding games online

Introduction to Game Center

Pacific Heights
Tuesday 2:00PM

CoreMotion

Sensors on the device

- Accelerometer
- Gyroscope



CF and Foundation

Snow Leopard parity



- Blocks
- Regular expressions

What's New in Foundation for iOS 4

Pacific Heights
Tuesday 10:15AM

Labs

Labs

Cocoa Touch Lab

Application Frameworks Lab D
Tuesday 2:00PM

Cocoa Touch Lab

Application Frameworks Lab B
Wednesday 11:30AM

Cocoa Touch Lab

Application Frameworks Lab C
Thursday 9:00AM

Cocoa Touch Lab

Application Frameworks Lab C
Friday 9:00AM

Getting Started with iPad Development Lab

Application Frameworks Lab A
Wednesday 9:00AM

More Information

Bill Dudney

Application Frameworks Evangelist
dudney@apple.com

Apple Developer Forums

<http://devforums.apple.com>



