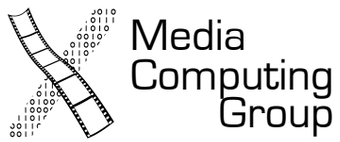

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Mobile Application Development
L04: Introduction to iOS

Jonathan Diehl (Informatik 10)
Hendrik Thüs (Informatik 9)

The iOS Device Family

Jonathan Diehl, Hendrik Thüs

Media Computing Group

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Mobile Device Characteristics

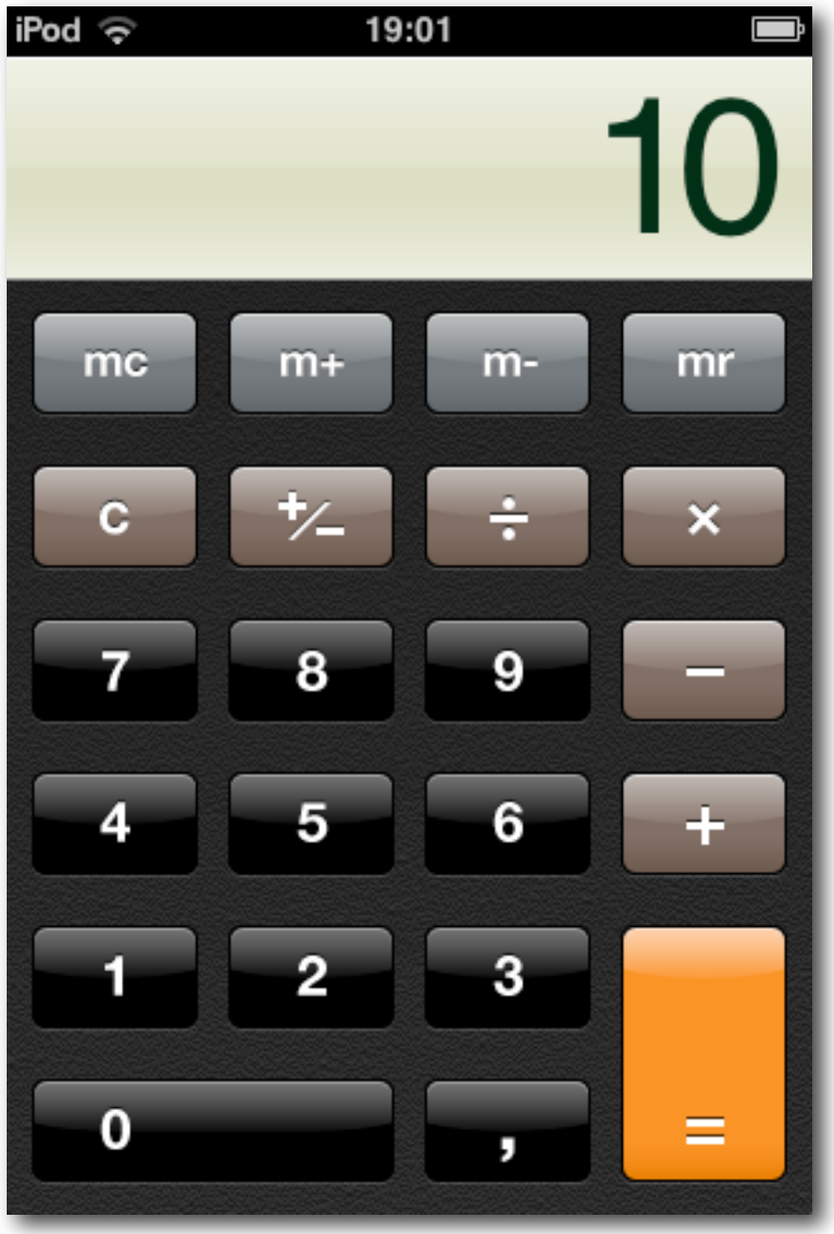
- Screen size is compact
- Memory is limited
- Users interact with one screen at a time
- Users interact with one application at a time
- Onscreen help is minimal
- *Context is key (task focus, peripheral use)*

Life as an App

- The iOS is an app-centric environment
  - One app per task
  - One task per app
- Data is stored per app
  - No common file system
  - Data exchange only via sharing

Designing the UI

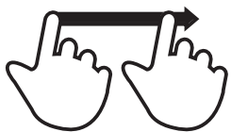
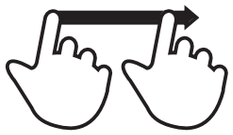
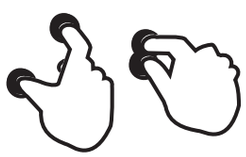
- Make it obvious how to use your application
- Display information incrementally and succinctly
- Sort information from top to bottom
- Minimize text input
- Provide fingertip-size targets



Direct Touch Interaction

- Multitouch interaction is still new
- Interaction patterns are not established yet
- Follow the standards
- If you need complex gestures, guide the user

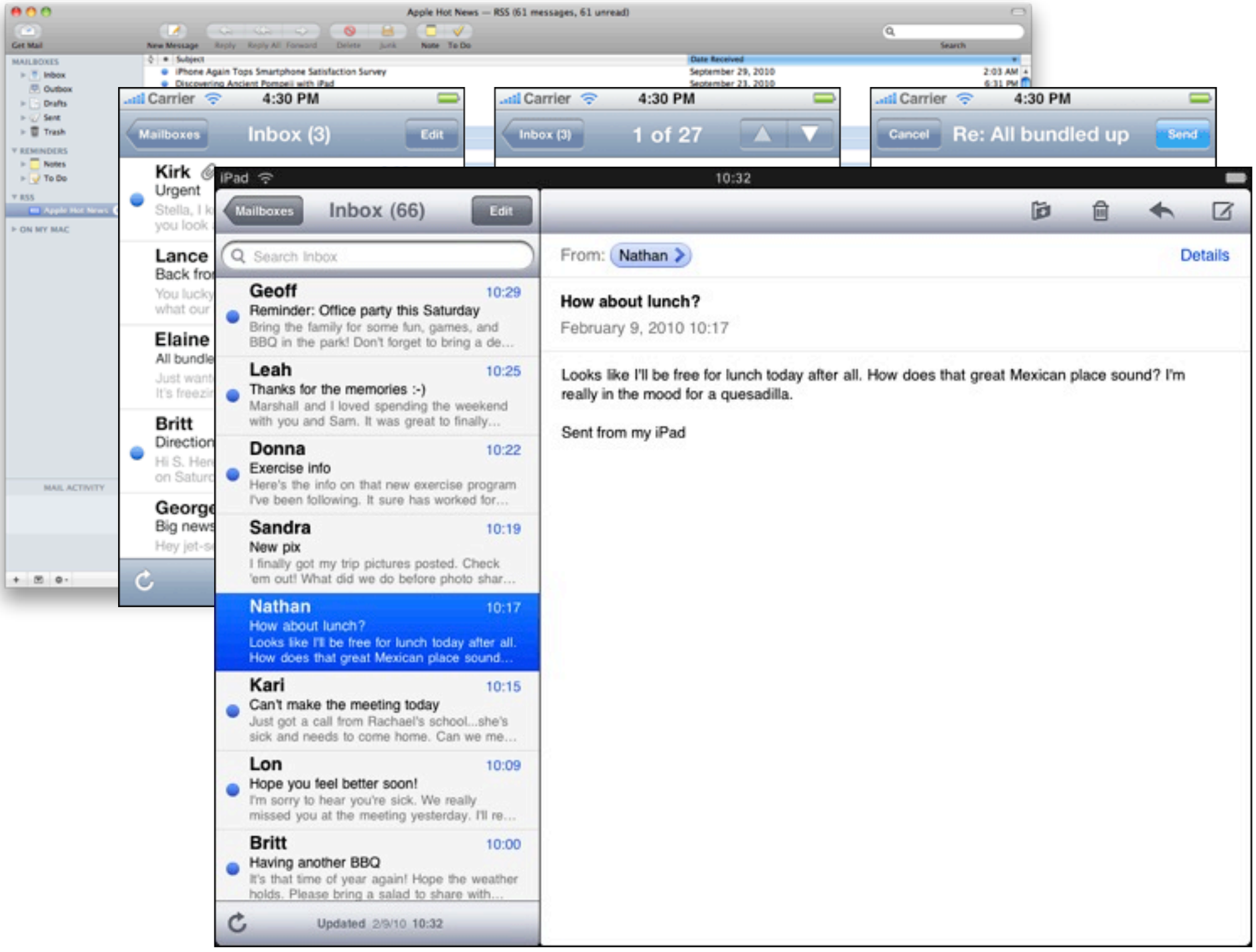
Standard Gestures

	Tap	To press or select a control or item (analogous to a single mouse click).
	Drag	To scroll or pan.
	Flick	To scroll or pan quickly.
	Swipe	In a table-view row, to reveal the Delete button.
	Double tap	To zoom in and center a block of content or an image. To zoom out (if already zoomed in).
	Pinch open	To zoom in.
	Pinch close	To zoom out.
	Touch and hold	In editable text, to display a magnified view for cursor positioning.

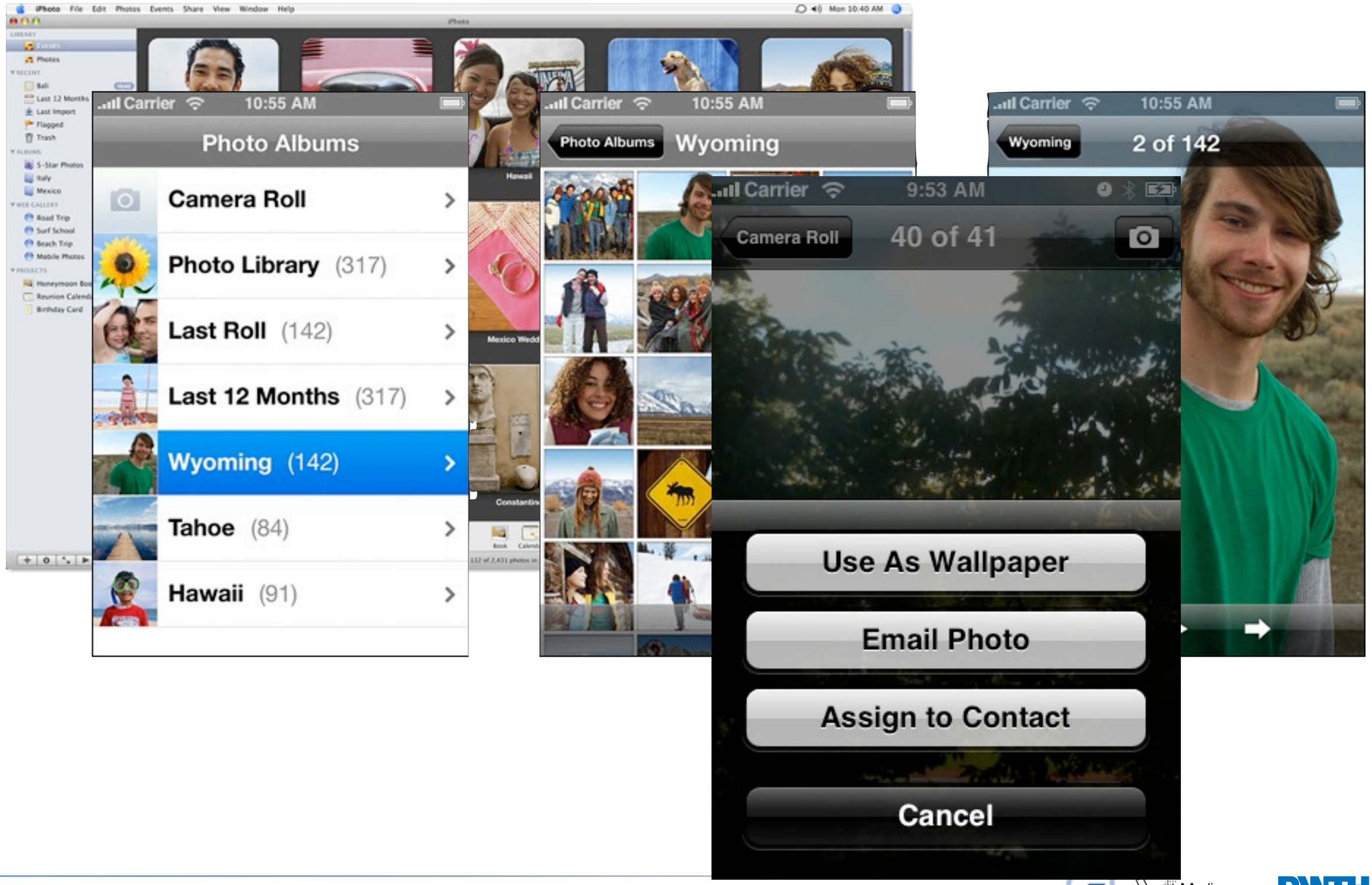
Device Diversity

- Device orientation:
  - Portrait, landscape, upside-down, left or right
- Device resolutions:
  - iPhone: 320x480
  - iPhone 4: 640x960
  - iPad: 1024x768
- Designing for the iPad requires more than increasing the resolution

Example: Mail



iPhoto


Carrier
10:55 AM
Photo Albums
Camera Roll
Photo Library (317)
Last Roll (142)
Last 12 Months (317)
Wyoming (142)
Tahoe (84)
Hawaii (91)
Photo Albums
Wyoming
Carrier
9:53 AM
Camera Roll
40 of 41
Use As Wallpaper
Email Photo
Assign to Contact
Cancel
Wyoming
2 of 142

Starting

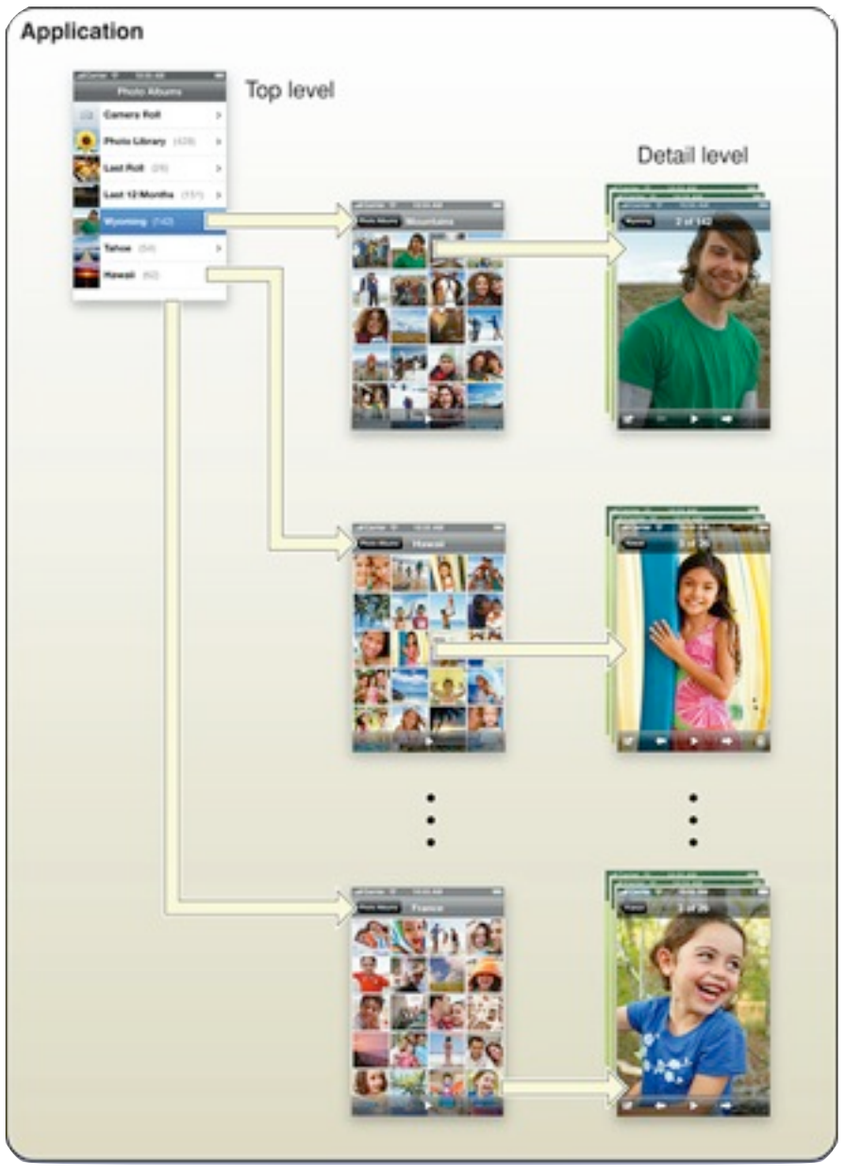
- Apps should start quickly to provide a fluid user experience
- Show a launch image that closely resembles the first screen of your app
- Restore the state of last run
- By default, launch in portrait orientation.

Stopping

- No *Quit* button or menu item
- Be prepared to quit at any time
- Program flow interrupted by external events
  - Incoming phone call
- Store state when stopping
- Application moved to background

Application Styles

Productivity



Photos

Utility

Weather

Immersive

Seadragon

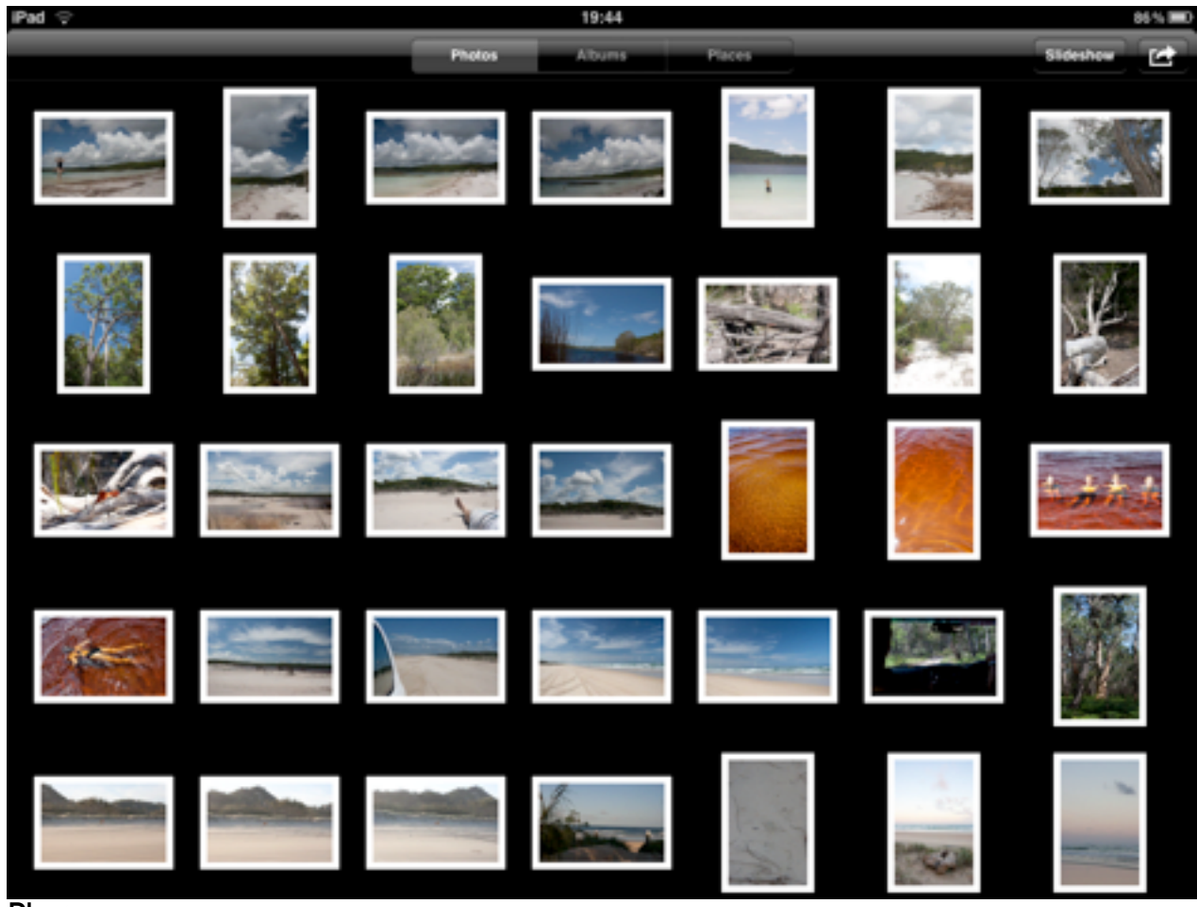
Productivity Applications

- Organizing and managing detailed information
- Often organize data hierarchically
- Organizing the list, add or remove items
- Examples: Contacts, Photos

Productivity Applications

Photos

Contacts



Photos

Utility Applications

- Simple task, minimum user input
- Customized, visually attractive UI that enhances the displayed information
- Data is organized in flattened list of items
- Examples: Weather, Stocks

Utility Applications

Weather

Stocks

Elements

Immersive Applications

- Full-screen, visually rich UI
- Focussed on content and user experience
- Tends to hide much of the device's user interface
- Custom navigational methods
- Examples: Living Earth, Carpenter

Immersive Applications

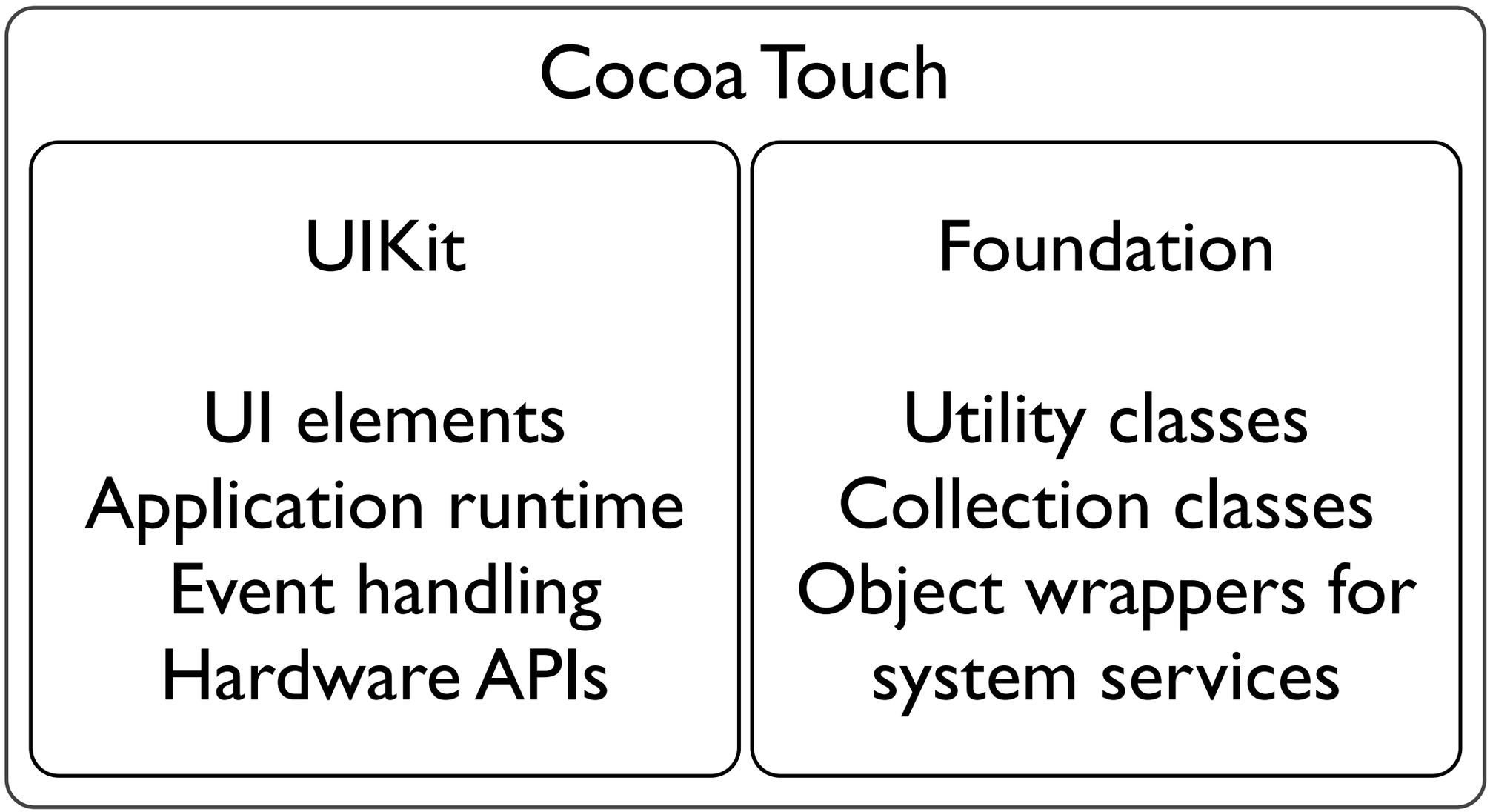
Living Earth

Carpenter

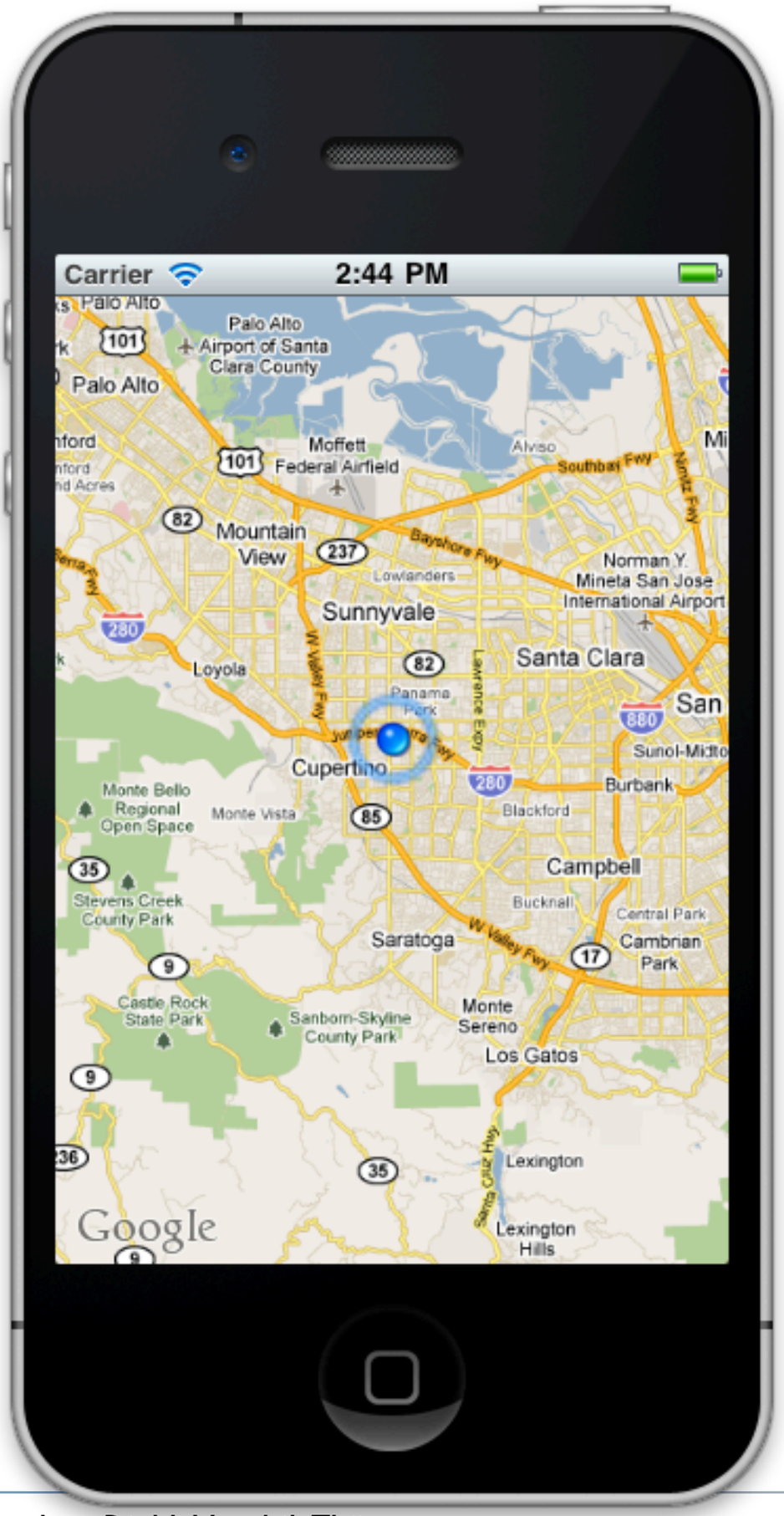
iOS SDK Overview

Cocoa Touch
Media
Core Services
Core OS

Cocoa Touch Architecture



SDK
280



MapKit

Core Location

Camera

Calendar

Address Book

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StoreKit

iAd

Core Data

WebKit

Push Notifications

Touch

Accelerometer

CoreMotion

Gyroscope

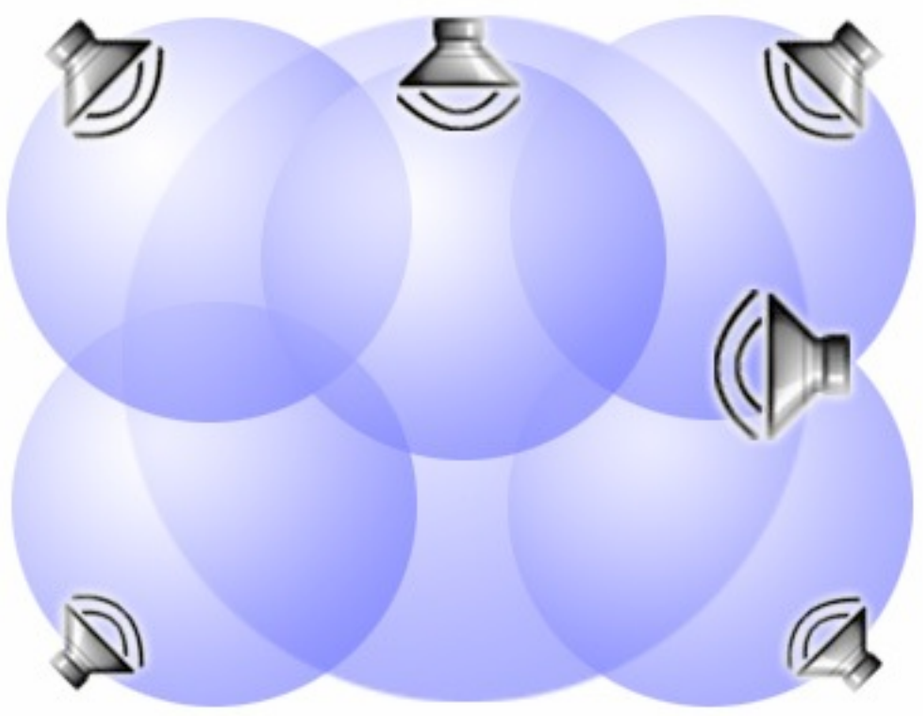
Graphics

GameKit

GameCenter

Bonjour

Core Audio



HTML 5

Register as an Apple Developer

http://developer.apple.com/programs/register/

Apple Yahoo! Google Maps

Register as an Apple Developer

Developer

Support Member Center

Search Developer

Carrier 10:53 AM

Toggle

FlashlightViewController.m

Simulator - 4.2 | Debug | Fla...

Page Overview Action Breakpoints Clean All

Groups & Files

Flashlight

Classes

FlashlightAppDelegate.h

FlashlightAppDelegate.m

FlashlightViewController.h

FlashlightViewController.m

Other Sources

Flashlight_Prefix.pch

main.m

Resources

FlashlightViewController.xib

MainWindow.xib

Flashlight-Info.plist

Frameworks

UIKit.framework

Foundation.framework

CoreGraphics.framework

Products

Targets

Executables

Find Results

Bookmarks

SCM

Project Symbols

Implementation Files

XIB Files

Breakpoints

Detail

All Results Latest Results By Step

Build Succeeded 09.11.10 10:52

No issues

```
//
//  FlashlightViewController.m
//  Flashlight
//
//  Created by Jonathan Diehl on 05.
//  Copyright RWTH 2010. All rights
//

#import "FlashlightViewController.h"

@implementation FlashlightViewContro

- (IBAction)toggle;
{
    if([flashlightView.backgroundCol
        flashlightView.backgroundCol
    } else {
        flashlightView.backgroundCol
    }
}

/*
// The designated initializer. Overrid
- (id)initWithNibName:(NSString *)nibNameOrNil bundle:(NSBundle *)nibBundleOrNil {
    if ((self = [super initWithNibName:nibNameOrNil bundle:nibBundleOrNil])) {
        // Custom initialization
```

Flashlight launched

Succeeded

one, Safari and Mac Dev Center Resources

ckly access a set of technical resources including

elopment videos on iTunes, documentation from

iPhone, Mac, and Safari Reference Libraries, and

OS X downloads.

g Reporting

the Apple Bug Reporter to submit and track

reports and enhancements requests for iPhone

Mac OS X.

Learn more about our developer programs

iOS Developer Program – Apple Developer

http://developer.apple.com/programs/ios/

iphone developer program

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Developer

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1. Develop

Develop your application with the iOS SDK and a wealth of technical resources in the iOS Dev Center. Learn more ▸

2. Test

Test and debug your code on iPad, iPhone and iPod touch to finalize your applications. Learn more ▸

3. Distribute

Distribute your apps on the App Store and reach millions of iPad, iPhone, and iPod touch users. Learn more ▸

Open "http://developer.apple.com/programs/ios/distribute.html" in a new tab behind the current one

String Matching

Search

Succeeded