

# Mobile Applications: Design and Development

Week 8

F27WD

Helen Hastie

Design slides from Lemon Sanver/Precedent

Some other content from

<http://www.slideshare.net/MotherRobot/mobile-revolution-mobilemarch2011>

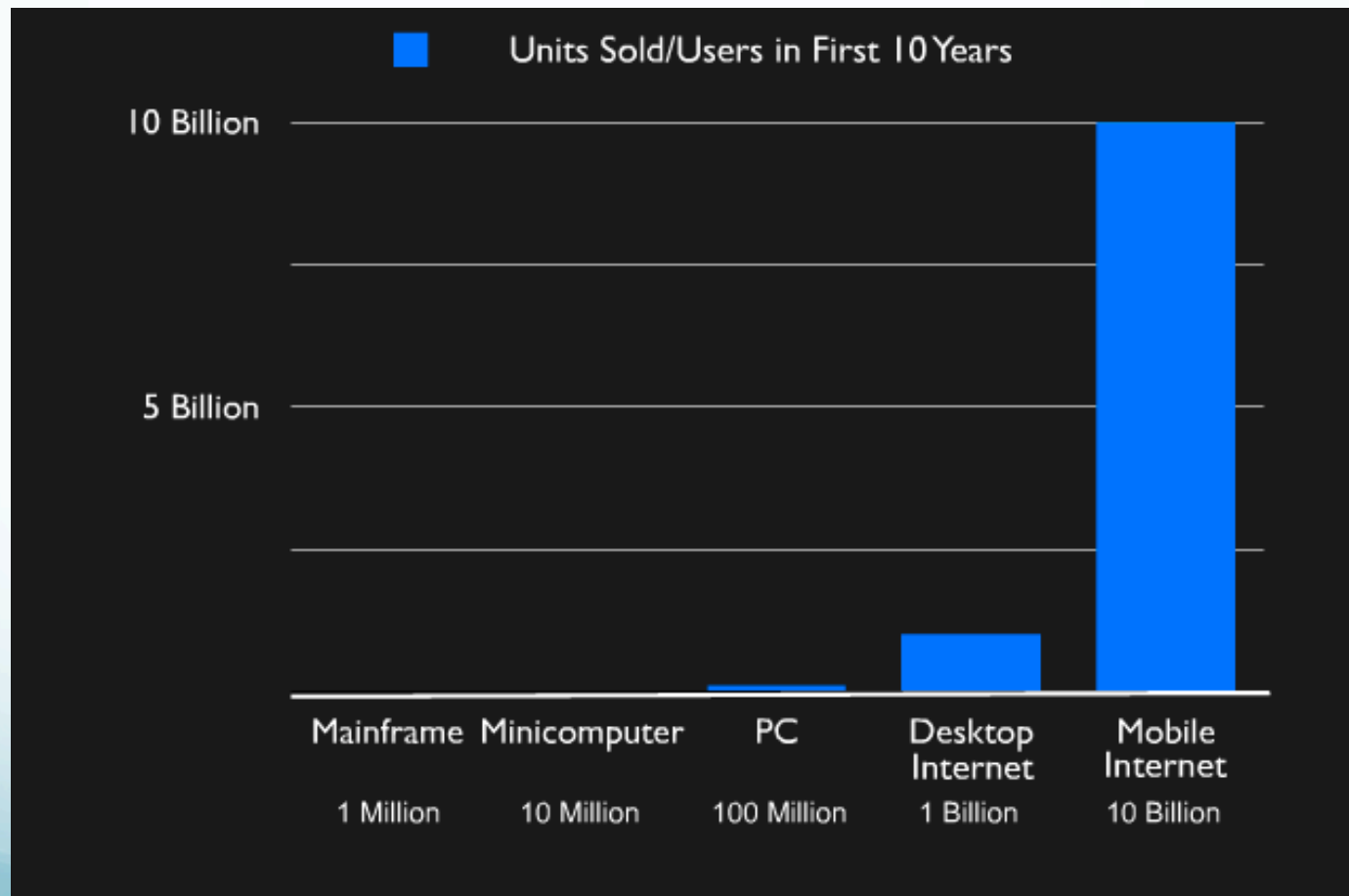
# Not this



But this



# It's not a bubble- it's a revolution





# The mobile revolution

- Smartphone units sold will surpass PC units in 2012 (Morgan Stanley- June 2010)
- Smartphone units sold actually surpassed PC units in **Q4 2010** (IDC worldwide quarterly tracker- January 2011, 100 million sold vs 92 million PCs)
- Growth of mobile phones is **87.2%** compared to 2.7% for PC (IDC)



# iPhone - game changing



The *iPhone* went on sale in the United States on *June 29, 2007*

*This started to fundamentally change the way people interact with phones*

# The rise of Tablets



iPad



Galaxy tab



Playbook

Now designing for mobile means not only phones but also tablets.

# Mobile App Design– What is it?

## Mobile phone recent history

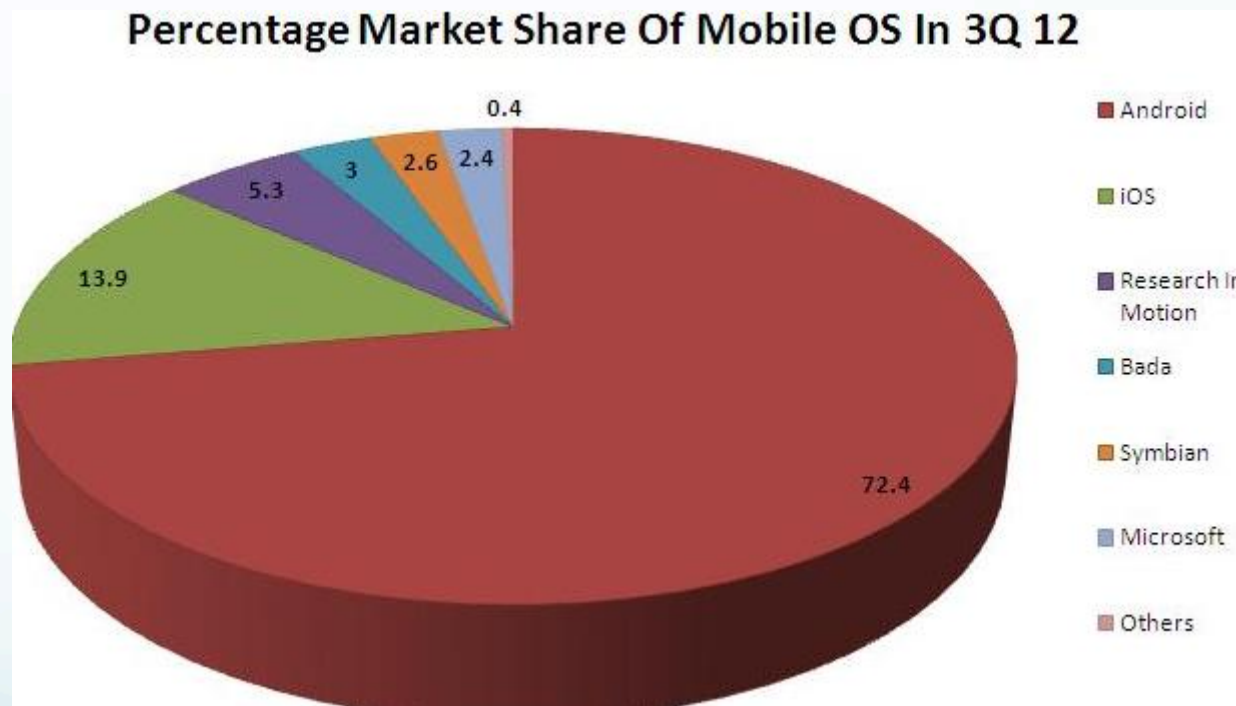


The history of phone platforms has been more diverse than that of PC

Notably, over the last few years the form factor has moved from physical keyboard to “touch” and there is a demand for more services

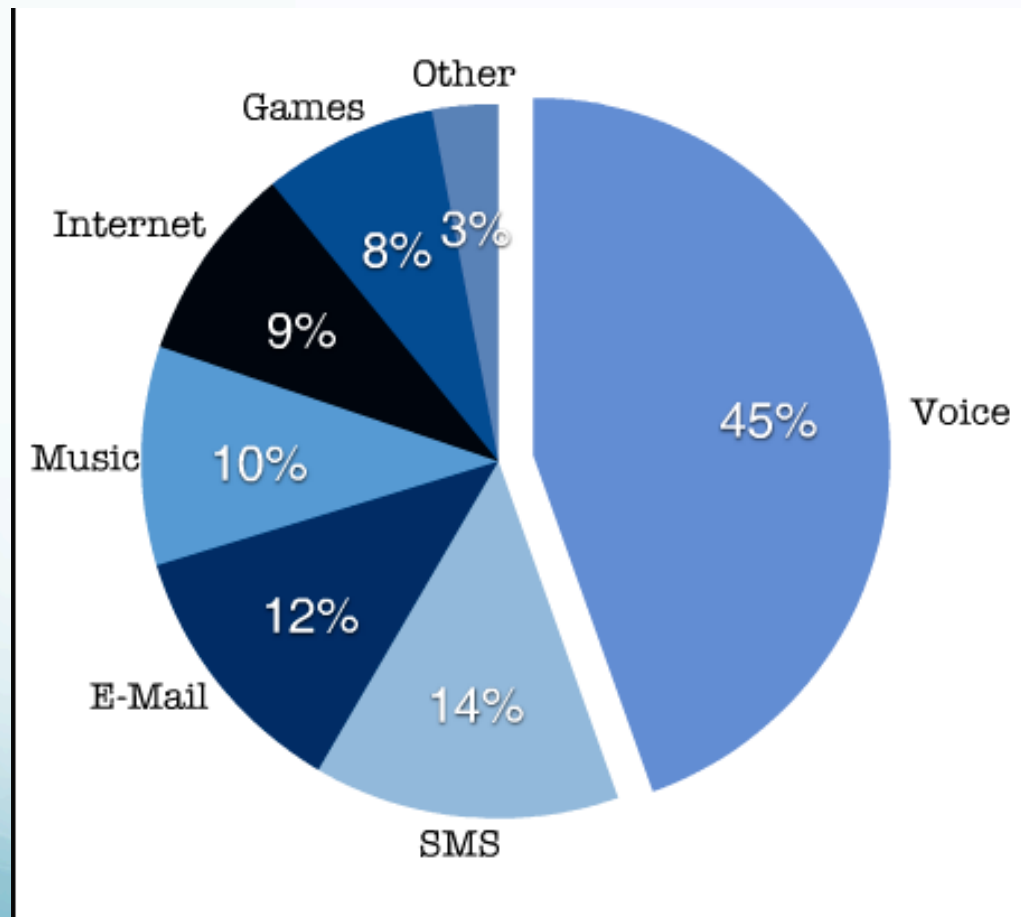


# Phone market share



*Source: Daze Info*

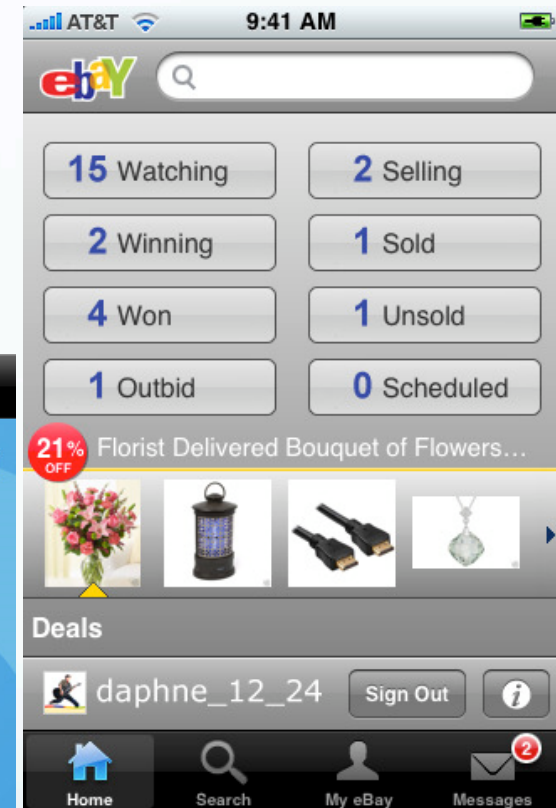
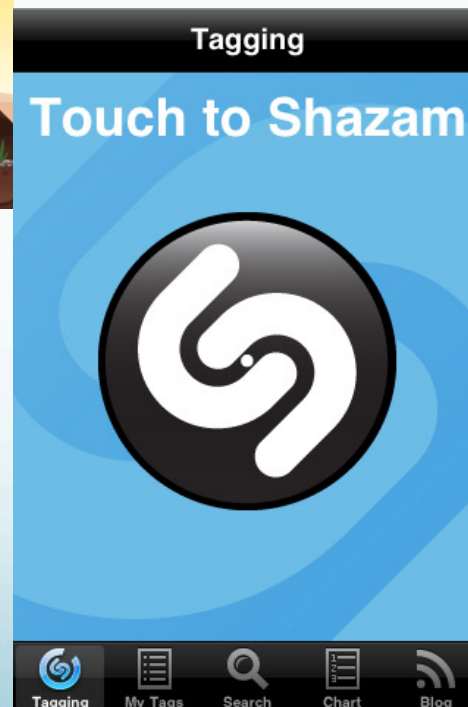
# Not just a phone



Source: Morgan Stanley/iSuppli- phone usage study

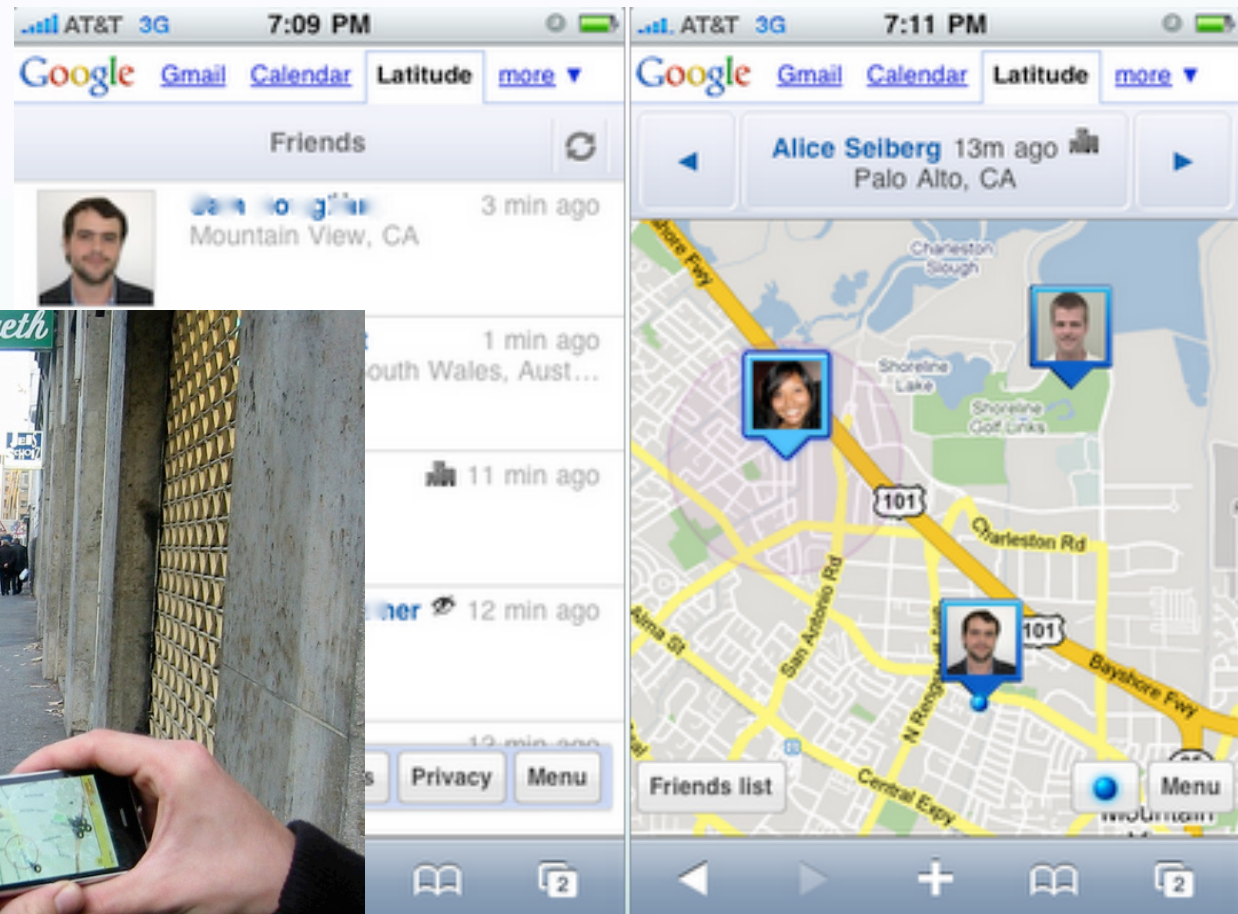
Favourite apps?

# Some top mobile apps





# Location Based Services (LBS)



# Augmented Reality

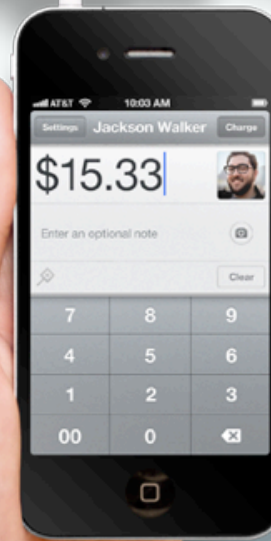




# Mobile Learning



# Device integration

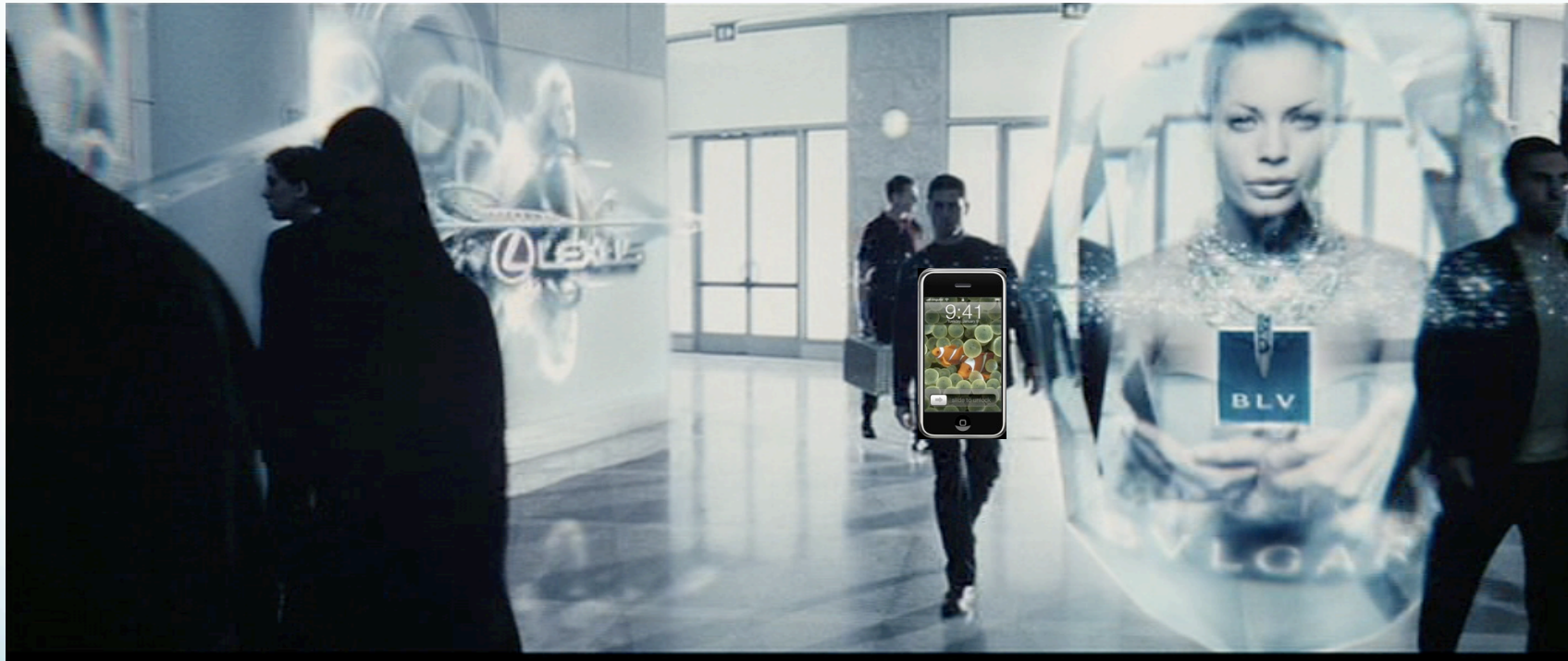




# Near Field Communication (NFC)

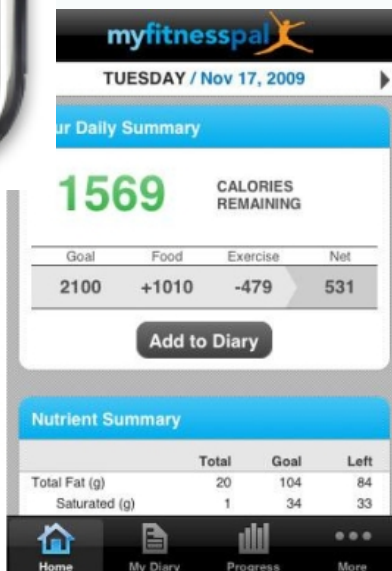


# Personalised Advertising



*From Minority Report*

# Health/Fitness

The Medscape app interface showing search results for 'orange juice'. The screen is titled 'Breakfast' and has tabs for 'Most Used', 'My Foods', and 'My Meals'. A search bar contains 'orange juice'. Below is a list of search results with calorie counts and icons for more details.

Search Results
Orange juice - Raw 1 cup, 111 calories
Orange juice - Canned, unsweetened 1 cup, 104 calories
Orange juice - Chilled, includes from concentrate 1 cup, 109 calories
Orange juice - Made from frozen concentrate, un... 1 cup, 112 calories
Orange juice - California, chilled, includes from... 1 cup, 109 calories
Pineapple and orange juice drink - Canned 1 cup (8 fl oz), 125 calories
Orange and apricot juice drink - Canned 1 cup (8 fl oz), 127 calories
Orange-grapefruit juice - Canned, unsweetened 1 cup, 106 calories



# Mobile App Design – where to start?

1. Choose an SDK
2. Learn an SDK
3. Design and develop
4. Publish to relevant App Store
5. Promote!



# Mobile App Design – which SDK, which Store?

## SDKs and “App Stores”



# Mobile Application Stores

	App Store	BREW	Download!	Handango	GetJar
<b>Fundamentals</b>					
Owner	Apple	Qualcomm	Nokia	Handango	GetJar Networks
Distribution model	via iTunes on iPhone and iPod Touch only	via operators on BREW devices only	on S60 devices only	direct and via operator, OEMs and retailers	direct and via operators
Platforms	OSX	BREW	S60	Java, Symbian, RIM WinMo, Palm, Android	Java, Symbian, FL, RIM WinMo, Palm, Android
Installed base of on-device storefront (2008 est.)	12M	500M	200M	N/A	0
<b>Key figures</b>					
Downloads per month as of end of 2008 (est.)	65M <sup>(1)</sup>	80M on average in 2007	3M <sup>(2)</sup>	3M <sup>(2)</sup>	17M <sup>(3)</sup>
Applications to end of 2008 (est.)	10,000	12,000M	10,000 (S60) 50,000 (Java) <sup>(4)</sup>	140,000 <sup>(4)</sup>	10,000
Revenues (2008 est.)	\$500M/year <sup>(1)</sup>	\$1B total for developers (March 07)	N/A	N/A	N/A
Revenue model	70% to developer	commission varies	varies	60-70% to developer + rev share to channel	ad-based apps + website promos
<b>Features</b>					
Global marketplace targeting, cert, submission, pricing	✓	✓ (CDMA markets)	partial (case-by-case submission)	✓	partial (targeting only)
Centralised Billing and settlement	✓ (one-shot)	✓ (via operator)	partial (via premium SMS only)	✓ (credit card, in some cases operator billing)	✓ (free or ad-funded apps CC billing coming in 4Q08)
Distribution across MNOs, OEMs and off-deck	✓ (OEM-only)	✓ (via operator)	partial (not available in all regions)	✓ (off-deck and via some OEMs/operators)	✓ (off-deck and via some OEMs/operators)
Provisioning, licensing and software management	✓	✓	partial (no silent install)	partial (mostly licensing)	-
On-device discovery catalogue managment & marketing	✓	✓	✓ (shop-in-shop)	✓ (where InHand installed)	partial (via bookmarking app)

(1) Based on publicly reported figures of application downloads and revenues

(2) Based on approximate cumulative figures and a linear growth model

(3) November 2008, stated to be increasing by 1M per month

(4) Handango's total application count includes variants. Nokia applications refer to total # of applications for S60

source: VisionMobile resea



PhoneGap



# Apple iPhone/iPad Apps

- Xcode 4
  - Xcode IDE,
  - performance analysis tools,
  - iOS Simulator,
  - Mac OS X and iOS SDKs.
- Need to know objective-C
- Need a mac
- Developer fee of \$99 (but can get a version of Xcode for free)
- Submit to app store for approval.
- Apple takes 30% of profits (better than traditional gaming route to markets)



# What about Android?

- *“Android is a software stack for mobile devices that includes an operating system, middleware and key applications”*
- Open source
- All applications are treated equally
- Easy for developers (just need to know a bit of Java)
- No “approval process” for apps
- Android is built on the open Linux Kernel
- Continues to evolve



# Google Buys Android

- August 2005

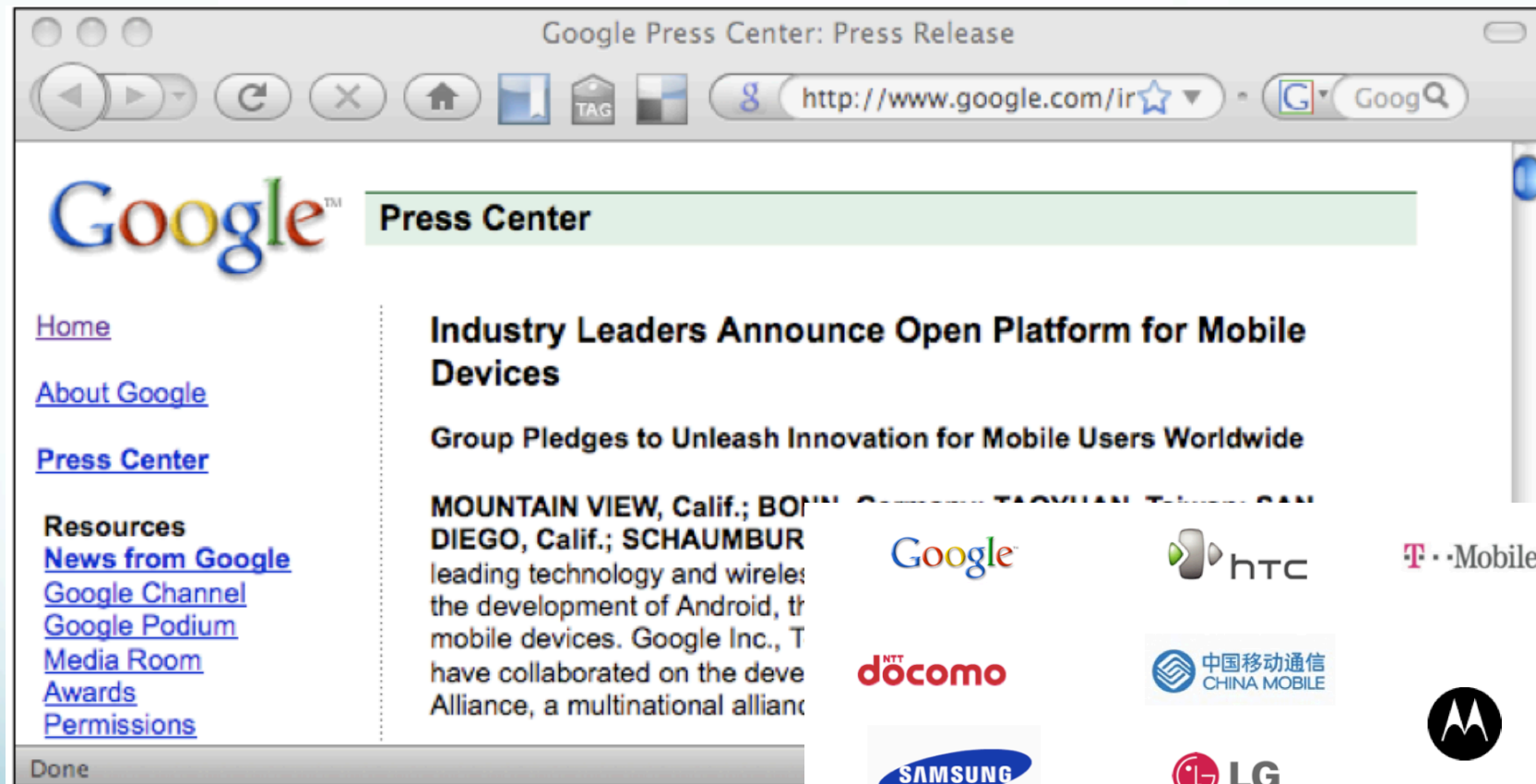


Source *Business week*





# Open Handset Alliance



<http://www.openhandsetalliance.com/>  
November 2007



# Android Marketplace

- \$25 registration fee for developers
- Developer receives 70% of each sale remaining amount goes to carriers
- Google does not take a percentage
- <http://www.android.com/market/>
- You can also self-publish!
- Open source
- All applications are treated equally



# What is PhoneGap?

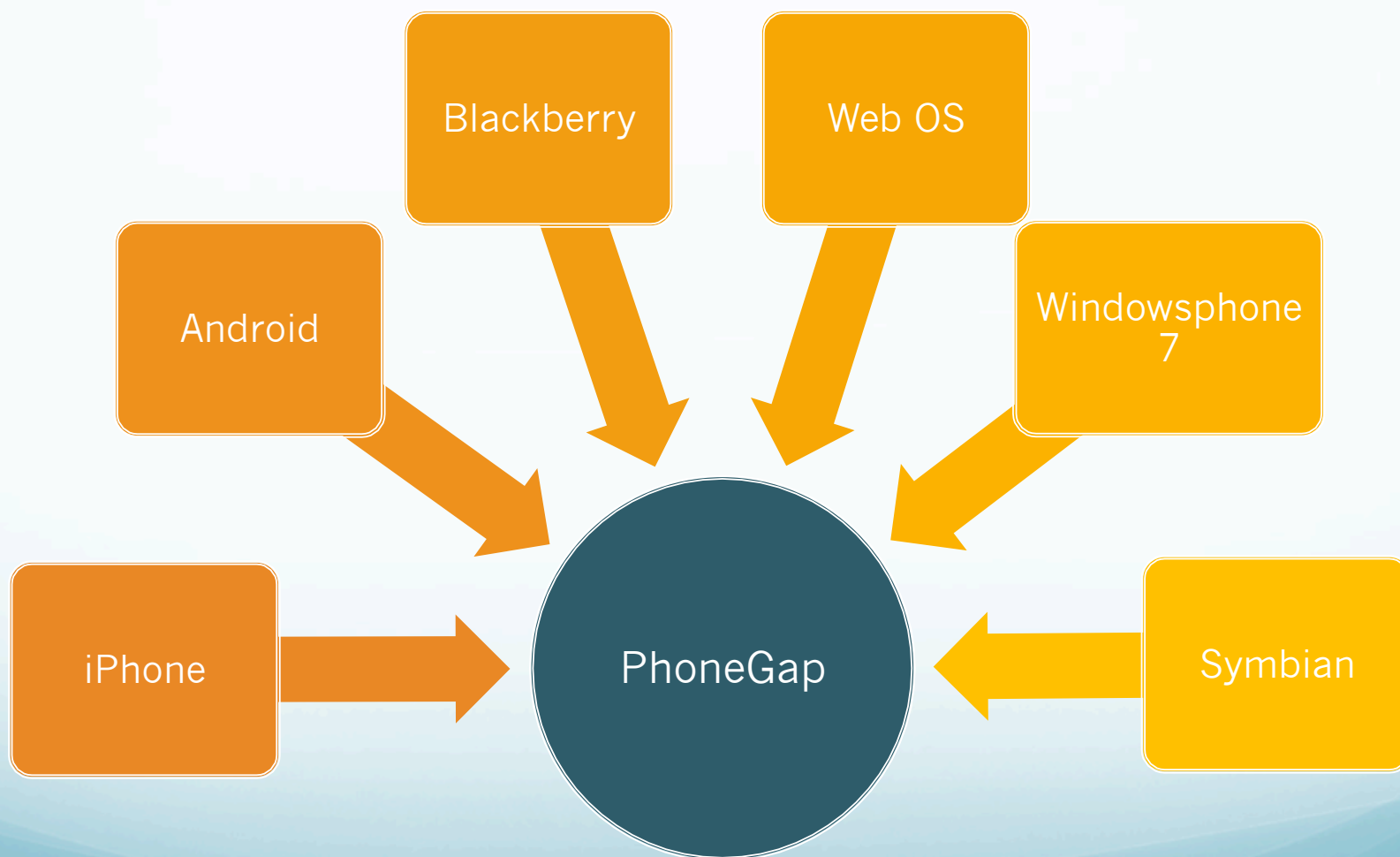
Phonegap is an open-source mobile development framework developed by Nitobi Software and IBM.

It enables all mobile developers to build applications for mobile devices using JavaScript, HTML and CSS.





# PhoneGap





# Mobile App Design – how to / key considerations



# Mobile App Design – how to / key considerations

1. Consider mobile users habits – short, often, fast and goal driven

# Mobile App Design – how to / key considerations

2. Joy of use - users really expect more because the mobile is so personal to them

# Mobile App Design – how to / key considerations

3. Use the abilities of the phone to do more – e.g. Location Based Services (LBS)



# Mobile App Design – how to / key considerations

4. User Test, gather feedback, iterate (internally or externally)

# Mobile App Design – how to / key considerations

5. Big is beautiful – design clearly designated touch areas – test graphics on device

# Mobile App Design – how to / key considerations

6. Consider how the App would work with no signal strength – can it deliver?

# Mobile App Design – how to / key considerations

## 7. Empower the user



# Mobile App Design – how to / key considerations

8. Finally, does it “Bite, snack, meal” ok?

# Mobile App Design – case study: Southampton

precedent.

Southampton Prospectus  
2010

A fully browseable in-App  
prospectus.

- Searchable by keyword
- No need for connection

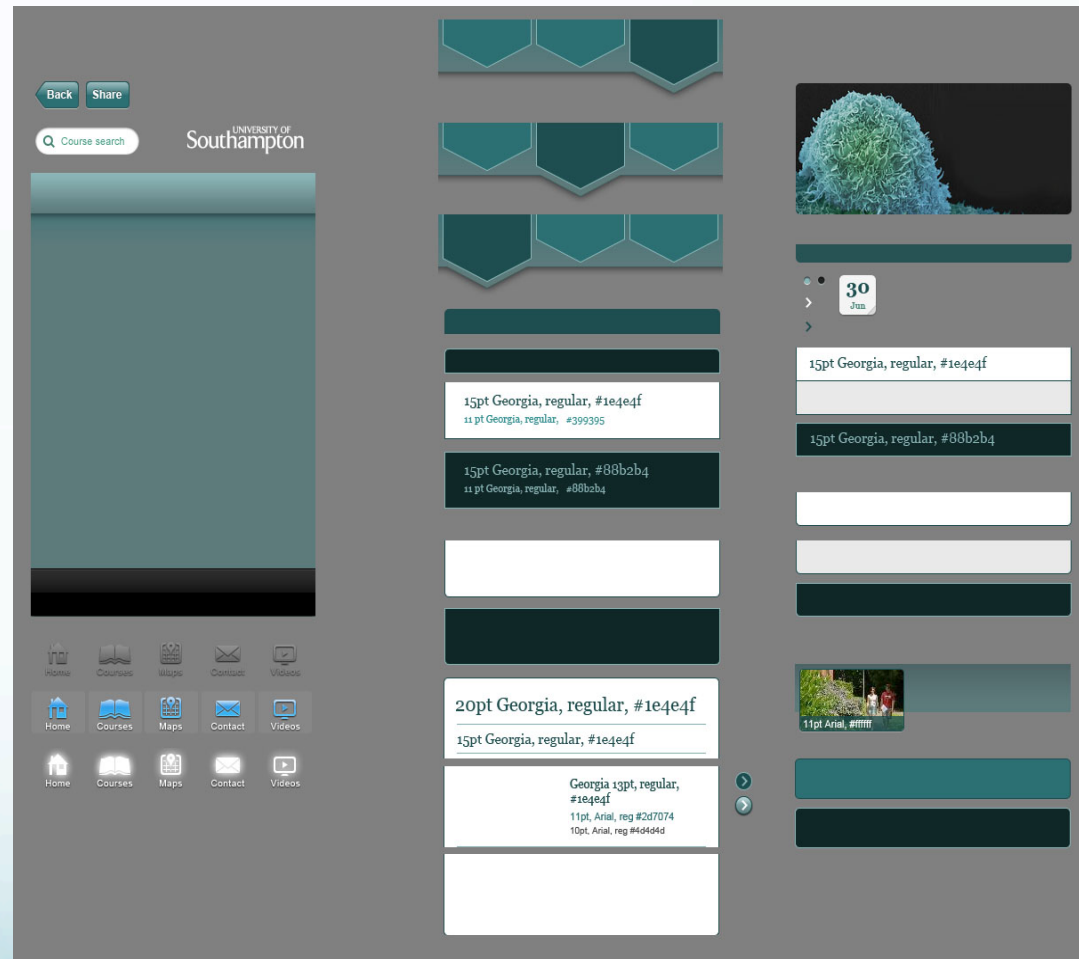
Also includes Showcase  
articles, Events Videos and  
Campus maps



precedent.

## 1. Well designed master asset sheet

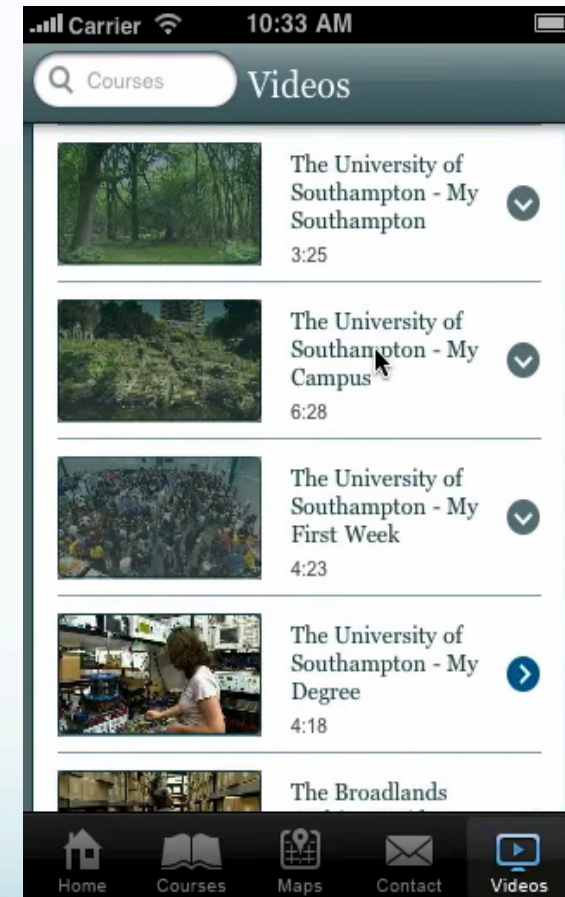
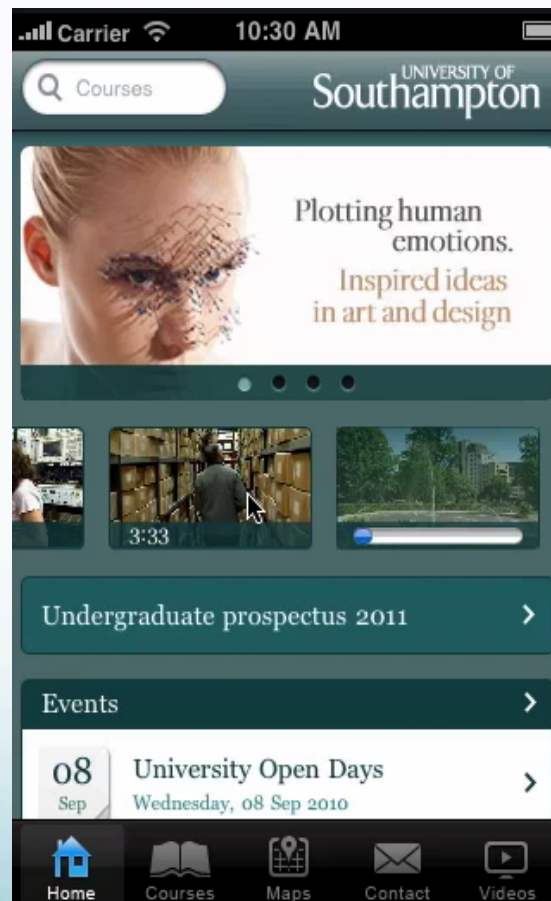
- Labelled layers
- Use e.g. Photoshop/Gimp to create



# Mobile App Design – case study: Southampton<sup>precedent.</sup>

## 2. Video caching

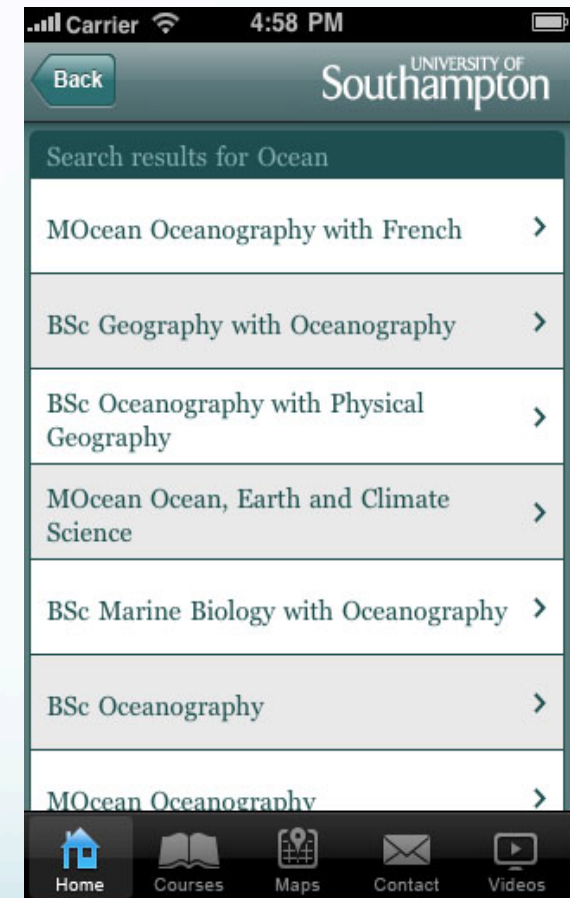
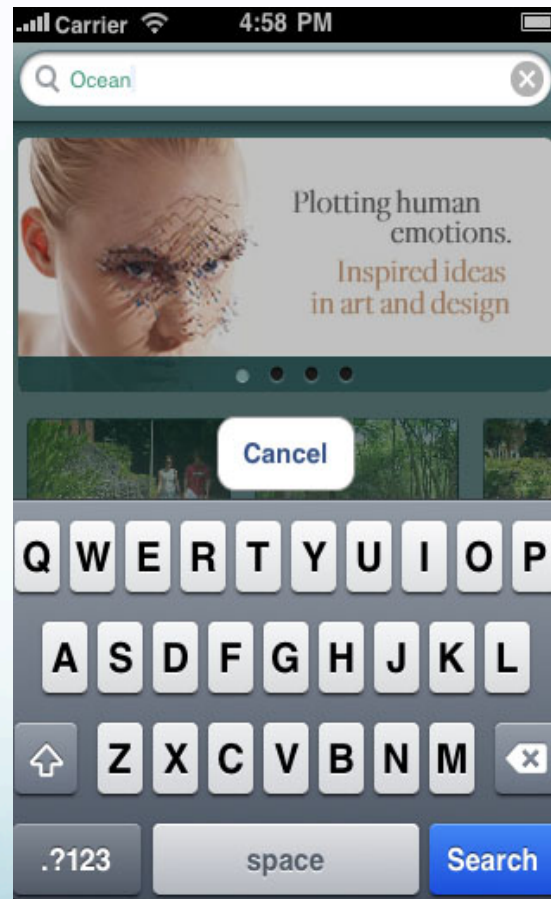
- Once downloaded means that it is stored in the App
- This solution allows for ease of access anywhere after the first download (notably Jamie Oliver's recipe app handles videos this way )



# Mobile App Design – case study: Southampton <sup>precedent.</sup>

## 3. Keyword searching

- Using an A-Z directory for the courses allowed one to utilize a keyword search to quickly filter courses

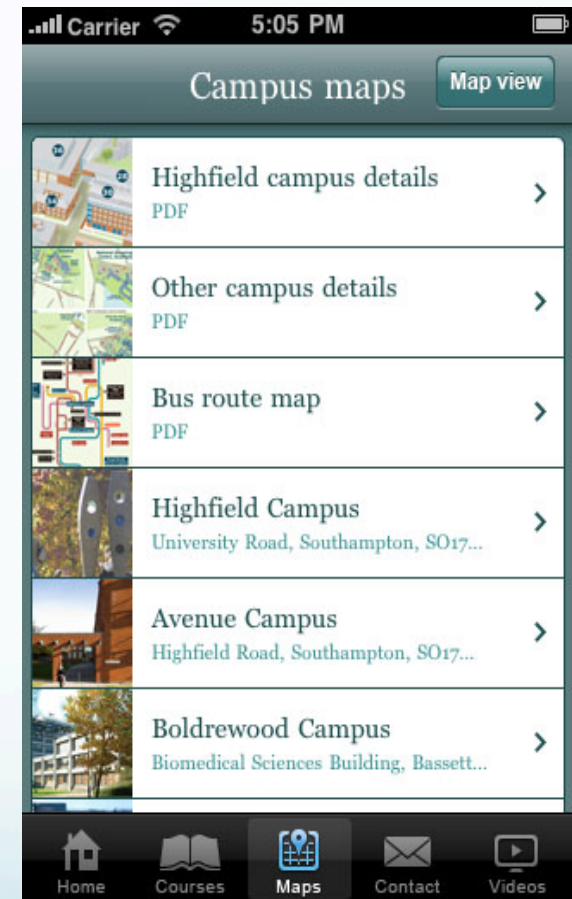
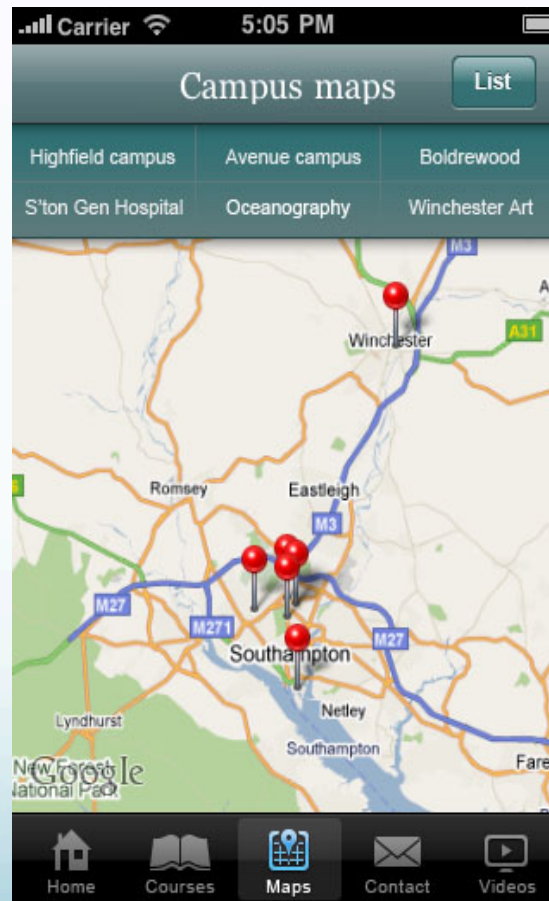




# Mobile App Design – case study: Southampton <sup>precedent.</sup>

## 4. Maps

- Geo tagged campuses on Google maps
- Included detailed PDFs of key campuses and bus routes around Southampton

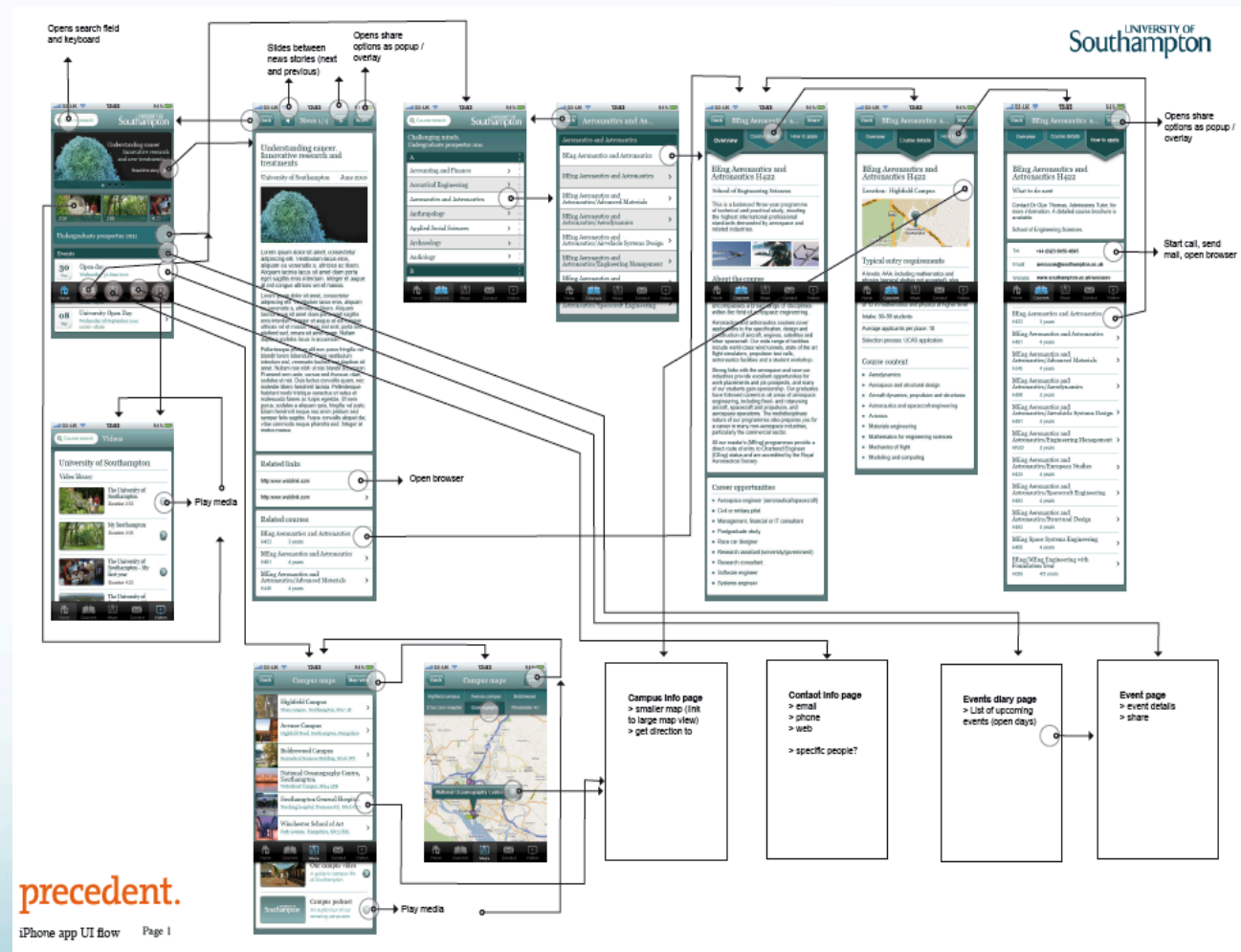


# Mobile App Design – case study: Southampton

precedent.

5. UI flow diagrammatic signed off with client early on in the process


- Create asset sheet from this



# Android: Getting Started

The screenshot shows the Android Developer website interface. At the top, there's a browser address bar with the URL `developer.android.com/index.html`. Below it is a navigation bar with links to various services like Yahoo!, Google Maps, YouTube, Wikipedia, Syngro, News, Popular, Buy John Lewis Value, Import to Mendeley, and 960 Gridder. The main header features the word "developers" in a green, stylized font, followed by a horizontal menu with tabs: Home, SDK, Dev Guide, Reference, Resources, Videos, and Blog. The "Home" tab is currently selected.

The main content area is divided into several sections:

- Developer Announcements:** This section features a blue square icon with a white Android robot. The text reads: "Introducing **Android Design**: The place to learn about principles, building blocks, and patterns for creating world-class Android user interfaces. Whether you're a UI professional or a developer playing that role, these docs show you how to make good design decisions, big and small." Below the text is a link: [Android Design »](#).
- Android Developers on Google+:** This section features a red Google+ icon with a green Android robot. The text reads: "We now have a Google+ page for [+Android Developers](#). We'll use it to host Hangouts for developers, talk about the latest releases, development and design tips, and much more." Below the text is a button that says "We're on  Add to circles".
- Download:** This section features a green Android robot icon with a download arrow. The text reads: "The Android SDK has the tools, sample code, and docs you need to create great apps." Below the text is a link: [Learn more »](#).
- Publish:** This section features a green Android robot icon with a publish arrow. The text reads: "Android Market is an open service that lets you distribute your apps to handsets." Below the text is a link: [Learn more »](#).
- Contribute:** This section features a green Android robot icon with a contribute arrow. The text reads: "Android Open Source Project gives you access to the entire platform source." Below the text is a link: [Learn more »](#).
- Target Devices:** This section features a green Android robot icon with a target arrow. The text reads: "The Device Dashboard provides information about deployed Android devices to help you target suitable device configurations as you build and update your apps." Below the text is a link: [Learn more »](#).

At the bottom of the page, there's a row of four icons: a left arrow, an Android robot icon labeled "Android 4.0.3", a Google+ icon labeled "Google+ Page", and a TV icon labeled "Google TV".



# Android Development tools

- Android SDK 4.0 (Ice Cream Sandwich)
- Eclipse plug-in
- Already installed in the Linux and Windows Lab



# Android SDK

- Android Emulator
- Command-line tools (e.g. for loading onto phone)
- Documentation
- Example Applications



<http://developer.android.com/sdk/android-4.0-highlights.html>



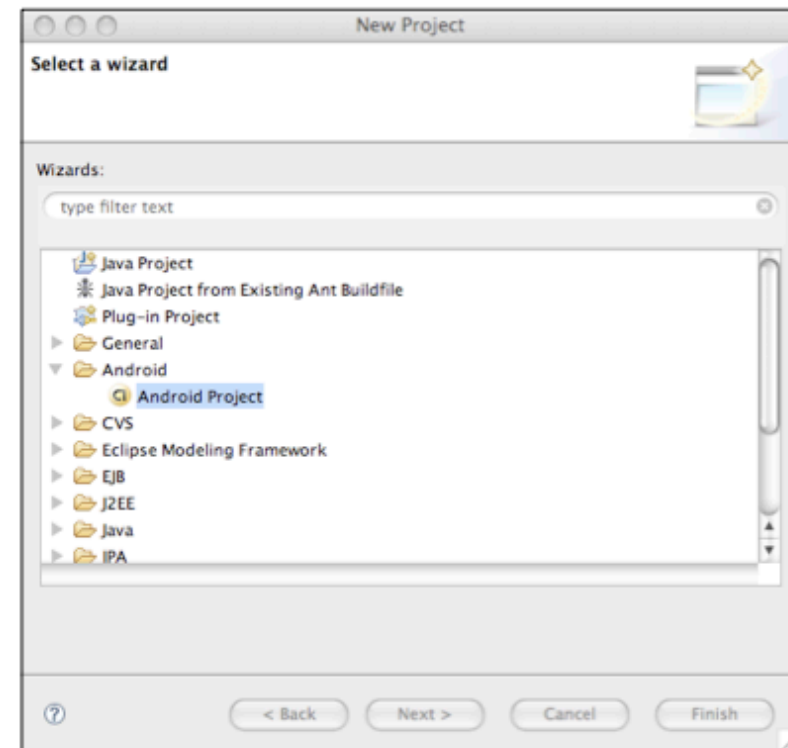


# Emulator Limitations

- No support for placing or receiving actual phone calls
- No support for camera/video capture (input)
- No support for audio input
- No support for determining connected state
- No support for determining battery charge level
- No support for Bluetooth



# Eclipse Plug-in



<http://developer.android.com/sdk/eclipse-adt.html>



# Android Application

- Application package file: *myapp.apk*
- An application is composed of one or more *activities*
- Implementing your UI
  - Java
  - XML

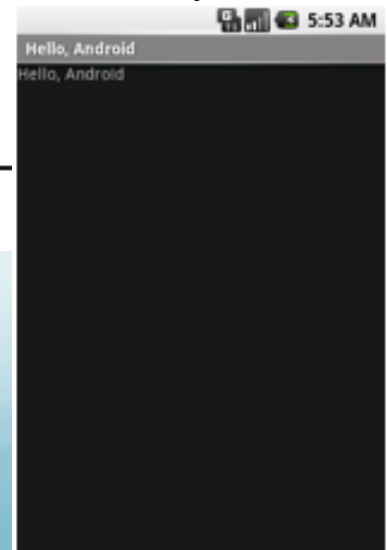


# XML: Layout

activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Hello World"
        />
</LinearLayout>
```

*Write the xml or use a WISIWIG Interface*





# Activity

- Provides a screen with which users can interact in order to do something,
  - E.g. dial the phone, take a photo, send an email, or view a map.
- Each activity is given a window in which to draw its user interface
- However, activities can also be faceless

*Activity to view and update alarms*







# Activity

- One activity is designated as the entry point for your application

```
import android.app.Activity;

public class MyActivity extends Activity
{
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);

        setContentView(R.layout.main);
    }
}
```



# Application Building blocks

- *Activities*: a screen that the user can interact with
- *Views*: an object that knows how to draw itself on the screen, e.g. button, Image, text label
- *Layouts*, e.g. frames, tables
- *Notifications*, e.g. tell the user when a file has been downloaded
- *ContentProviders*, manage access to a structured set of Data e.g. create Database
- *AndroidManifest.xml*, store permissions, libraries etc.
- *Intents & IntentReceivers*, simple message that represents an intention to do something in the Android system, e.g. open up a URL, web\_search, sync, data transfer

# Android Resources

- <http://code.google.com/android/>
- <http://android-developers.blogspot.com>
- <http://code.google.com/p/apps-for-android/>
- <http://sites.google.com/site/io/>
- <http://www.openhandsetalliance.com/>
- <http://source.android.com>
- <http://androidforbeginners.blogspot.com/>

# Other resources

- <http://www.phonegap.com>
- <https://developer.apple.com>
- Many tutorials on <http://www.youtube.com/>
- E.g.  
[http://www.youtube.com/watch?v=l6ObTqliYfE&feature=player\\_embedded](http://www.youtube.com/watch?v=l6ObTqliYfE&feature=player_embedded)

# The Future?

Google Glass





# How to make money out of an App

- Free??
  - Good exposure to users
  - Impress them and build a trusted name
  - Drive traffic towards your paid apps

# How to make money out of an App

- Free with ads
  - Ad providers e.g. Admob
  - Advertisers SDKs usually add weight to your app
  - Loss of real-estate
  - Need minimum user face time and interaction to maximize chance that users will press ad



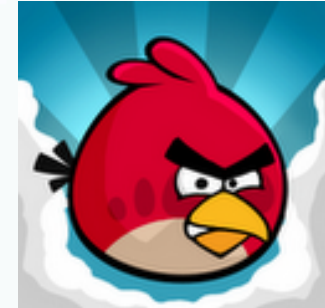
# How to make money out of an App

- Free with in-app purchase
  - Get them in the door then offer add-ons at a price
  - Micropayments allow users to buy content at a few pennies
  - Deliver basic system for free
  - Get user base
  - Utilize novelty-driven or premium-functionality requirements towards generating income.
- Note: micro pay systems are not available in all countries
- Not all apps lend themselves to it.



# How to make money out of an App

- Cut down/trial version
  - Give away a basic free version
  - Provide paid 'pro' versions
  - Content needs to warrant the additional 69p



# How to make money out of an App

- Charge for it
  - Make immediate profit up front
  - Once past the initial 15 minute refund it's a sale
  - But...Android users are stingy bunch
  - Run the risk of being undersold by free app



Android #1  
@ £1.49

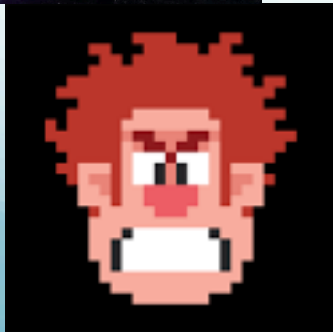


Android  
#3/ iPhone #1  
@ £4.99



iPhone #2  
@ 69p

Android  
#2  
@ 69p



# Summary

- Mobile revolution
- Designing for mobiles
- SDKs
- Android
- £££



# Today's Lab

- Option 1: in pairs, design a mobile application with Balsamiq to help people with hay fever.
- Option 2: use eclipse to create a HelloWorld Android application.

# Other Business

- Next time: blogging and social media
- Week 10: demo assessment double lab on the Monday 11<sup>th</sup> March 12.15-2.15
  - Demonstration of at least one functionality working through PHP/HTML e.g insertion of data or display of data.
- Week 11: assessment due on the Friday the 22nd. TurnItIn will be open until Midnight