

# CSC 540 Mobile App Development II

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## Outline

Mobile Web  
Mobile Web Apps  
X-Platform Mobile App Development

## iPhone

### Platform:

- New SDK
- New Tools
- New language (Objective C)
- Embedded development



## iPad

### IOS Based Tablet

- Plethora of competitors
- Many are Android based

### There is a WP7 Tablet

- Panorama UI
- Zune connectivity ☹



## Windows Mobile

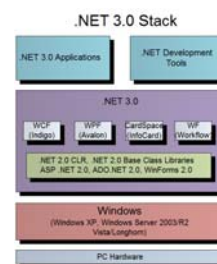
### WPhone7

- New initiative from Microsoft
- Will power Nokia smartphones
- Is based very heavily around
  - Silverlight
  - WPF Applications
  - XAML



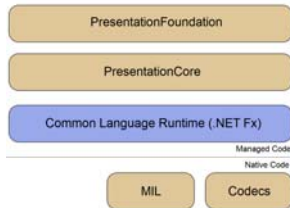
## Windows Mobile

### Windows Presentation Foundation



## Windows Mobile

### Windows Presentation Foundation



## Windows Mobile

### XAML

- Cross-Platform Interface Description Language

```
<Button>
  <Button.Background>
    <SolidColorBrush Color="Blue"/>
  </Button.Background>
  <Button.Foreground>
    <SolidColorBrush Color="Red"/>
  </Button.Foreground>
  <Button.Content>
    This is a button
  </Button.Content>
</Button>
```

## Android

Started out as an FOSS project but now supported by Google, etc.



## Android

### Development

- Java SDK
- Widgets



## Android

### Development

- XML specification of widgets

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
  <item android:id="@+id/menu_search"
        android:title="Search"
        android:icon="@drawable/ic_menu_search"
        android:showAsAction="ifRoom"
        android:actionLayout="@layout/searchview" />
</menu>
```

## Android

### Development

- Activities

```
public class ExampleActivity extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // The activity is being created.

        setContentView(R.layout.activity_main);
        // The activity is about to become visible.

        @Override
        protected void onStart() {
            super.onStart();
            // The activity has become visible (it is now "resumed").

            @Override
            protected void onResume() {
                super.onResume();
                // Another activity is taking focus (this activity is about to be "paused").

            @Override
            protected void onPause() {
                super.onPause();
                // The activity is no longer visible (it is now "paused").

            @Override
            protected void onStop() {
                super.onStop();
                // The activity is about to be destroyed.
            }
        }
    }
}
```

- Mobile Web

The Mobile Web is sometimes called **seventh mass media channel** (Tomi Ahonen):

- Print (books, pamphlets, newspapers, magazines, etc) from the late 15th century
- Recordings (gramophone records, magnetic tapes, cassettes, cartridges, CDs, DVDs) from the late 19th century
- Cinema from about 1900
- Radio from about 1910
- Television from about 1950
- Internet from about 1990
- Mobile phones from about 2000

- Mobile Web

The **Mobile channel** is claimed to be different:

- Mobile is the first personal mass media
- Mobile is permanently carried
- Mobile is always on
- Mobile has a built-in payment mechanism
- Mobile is available at the point of creative inspiration
- Mobile has the most accurate audience measurement
- Mobile captures the social context of media consumption
- Mobile allows augmented reality to be used in media

## Mobile Web

Some people have called it the **fourth screen**

- Cinema
- Television
- Personal Computer
- Mobile device

- Mobile Web

## Mobile Web Markup Languages



## Mobile Web

## The Mobile Web has some fundamental problems

- Although **Responsive Web Design** attempts to build a fluid website that adapts to different platforms
- Term coined by Ethan Marcotte
  - <http://www.alistapart.com/articles/responsive-web-design/>
- #2 on some list of “hot” web trends for 2012
- Doesn’t address the fundamental issue that according to some analyses only 20% of a websites functionality is appropriate for the mobile version

- Mobile Web Apps

## Mobile Web Application Frameworks

- JQuery Mobile
  - Compatible with Phonegap

```
$('#div').live('tap', function(event){
    alert('You touched the element');
});
```

<http://facweb.cs.depaul.edu/asteale/Courses/CSC540/Resources/mobile.html>

- iUI
  - Originally iPhoneNav

## Mobile Web Apps

### Problem with Web Apps

- Poor access to underlying APIs
  - Geolocation
  - Phone services like SMS
  - Other sensors
- Apps usually have a non-native look and feel because they are not using the native widgets

## Cross-Platform Development

### Cross-Platform Solutions

Framework	URL	License	Type
Rhodes	<a href="http://rhodobox.com/products/rhodes/">http://rhodobox.com/products/rhodes/</a>	Open Source	Platform
Phonegap	<a href="http://www.phonegap.com">http://www.phonegap.com</a>	Open Source	Framework
FeedHenry	<a href="http://developer.feedhenry.com/">http://developer.feedhenry.com/</a>	Commercial	Platform
Apperator	<a href="http://www.apperator.com/">http://www.apperator.com/</a>	Open Source	Platform
Grapple	<a href="http://www.grapplecode.com/">http://www.grapplecode.com/</a>	Commercial	Framework
MotherApp	<a href="http://www.motherapp.com/">http://www.motherapp.com/</a>	Commercial	Framework
Comma	<a href="http://www.comma.com/products/">http://www.comma.com/products/</a>	Commercial	Product
Sencha Touch	<a href="http://www.sencha.com/products/touch/">http://www.sencha.com/products/touch/</a>	OS Commercial	Library
MidSync	<a href="http://www.midsync.com/">http://www.midsync.com/</a>	Open Source	Platform
Reco	<a href="http://www.reco.net/">http://www.reco.net/</a>	Commercial	Platform
CouchOne	<a href="http://www.couchone.com/products/">http://www.couchone.com/products/</a>	Commercial	Platform
MobSkins	<a href="http://mobskins.com/">http://mobskins.com/</a>	Commercial	Platform
WidgetPad	<a href="http://www.widgetpad.com/">http://www.widgetpad.com/</a>	Open Source	Platform
AML	<a href="http://www.amlcode.com/">http://www.amlcode.com/</a>	Open Source	Framework
JS	<a href="http://jsapi.com">http://jsapi.com</a>	Open Source	Library
nd	<a href="http://nd.js.org">http://nd.js.org</a>	Open Source	Library
jQuery Mobile	<a href="http://jquerymobile.com/">http://jquerymobile.com/</a>	Open Source	Library
jQuery Touch	<a href="http://jquerytouch.com/">http://jquerytouch.com/</a>	Open Source	Library
QT	<a href="http://qt.nokia.com/products/qt-for-mobile-platforms/">http://qt.nokia.com/products/qt-for-mobile-platforms/</a>	Open Source	Framework
QuickConnectFamily	<a href="http://www.quickconnectfamily.com/">http://www.quickconnectfamily.com/</a>	Open Source	Framework
Bedrock	<a href="http://www.bedrock.com/">http://www.bedrock.com/</a>	Commercial	Platform
WebApp.net	<a href="http://webapp.net.com/">http://webapp.net.com/</a>	Open Source	Framework

## Cross-Platform Development

### Phonegap

#### Supported platforms:

- iOS, Android, Blackberry, Windows Mobile 6.5, Symbian, Palm

#### Strengths:

- All native wrapper source code is provided so it can be customized further. Simple 'drop-in libraries' concept makes it easier to develop. Broad range of platforms supported. Apps built purely in HTML, JavaScript and CSS lowers the barrier of adoption for web developers.

## Cross-Platform Development

### Phonegap

#### Weaknesses:

- Must assume that normal capabilities of a web-based application are available.
- Recommended as a contender for applications which are heavily web dependent.
- Lack of support for native UI components, design patterns and dev tools.

Good for porting existing web sites

## Cross-Platform Development

### Phonegap

Capability	iPhone	Windows M	BlackBerry	Symbian	Android	Palm
Geo-location	Yes	Yes	Yes	Yes	Yes	Yes
PIM contacts	Yes	Yes	BB OS 5/6 only	Yes	Partially	No
Camera	Yes	No	BB OS 5/6 only	Yes	Yes	No
Native menu/Tab bar	No	No	No	No	No	No
Barcode	No	No	No	No	No	No
Audio/video capture	Partially	Partially	No	No	Yes	No
Bluetooth	No	No	No	No	No	No
Push/SMS	No	No	No	No	No	No
Calendar	No	No	No	No	No	No
Screen rotation	Yes	Yes	BB OS 5/6 only	Yes	Yes	Yes
Native maps	No	No	No	No	No	No
Ringtones	No	No	No	No	No	No
Storage	Yes	No	BB OS 5/6 only	No	Partially	Yes

## Cross-Platform Development

### Rhodes

#### Supported platforms:

- iOS, Android, Blackberry, Windows Mobile 6.5, Symbian
  - UI is constructed using HTML, JavaScript and CSS

#### Strengths:

- Ruby code helps to structure and control business logic using the built in Model-View-Controller and Object Relational Mapper design patterns. Supports a broad range of mobile platforms.

## Cross-Platform Development

### Rhodes

#### Weaknesses:

- Updating HTML/JavaScript code needs a complete rebuild. Need to know Ruby well to do anything a bit more sophisticated.
- Doesn't generate source code only a native package which can restrict any further tweaking of the app.

RhoMobile is now a Motorola Company

- <http://rhomobile.com/>

## Cross-Platform Development

### Rhodes

Capability	iPhone	Windows M	BlackBerry	Symbian	Android	Palm
Geo-location	Yes	Yes	Yes	Yes	Yes	N/A
PIM contacts	Yes	Yes	Yes	Yes	Yes	N/A
Camera	Yes	Yes	Yes	Yes	Yes	N/A
Native menu/Tab bar	Yes	2.0	Yes	2.1	Yes	N/A
Barcode	2.1	2.1	2.1	2.1	2.1	N/A
Audio/video capture	3.0	3.0	3.0	3.0	3.0	N/A
Bluetooth	2.2	2.2	2.2	2.1	2.2	N/A
Push/SMS	Yes	2.0	Yes	2.1	2.0	N/A
Calendar	2.2	2.2	2.2	2.2	2.2	N/A
Screen rotation	2.1	2.5	2.0	2.1	2.1	N/A
Native maps	1.4	2.3	1.4	2.1	1.5	N/A
Ringtones	2.5	1.5	1.5	N/A	1.5	N/A
Storage	2.0	2.0	2.0	2.0	2.0	N/A

## Cross-Platform Development

### Appcelerator Titanium

#### Supported platforms:

- iOS, Android, BlackBerry

#### Strengths:

- Native code output very quick and fluid on phone. Easy setup and start-up for developers. Excellent documentation and examples. Strong community forums to find out answers.
- Intuitive app management environment. Support for desktop and tablet development.

## Cross-Platform Development

### Appcelerator Titanium

#### Weaknesses:

- Potentially restrictive API's. Small set of phones currently supported. Tries to solve too many problems in one single shot (i.e. supporting phones, tablets and desktops)
- Seems pretty powerful though – check out the “Kitchen Sink” app
- Seem to have promise as a prototyping tool at the very least

## Cross-Platform Development

### Appcelerator Titanium

Capability	iPhone	Windows M	BlackBerry	Symbian	Android	Palm
Geo-location	Yes	N/A	N/A	N/A	Yes	N/A
PIM Contacts	Yes	N/A	N/A	N/A	Partially	N/A
Camera	Yes	N/A	N/A	N/A	Yes	N/A
Native menu/Tab bar	Yes	N/A	N/A	N/A	Yes	N/A
Barcode	No	N/A	N/A	N/A	No	N/A
Audio/video capture	Yes	N/A	N/A	N/A	Yes	N/A
Bluetooth	No	N/A	N/A	N/A	No	N/A
Push/SMS	Partially	N/A	N/A	N/A	Partially	N/A
Calendar	No	N/A	N/A	N/A	Yes	N/A
Screen rotation	Yes	N/A	N/A	N/A	Yes	N/A
Native maps	Yes	N/A	N/A	N/A	Yes	N/A
Ringtones	No	N/A	N/A	N/A	No	N/A
Storage	Yes	N/A	N/A	N/A	Yes	N/A

## Cross-Platform Development

### Development Language is JavaScript

- Doesn't have the same learning curve as Objective-C
- The supplied libraries have access to a fairly complete set of the underlying functionality of the platform
- However, there will always be stuff that is not available
  - E.g. iCloud, complex Multitouch
- Compiled code is interpreted
  - Not appropriate for resource intensive applications, like games

## Cross-Platform Development

### Conclusion

There is a plethora of mobile platforms

[http://en.wikipedia.org/wiki/Multiple\\_phone\\_web\\_based\\_application\\_framework](http://en.wikipedia.org/wiki/Multiple_phone_web_based_application_framework)

There are no clear winners yet, but I think tools which produce (pseudo-native) apps are the way to go.

## Project

### Schedule

- Today – Project Discussion
- Week 9 – Submit Draft of Project  
Paper Draft (I will provide comments)
- Week 10 – Project Presentations  
DL students will voice annotate their presentations
- Week 11 – Final Project Report due  
No class, just electronic submission of project