

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>

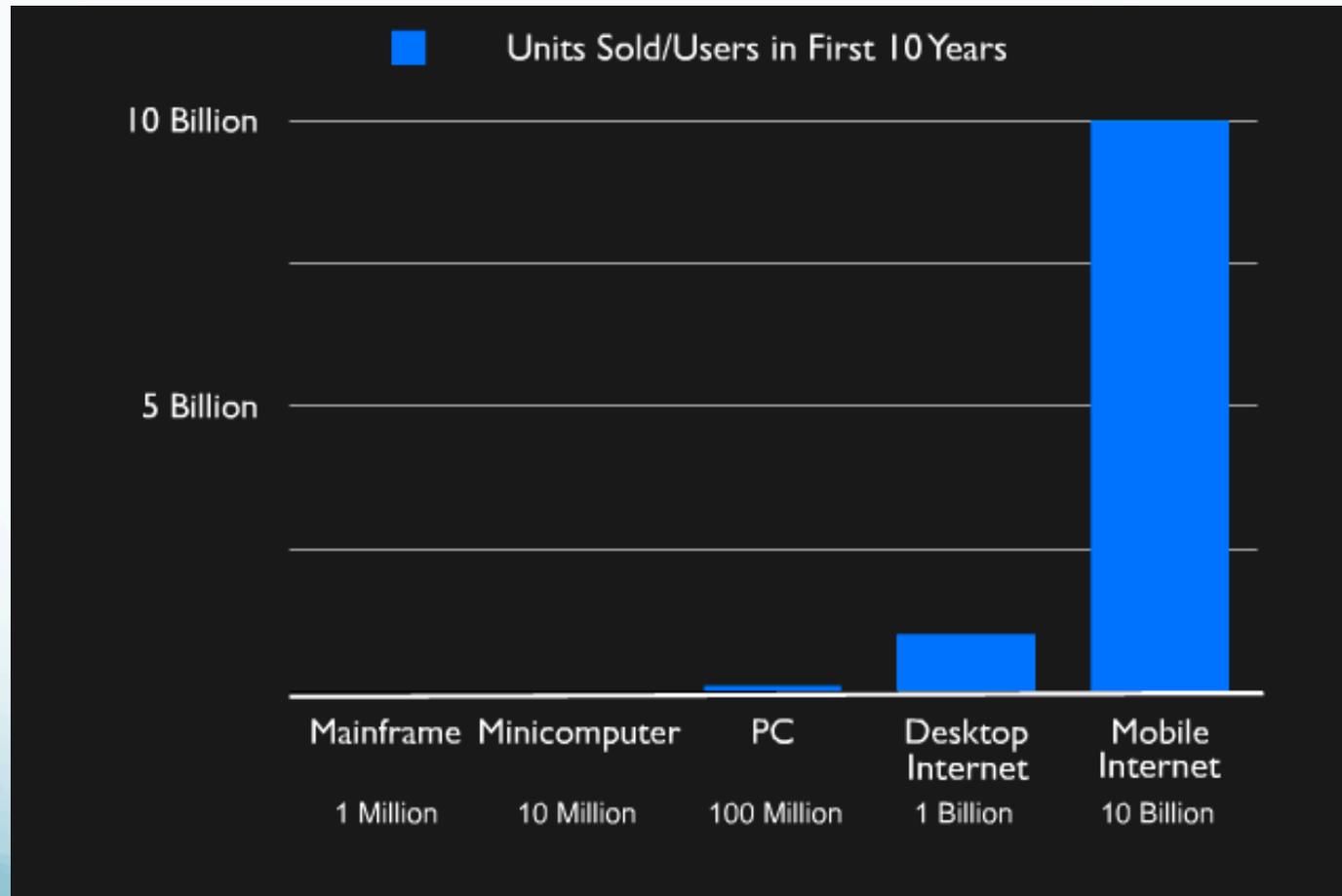
Not this



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?

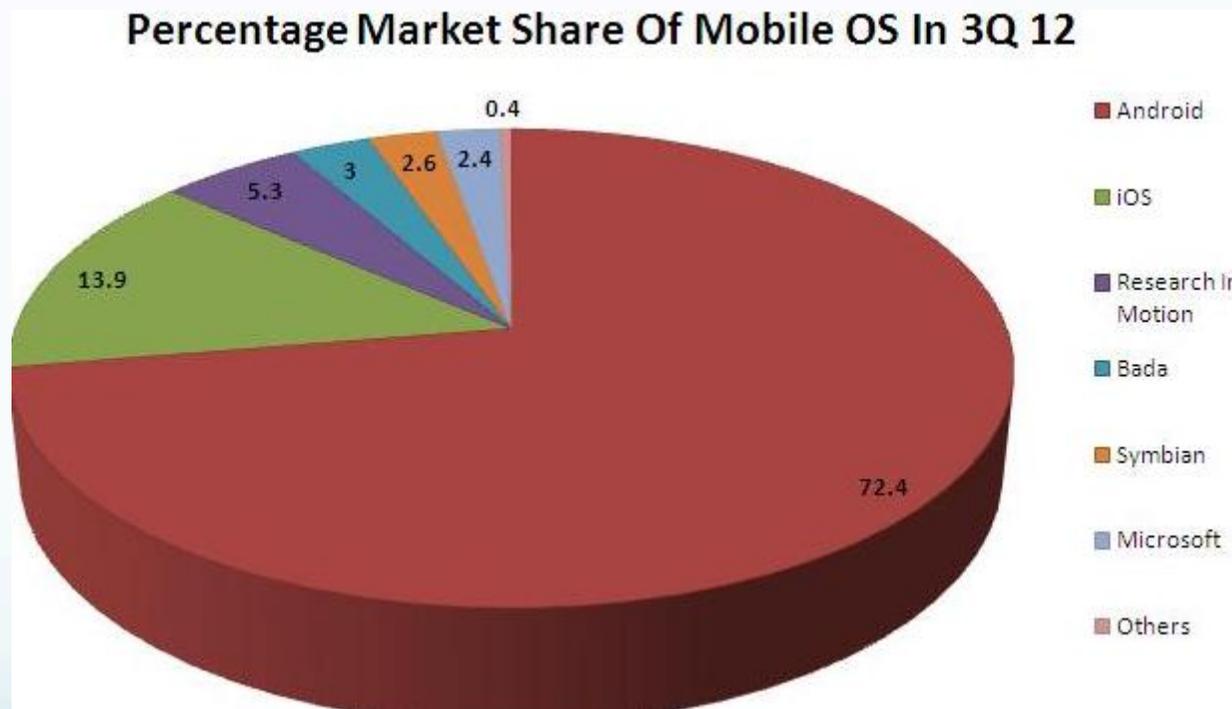
Mobile phone recent history



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

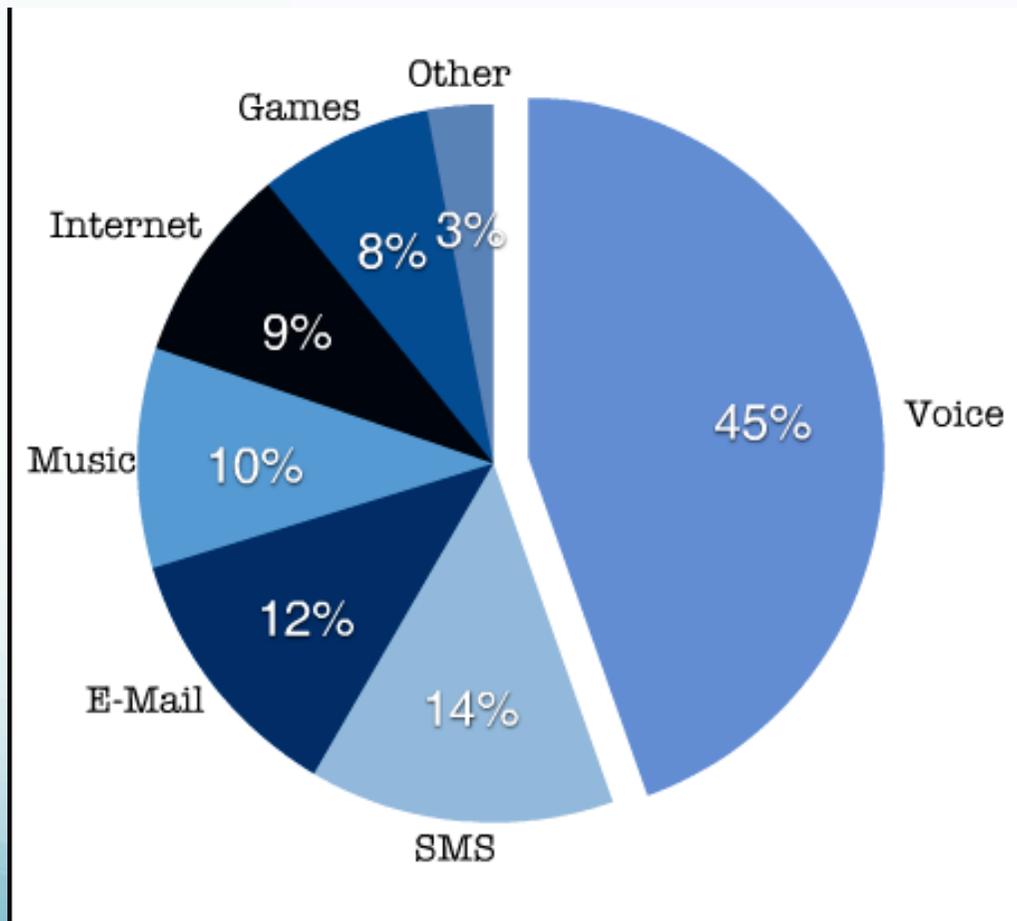
Notably, over the last few years the form factor has moved from physical keyboard to “touch” and there is a demand for more services

Phone market share



Source: Daze Info

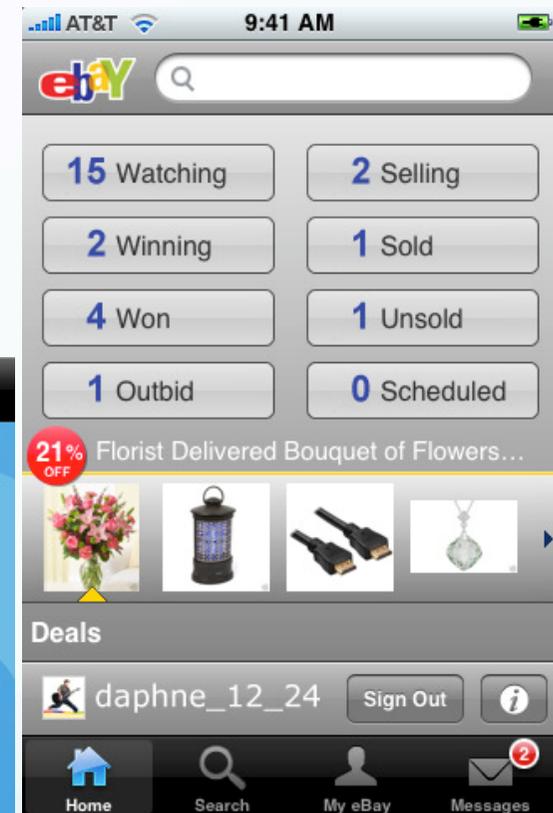
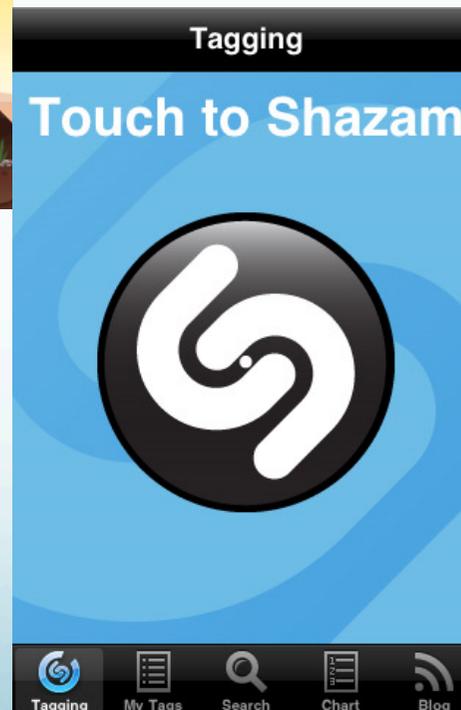
Not just a phone



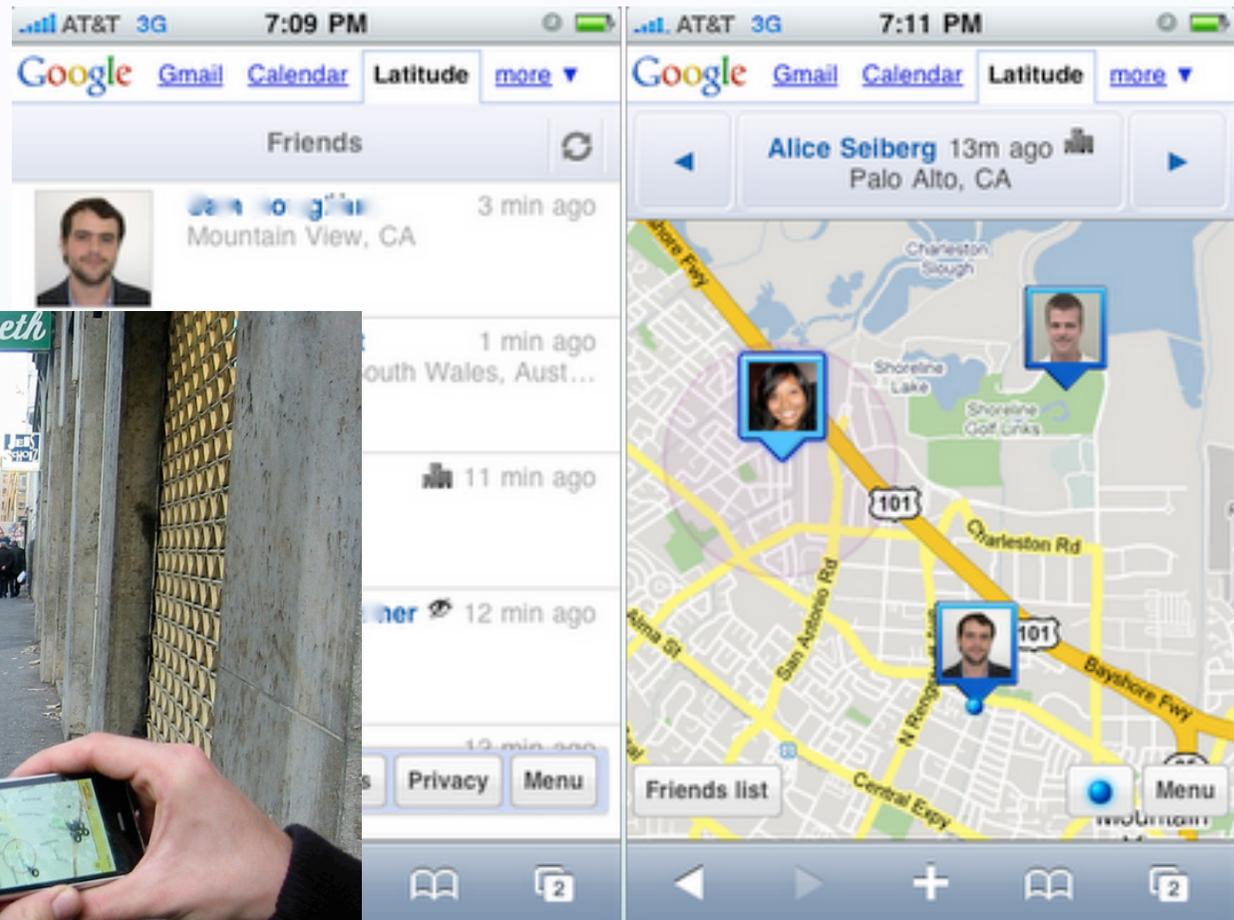
Source: Morgan Stanley/iSuppli- phone usage study

Favourite apps?

Some top mobile apps



Location Based Services (LBS)



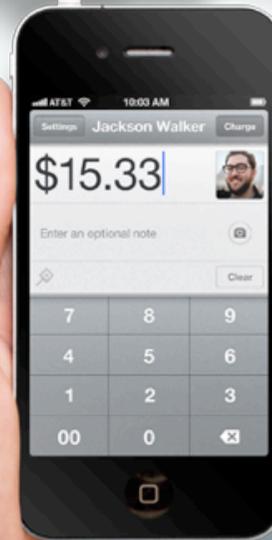
Augmented Reality



Mobile Learning



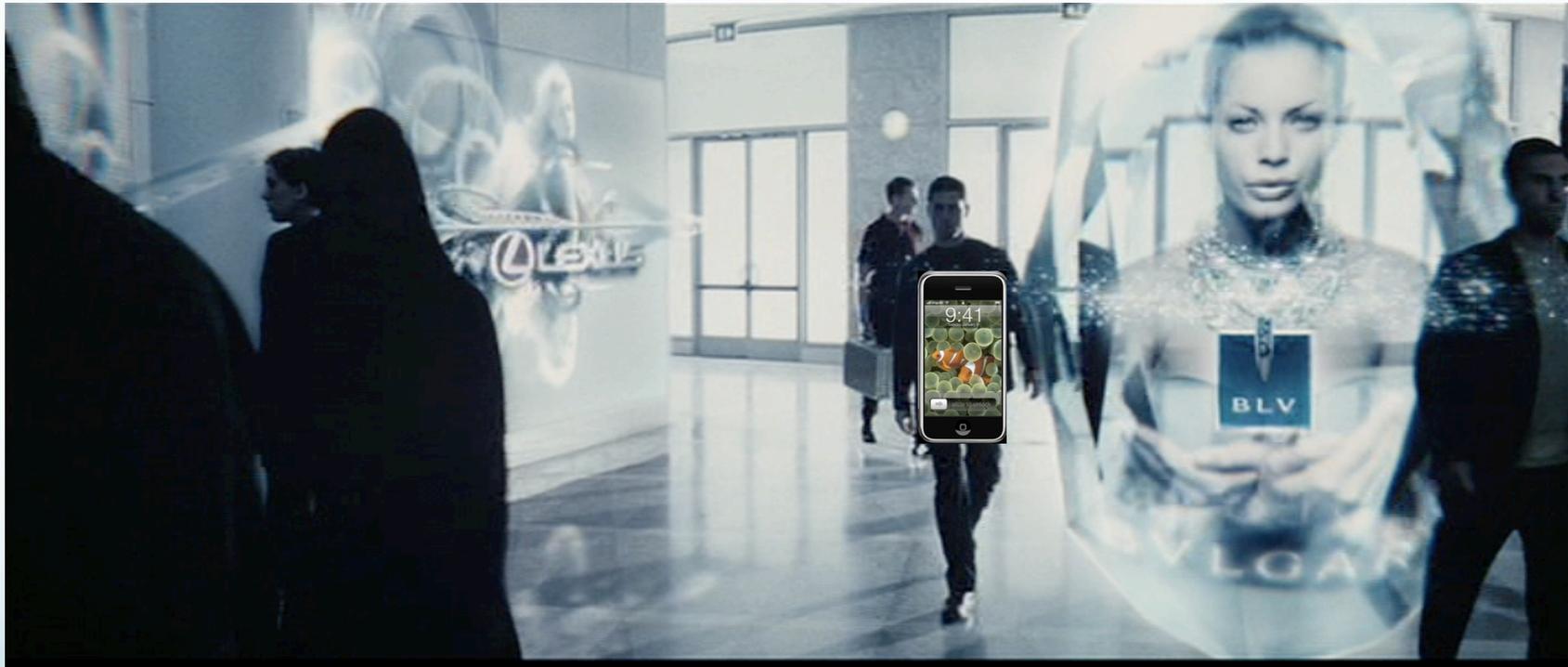
Device integration



Near Field Communication (NFC)



Personalised Advertising



From Minority Report

Health/Fitness



myfitnesspal

TUESDAY / Nov 17, 2009

our Daily Summary

1569 CALORIES REMAINING

Goal	Food	Exercise	Net
2100	+1010	-479	531

Add to Diary

Nutrient Summary

	Total	Goal	Left
Total Fat (g)	20	104	84
Saturated (g)	1	34	33

Home My Diary Progress More

Add Entry Breakfast

Most Used My Foods My Meals

orange juice

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
Fundamentals					
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
Key figures					
Downloads per month as of end of 2008 (est.)	65M ⁽¹⁾	80M on average in 2007	3M ⁽²⁾	3M ⁽²⁾	17M ⁽³⁾
Applications to end of 2008 (est.)	10,000	12,000M	10,000 (S60) 50,000 (Java) ⁽⁴⁾	140,000 ⁽⁴⁾	10,000
Revenues (2008 est.)	\$500M/year ⁽¹⁾	\$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
Features					
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 managmnt & 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





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

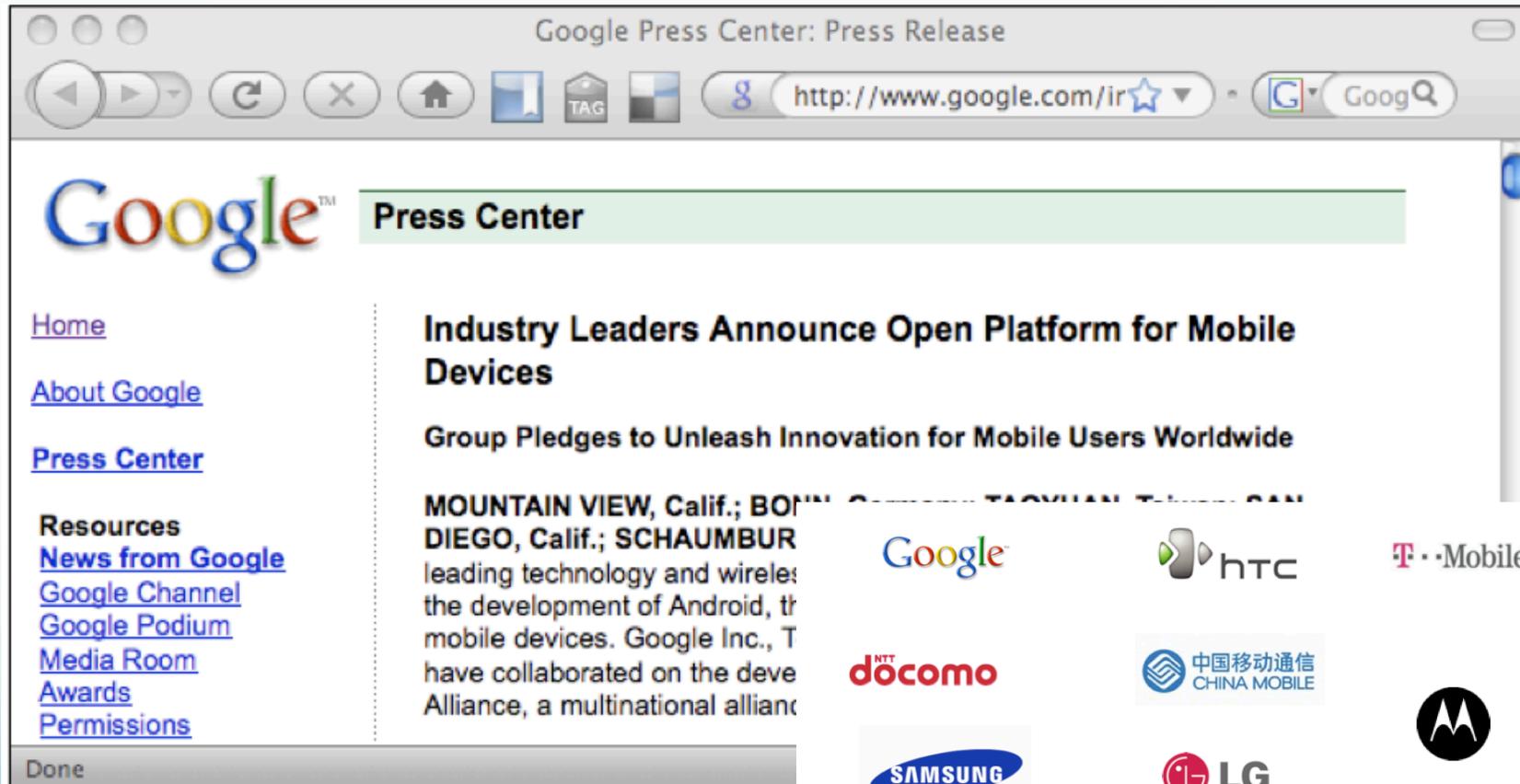
- August 2005

A screenshot of a web browser window. The title bar reads "Google Buys Android for Its Mobile Arsenal". The address bar shows the URL "http://www.businessweek.com/print/technology/content/aug2005/tc2005". The search bar contains "Google". The main content area displays the article title "Google Buys Android for Its Mobile Arsenal" in a large, bold font. Below the title is a sub-headline: "The search giant quietly acquires the startup, netting possibly a key player in its push into wireless, 'the next frontier in search'". The article text begins with "In what could be a key move in its nascent wireless strategy, Google (GOOG) has quietly acquired startup Android Inc., BusinessWeek Online has learned. The 22-month-old startup, based in Palo Alto, Calif., brings to Google a wealth of talent, including co-founder Andy Rubin, who previously started mobile-device maker Danger Inc." A second paragraph states "Android (www.android.com) has operated under a cloak of secrecy, so little is known about its work. Rubin & Co. have sparingly described the outfit as making software for mobile phones, providing little more detail than that. One source familiar with the company says Android had at one point been working on a software operating system for cell phones." A third paragraph is titled "SEEKING A MOBILE EDGE." and discusses a 2003 interview with BusinessWeek. The final paragraph notes that Rubin declined to comment on the sale to Google.

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?

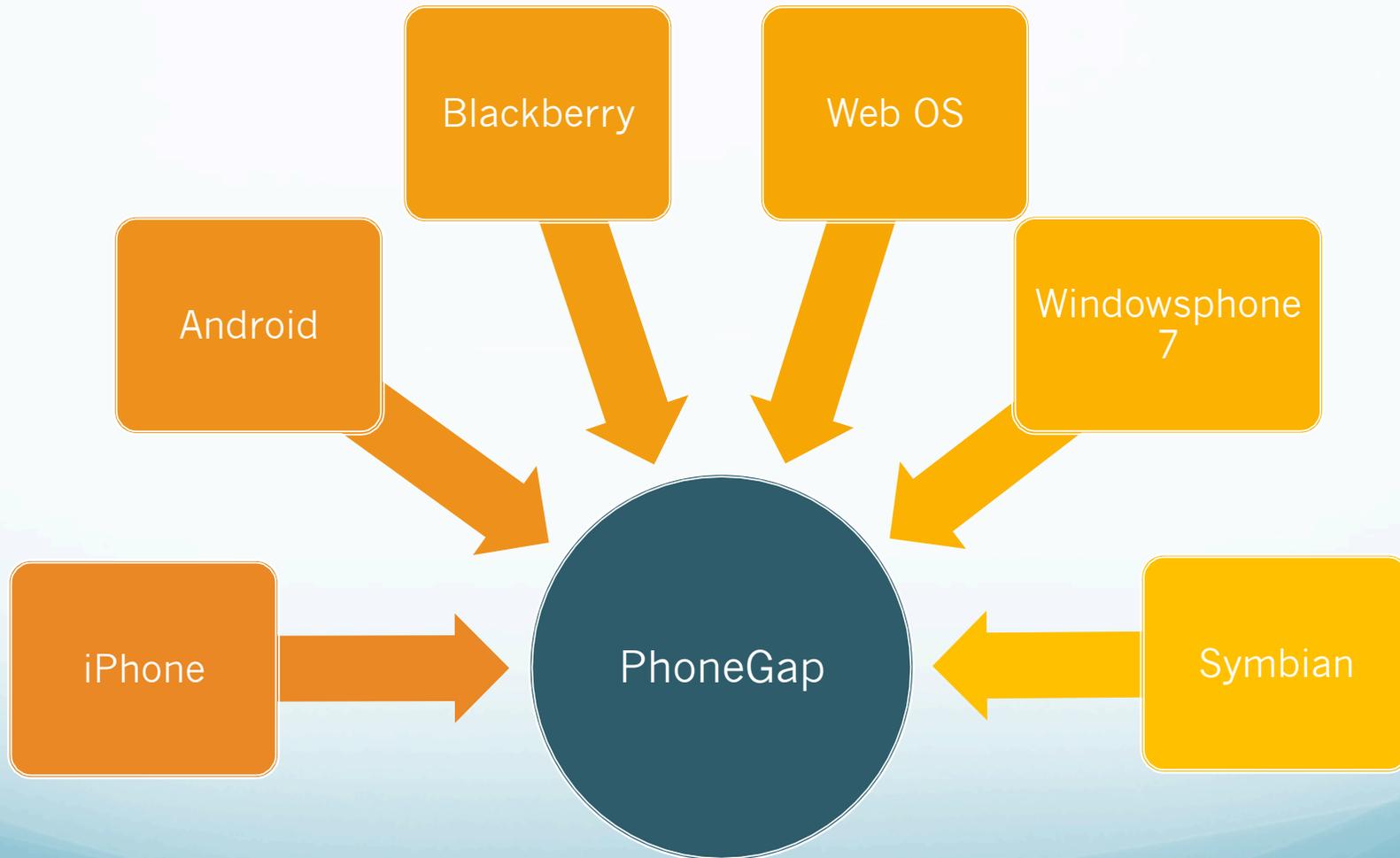
Phonegap is an open-source mobile development framework developed by Nitobi Software and IBM.

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?

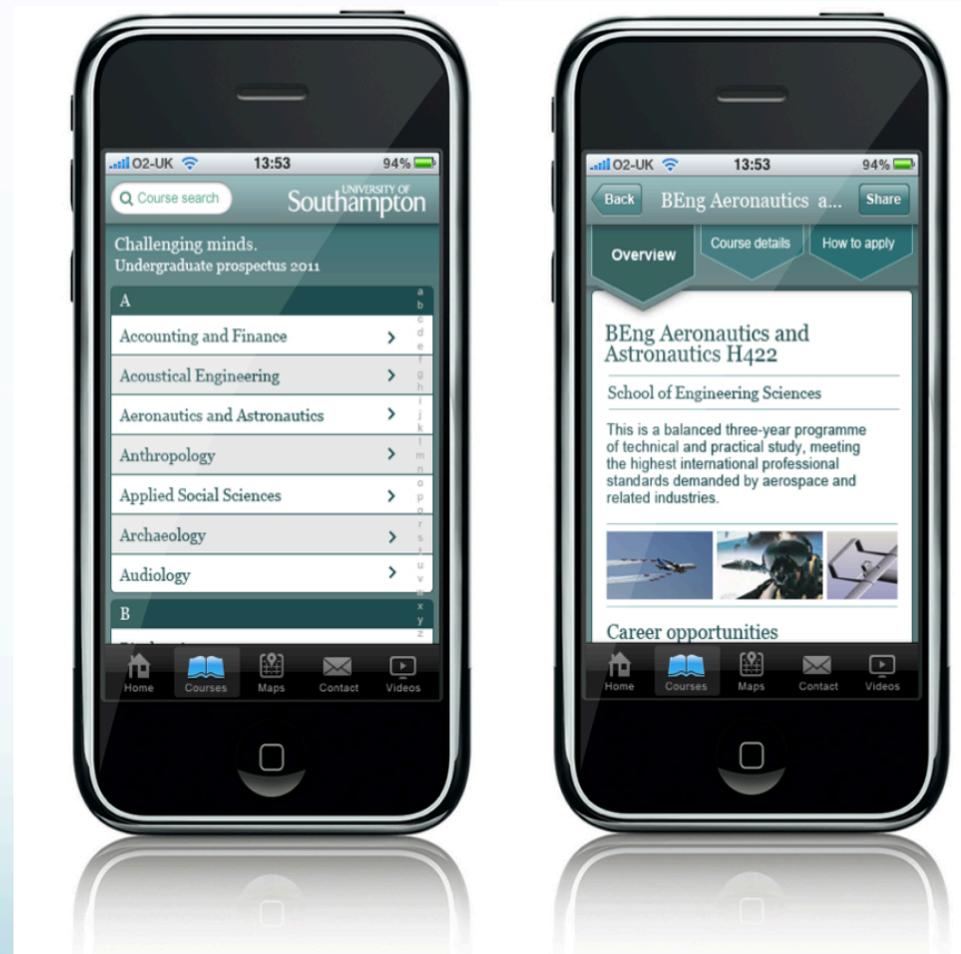
Mobile App Design – case study: Southampton

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

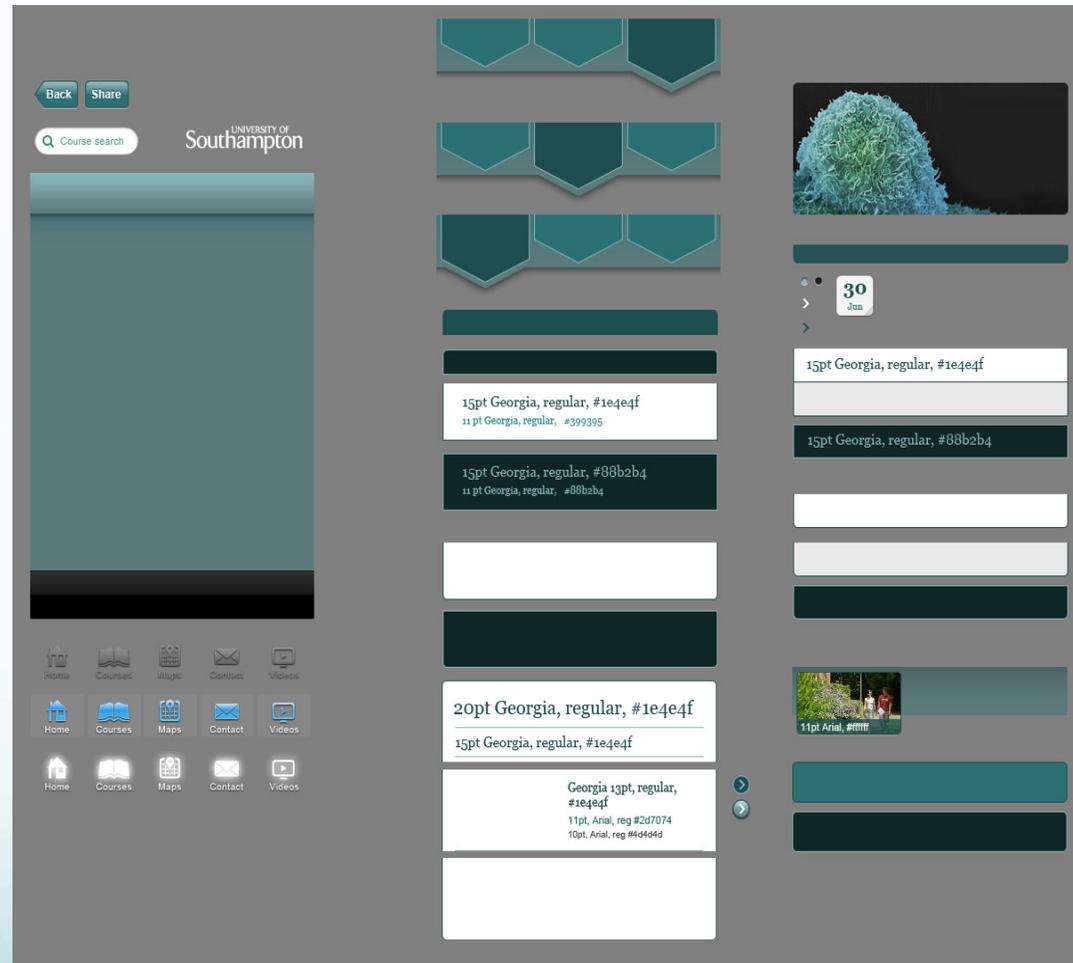


Mobile App Design – case study: Southampton

precedent.

1. Well designed master asset sheet

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

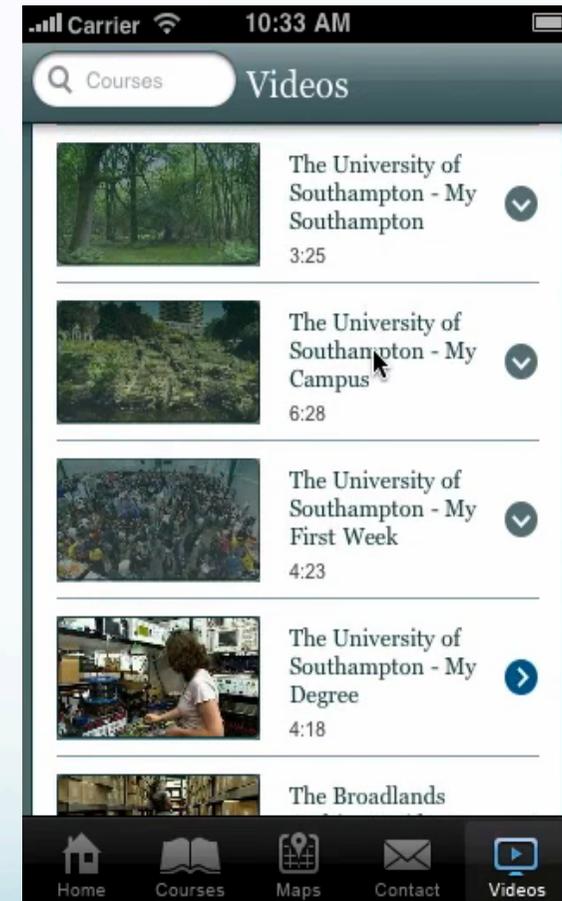
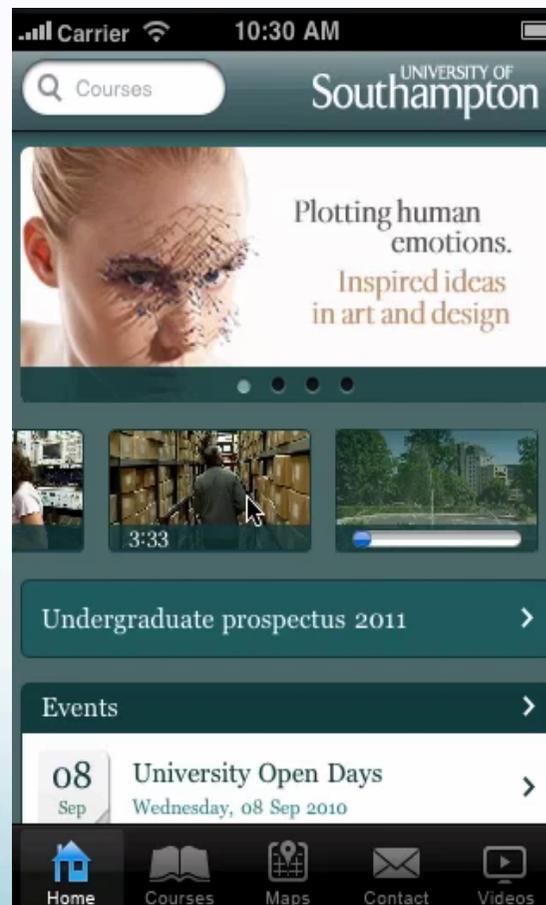


Mobile App Design – case study: Southampton

precedent.

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)

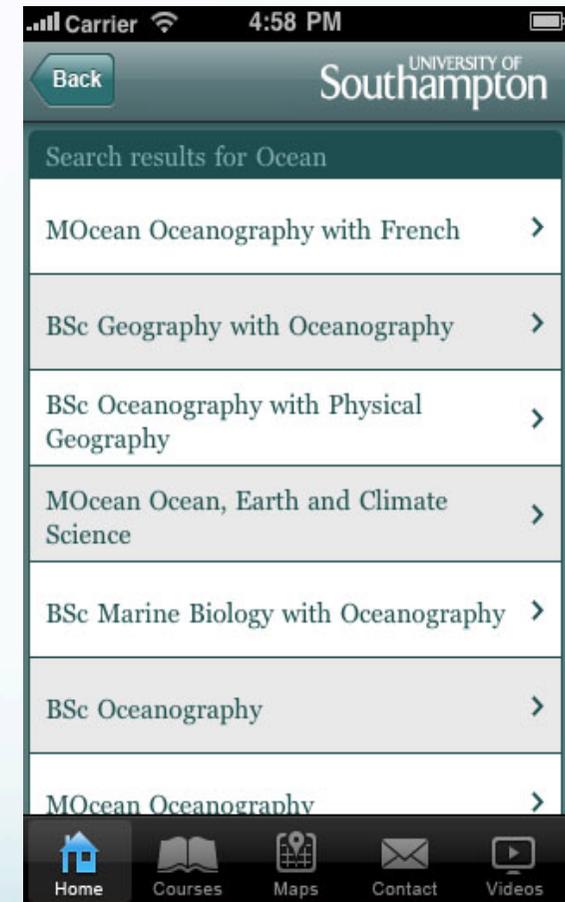
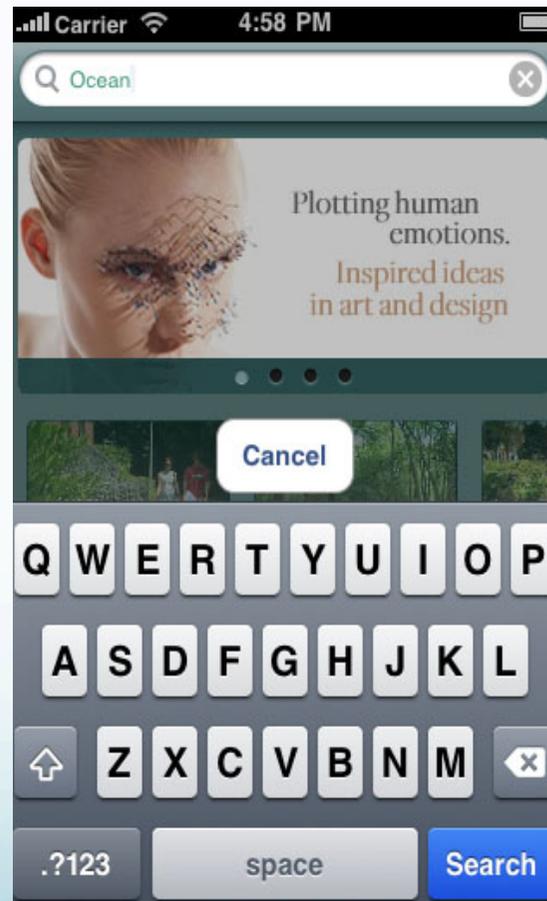


Mobile App Design – case study: Southampton

precedent.

3. Keyword searching

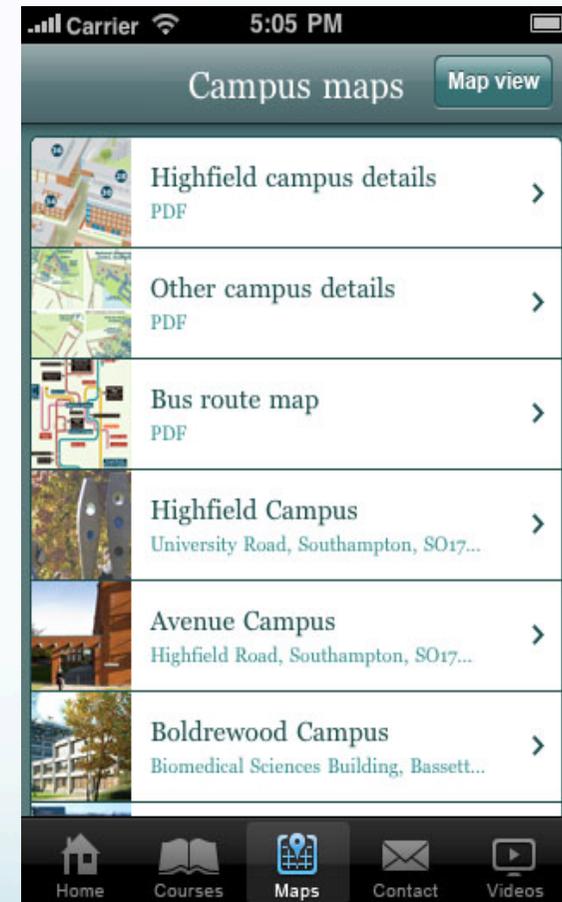
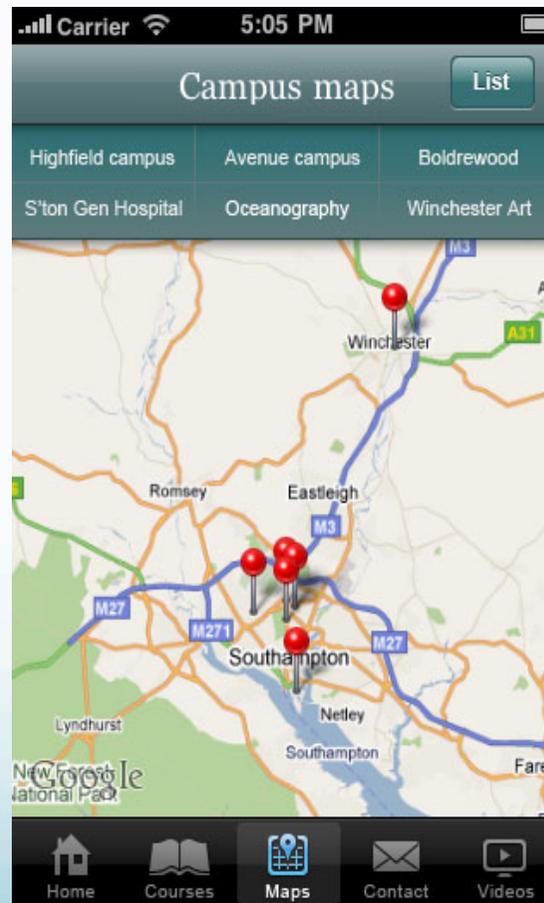
- Using an A-Z directory for the courses allowed one to utilize a keyword search to quickly filter courses



Mobile App Design – case study: Southampton ^{precedent.}

4. Maps

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

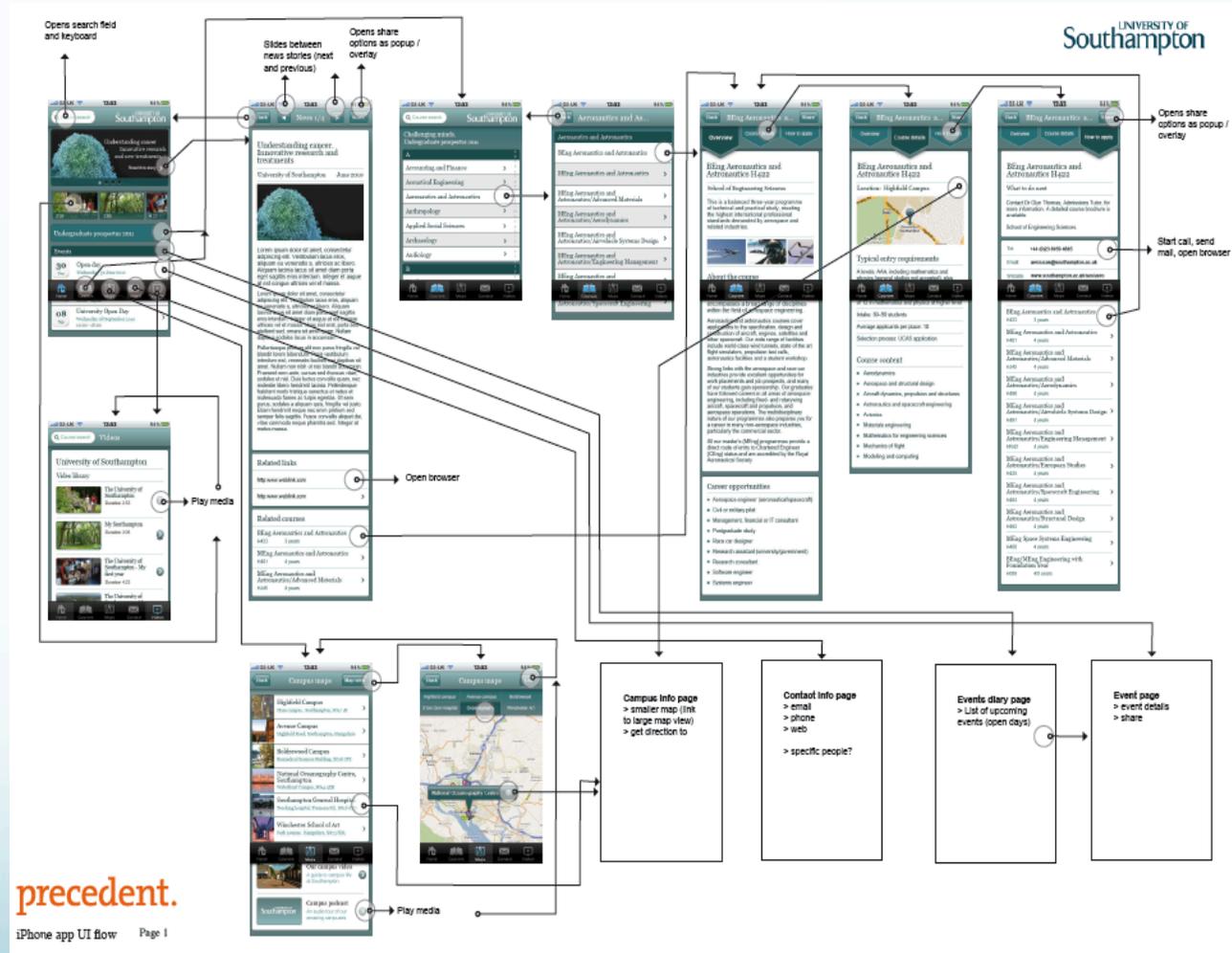


Mobile App Design – case study: Southampton

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 homepage of the Android Developer website. The browser address bar displays `developer.android.com/index.html`. The page features a navigation menu with tabs for Home, SDK, Dev Guide, Reference, Resources, Videos, and Blog. The main content area is divided into several sections:

- Developer Announcements:** A section with a blue grid background and an Android robot icon. It introduces **Android Design** as a resource for learning about UI principles and patterns. A link for [Android Design »](#) is provided.
- Android Developers on Google+:** A section with a red Google+ icon and an Android robot. It announces a new Google+ page for **Android Developers** and includes a button to [Add to circles](#).
- Download:** A section with a download icon and text stating that the Android SDK provides tools, sample code, and docs. A link for [Learn more »](#) is included.
- Publish:** A section with a publish icon and text explaining that Android Market is an open service for distributing apps. A link for [Learn more »](#) is included.
- Contribute:** A section with a contribute icon and text stating that the Android Open Source Project provides access to the platform source. A link for [Learn more »](#) is included.
- Target Devices:** A section with a target devices icon and text explaining that the Device Dashboard provides information about deployed devices. A link for [Learn more »](#) is included.

At the bottom of the main content area, there is a carousel of three icons: **Android 4.0.3**, **Google+ Page**, and **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>

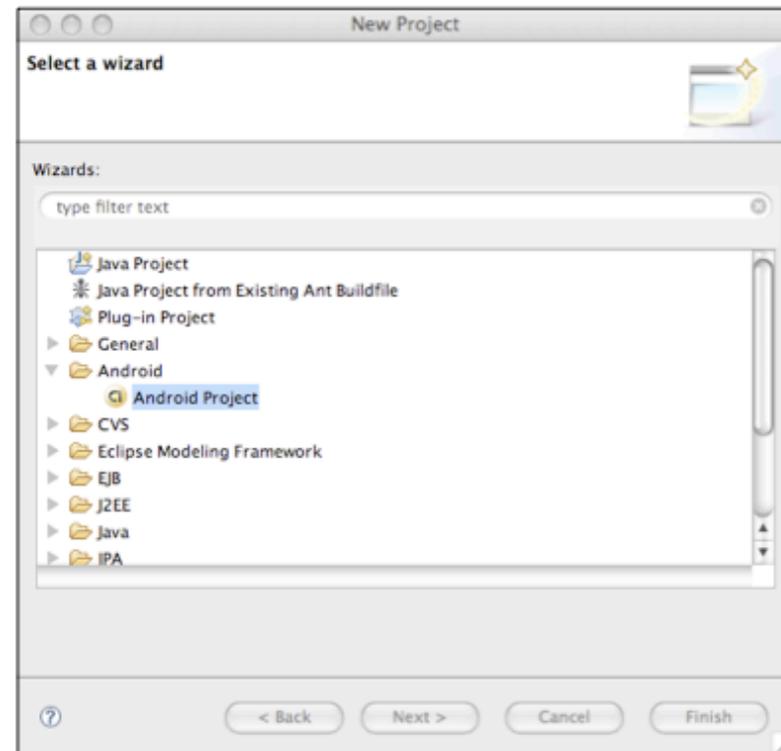


Emulator Limitations

- 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

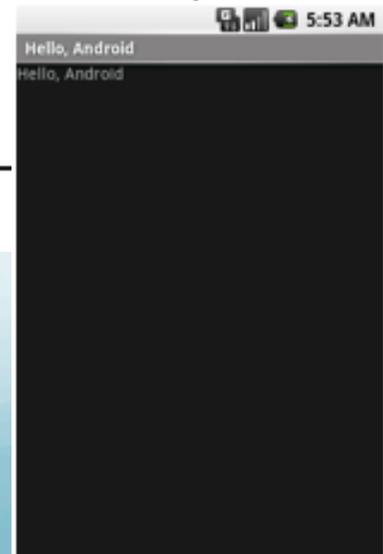


XML: Layout

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

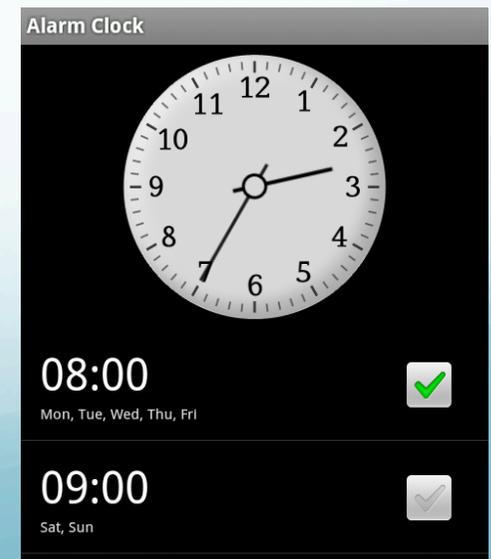




Activity

- 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=I6ObTqliYfE&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

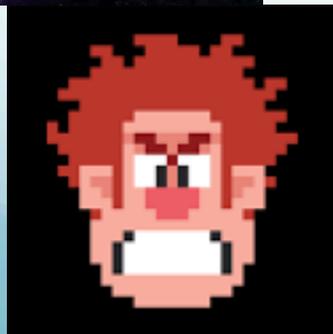


Android
#3/ iPhone #1
@ £4.99



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 11th 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