

How to build Mobile Apps

An openSource approach

Miguel Carrasco Q.
miguel.carrasco@VisitAnyPlace.com



Chandigarh, India. May 14 / 2013













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miguel.carrasco@yashkeyplace.com



Changan, India May 17, 2013



Q: What we are going to do today?

A: A "hello world" application

सी डी
CDAC









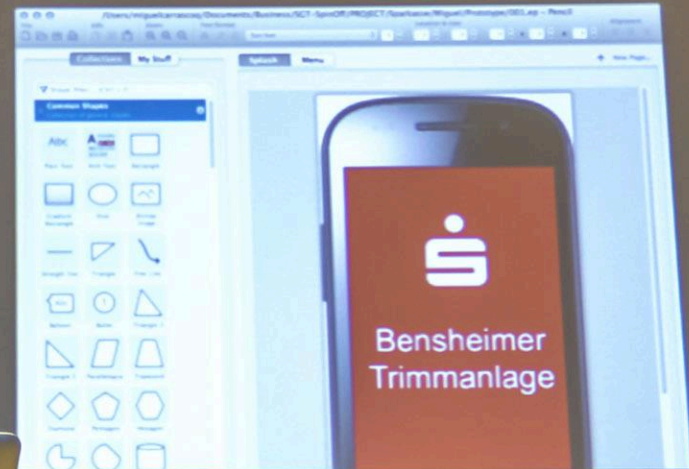
- Programming language: C# or V
- Phone Simulator: **Windows Pho**

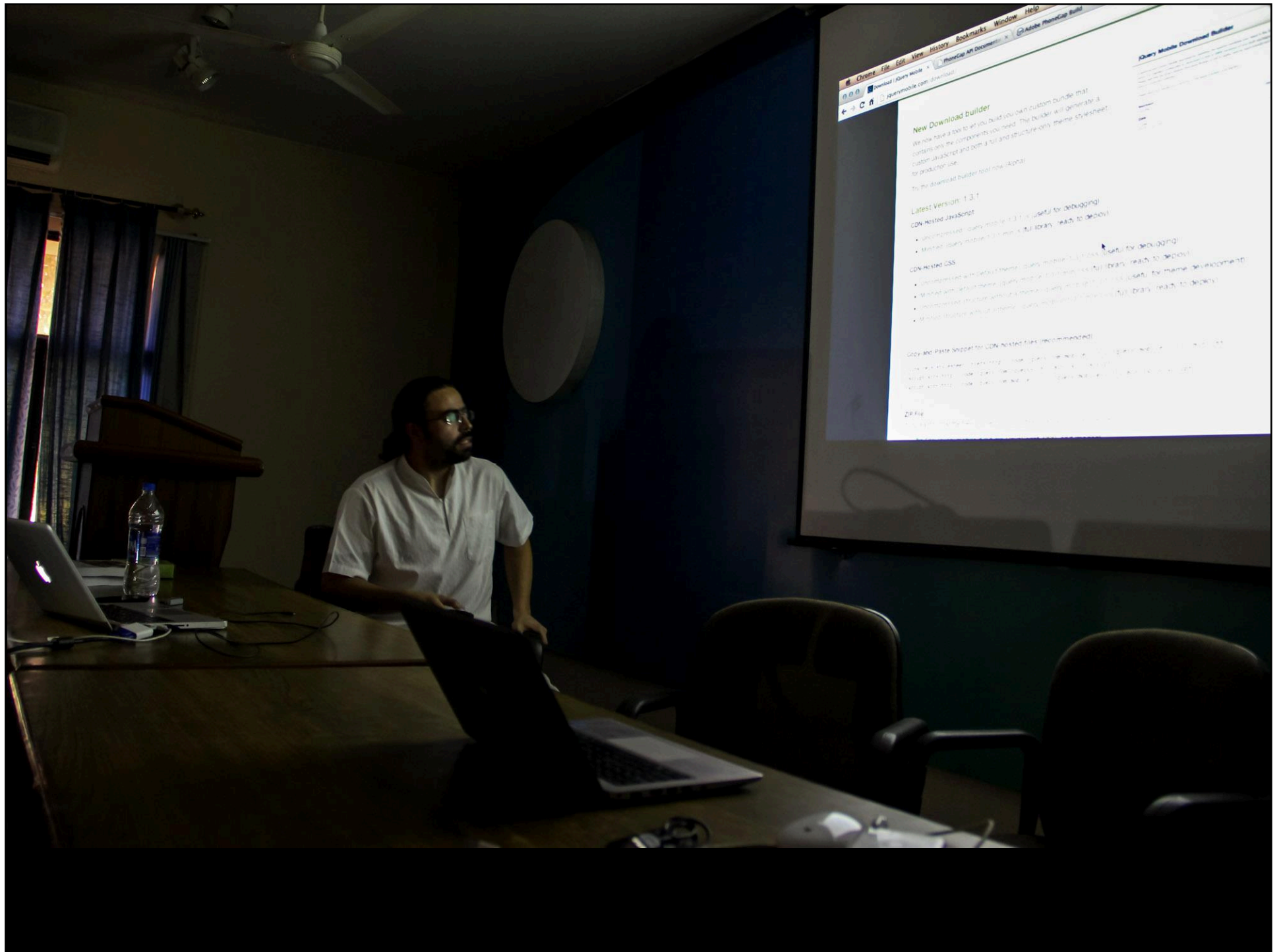


OpenSource Tool: Design

- Before to start programming, is a good idea to plan (draw) the solution

PENCIL: pencil.evolus.vn





Chrome File Edit View History Bookmarks Window Help
jquerymobile.com/download

New Download builder

We now have a tool to let you build your own custom bundle that contains only the components you need. The builder will generate a custom JavaScript and both a full and structure-only theme stylesheet for production use.

Try the download builder tool now! (Alpha)

Latest Version: 1.3.1

CDN-Hosted JavaScript

- Uncompressed: jquery.mobile-1.3.1.js (useful for debugging)
- Minified: jquery.mobile-1.3.1.min.js (full library, ready to deploy)

CDN-Hosted CSS

- Uncompressed with default theme: jquery.mobile-1.3.1.css (useful for debugging)
- Minified with default theme: jquery.mobile-1.3.1.min.css (full library, ready to deploy)
- Uncompressed structure-only theme: jquery.mobile.structure-1.3.1.css (useful for theme development)
- Minified structure-only theme: jquery.mobile.structure-1.3.1.min.css (full library, ready to deploy)

Copy and Paste Snippet for CDN-hosted files (recommended):

```
<script src="http://code.jquery.com/jquery-1.8.2.js"></script>  
<script src="http://code.jquery.com/jquery.mobile-1.3.1.min.js"></script>  
<link href="http://code.jquery.com/jquery.mobile-1.3.1.min.css" rel="stylesheet">
```

ZIP File



Chrome File Edit View History Bookmarks Window Help

Download jQuery Mobile x PhoneGap API Document x Adobe PhoneGap Build x

jquerymobile.com/download/

Copy-and-Paste Snippet for CDN-hosted files (recommended):

```
<link rel="stylesheet" href="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.css" />
<script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
<script src="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.js"></script>
```

ZIP File:
If you want to host the files yourself you can download a zip of all the files:

- Zip File: jquery.mobile-1.3.1.zip (JavaScript, CSS, and images)

Microsoft CDN hosted jQuery Mobile files:

- <http://www.asp.net/ajaxLibrary/CDN.ashx>

Legacy Version: 1.2.1

We provide CDN-hosted versions of jQuery Mobile for you to include into your site. These are already minified and compressed – and host the image files as well. It'll likely be the fastest way to include jQuery Mobile in your site.

CDN-Hosted JavaScript:

- Uncompressed: jquery.mobile-1.2.1.js (useful for debugging)
- Minified: jquery.mobile-1.2.1.min.js (full library, ready to deploy)

CDN-Hosted CSS:

- Uncompressed with Default theme: jquery.mobile-1.2.1.css (useful for debugging)
- Minified with Default theme: jquery.mobile-1.2.1.min.css (full library, ready to deploy)
- Uncompressed structure without a theme: jquery.mobile-1.2.1.css (useful for theme development)
- Minified structure without a theme: jquery.mobile-1.2.1.min.css (full library, ready to deploy)

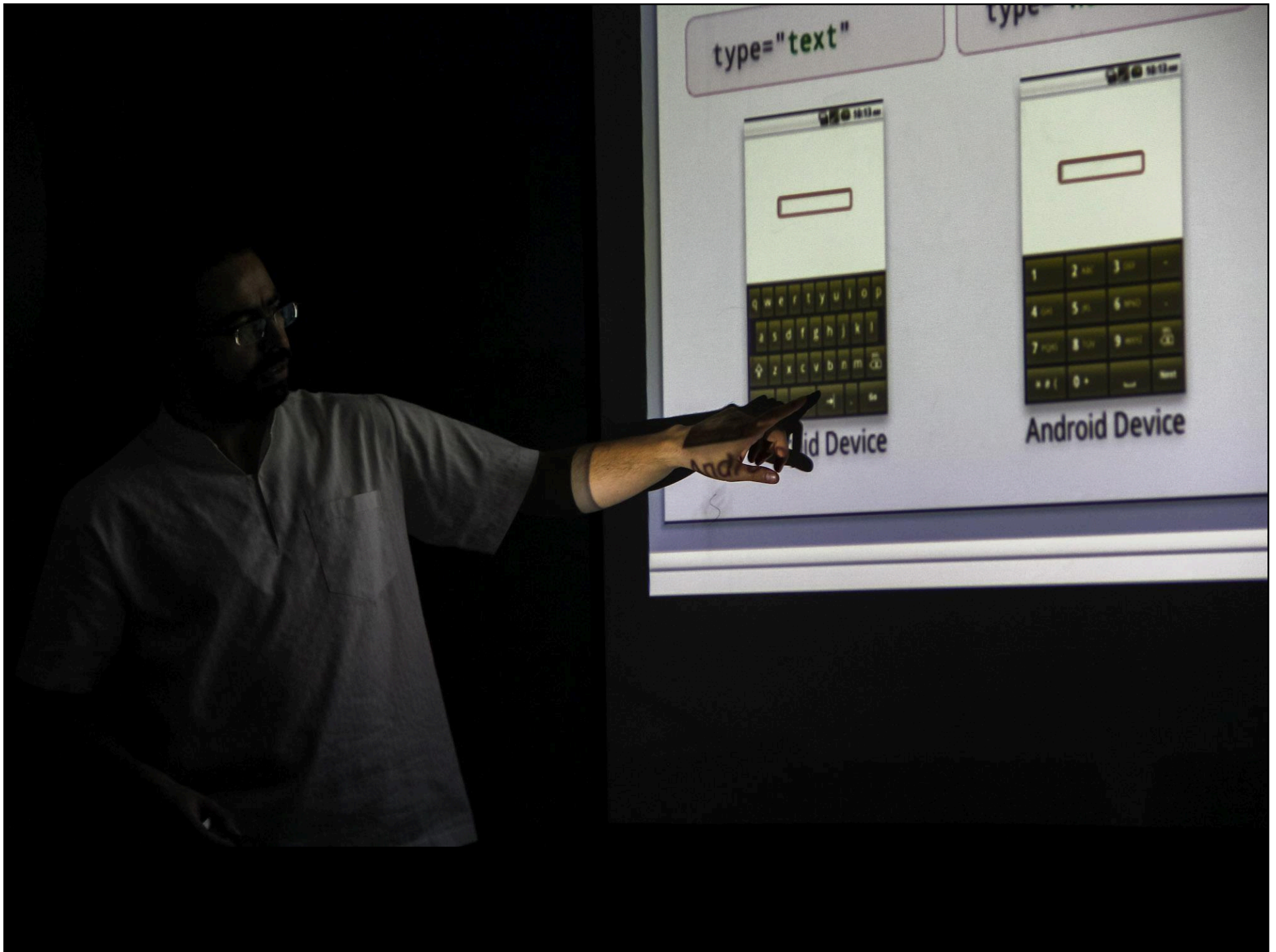
Copy-and-Paste Snippet for CDN-hosted files (recommended):



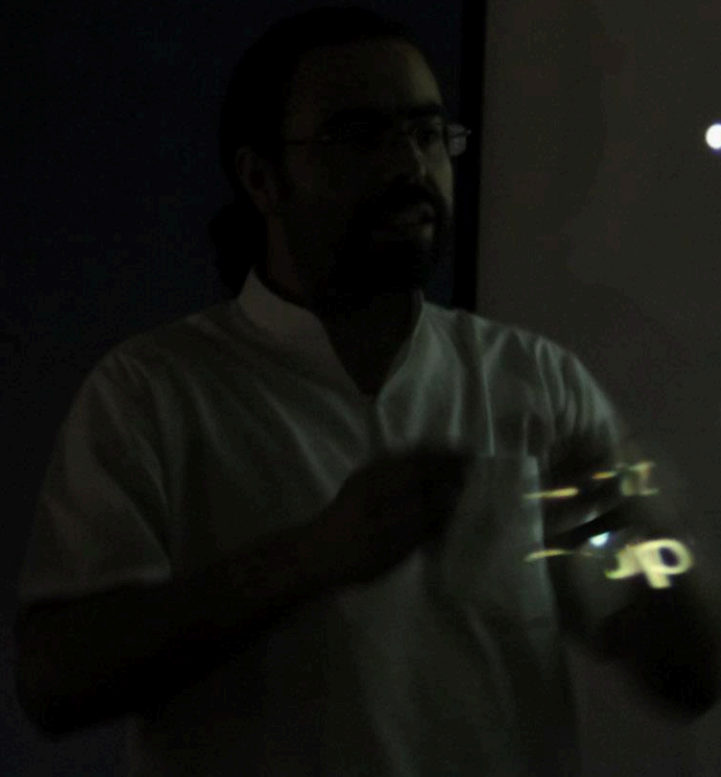








- Motores 2D - ej: WCI
 - fuerza de gravedad
 - roce,
 - detección de colisi
 - fluidos
 - eventos para inter
- Motores 3D - ej: Alter
 - primitivas en 3D
 - importar modelos
 - texturas, iluminaci
- JMonkeyEngine v/s Co











Next Presentation

- ActionScript 3 (the basis) and
- The MakeyMakey board (an open source hardware)
- Interacting with the MakeyMakey, with ActionScript and the body



Aplicaciones móviles

Dr. Miguel Ángel Carrasco
Universidad Miguel Alemán, Mérida
E-mail: miguel.carrasco@mda.mx



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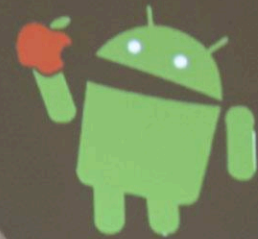
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Q: What we are going to do today?

A: A “hello world” application

Q: What Kind of app we are going to make?

A: For smartPhones:

- Android
- iOS (iPodTouch / iPhone / iPad)
- Windows Phone



Q: How will be the look and feel of the app?

A:



Q: What do I need (Software & Hardware)?

A: There is not ONE way to make mobile applications. But, you have:

- the official way &
- some alternative ways...

So. According to this, we will choose the software...

The official way to make **Android** apps

- SDK: Eclipse + Google ADT
(Android Developer Tools)
- Programming language: Java
- Phone Simulator: A virtual machine (API levels)

The official way to make iOS apps

- SDK: Apple xCode
- Programming language: Objective-C
- Phone Simulator: iOS Simulator (comes with xCode)

The official way to make **Windows Phone** apps

- SDK: Microsoft Visual Studio Express 2012 for Windows Phone
- Programming language: C# or Visual Basic
- Phone Simulator: Windows Phone 8 Emulator

... SO

- We will use an **alternative way** (not the official way)
- We will use **web technology** (HTML5, JS, CSS)
- And **OpenSource**

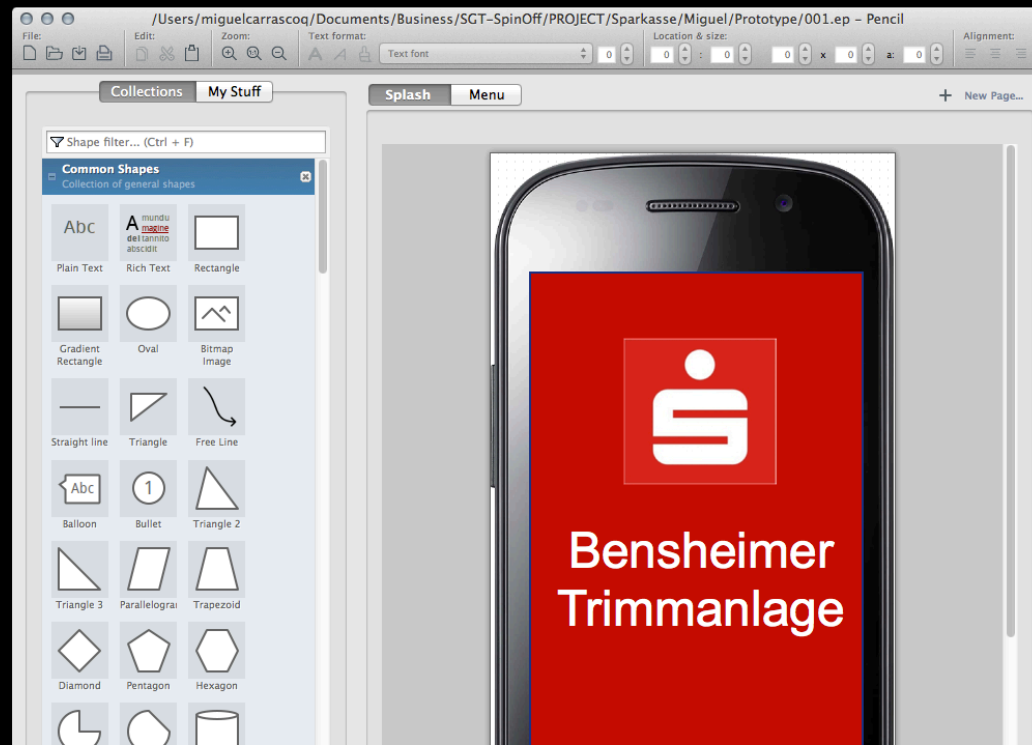
OpenSource/Free Tools

- Design (Prototype)
- Build the UI (User Interface)
- Code (Write the program)
- Run (Test the app)
- Compile (package the app to upload to the marketplaces)

OpenSource Tool: Design

- Before to start programming, is a good idea to plan (draw) the solution

PENCIL: pencil.evolus.vn



OpenSource Tool: Build the UI

- “do not invent the wheel. Use frameworks”.
For the UI there is a lot of frameworks like:
appML, jqTouch, ~~iWebKit~~, **jQueryMobile**, SenchaTouch, UiuiKit, Jpint, etc, etc...

jQueryMobile: jquerymobile.com





Carrier 2:28 AM

XSTOCK
Ingreso de Rodal

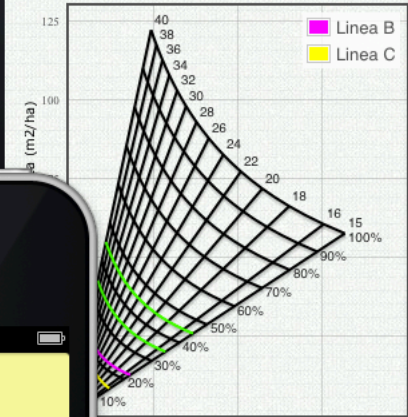
Por favor, ingrese los siguientes datos:

ID del Predio: Seleccione
ID del Rodal: Seleccione
Latitud: 37.785834
Longitud: -122.406417
Fecha Evaluación: 14/05/2013
N/ha: N/ha
Área basal (m²/ha): Área basal

Carrier 2:34 AM

XSTOCK
Gráfico

Diámetro Medio Cuadrático: 126.3



OpenSource Tool: Build the UI

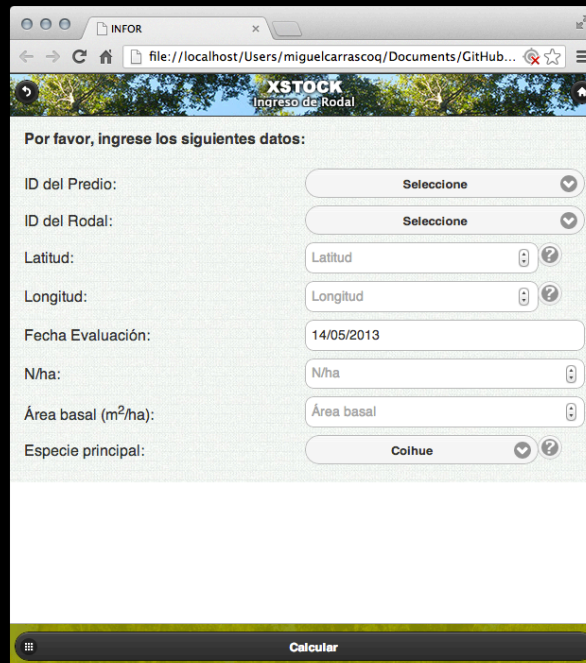
- 2 more (new ones):
 - Fries
<http://jaunesarmiento.me/fries/>
 - RATCHET
<http://maker.github.io/ratchet/>

Free/Shareware Tool: Code

- **NotePad++:**
 - for Windows
 - free
 - URL: notepad-plus-plus.org
- **SublimeText:**
 - for Windows, OS X, Linux
 - Shareware (USD: \$70)
 - URL: sublimetext.com

Free Tool: Run

- Because the app is base on HTML5, you can test in a web browser base on webKit engine:
Google Chrome / Apple Safari



A screenshot of a web browser window displaying the XSTOCK application. The browser's address bar shows a local file path. The application has a header with the XSTOCK logo and a navigation menu. Below the header, there is a form titled "Por favor, ingrese los siguientes datos:". The form contains several input fields: "ID del Predio:" with a dropdown menu showing "Seleccione"; "ID del Rodal:" with a dropdown menu showing "Seleccione"; "Latitud:" with a text input field and a help icon; "Longitud:" with a text input field and a help icon; "Fecha Evaluación:" with a text input field containing "14/05/2013"; "N/ha:" with a text input field; "Área basal (m²/ha):" with a text input field; and "Especie principal:" with a dropdown menu showing "Colihue". At the bottom of the form is a "Calcular" button.

then



A screenshot of the XSTOCK application running on a mobile device. The screen shows the same form as the web browser version, but with the data filled in. The "ID del Predio:" dropdown shows "Mhi", "ID del Rodal:" shows "Pou", "Latitud:" shows "37.785834", "Longitud:" shows "-122.406417", "Fecha Evaluación:" shows "14/05/2013", "N/ha:" shows "345", "Área basal (m²/ha):" shows "432", and "Especie principal:" shows "Colihue". The "Calcular" button is still visible at the bottom.

Ojo con HTML5, WebKit y el openSource



“... For the same reasons, HTML5 is also a potential candidate for **cross-platform mobile applications**. Many features of HTML5 have been built with the consideration of being able to run on low-powered devices such as smartphones and tablets.”

- Motor diseñado para permitir a los navegadores renderizar páginas web.
- Safari y Chrome están basados en este motor (30% del mercado a 08/11).
- SO como: iOS, Android y Kindle ebook.

OpenSource/Service Tools: Compile

- PhoneGap

What is PhoneGap?

1. **PhoneGap** (Cordova): It's an OpenSource Project of the Apache Software Foundation
 - Download the “template” of each SDK and compile in your computer (you need a Mac for iOS)
2. **PhoneGap Build**: A Cloud Service
 - Compile in the cloud (you don't need a Mac for iOS)



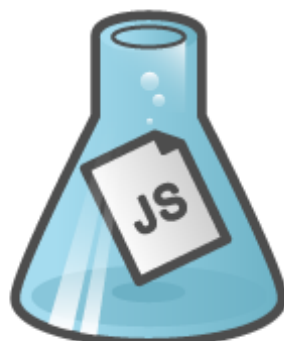
For now, I'll choose this

What is PhoneGap?

With **PhoneGap** you can,



Take advantage of **HTML5**
and **CSS3**



Use **JavaScript** to write
your code



Access **Native Features**



Deploy your app to
Multiple Platforms

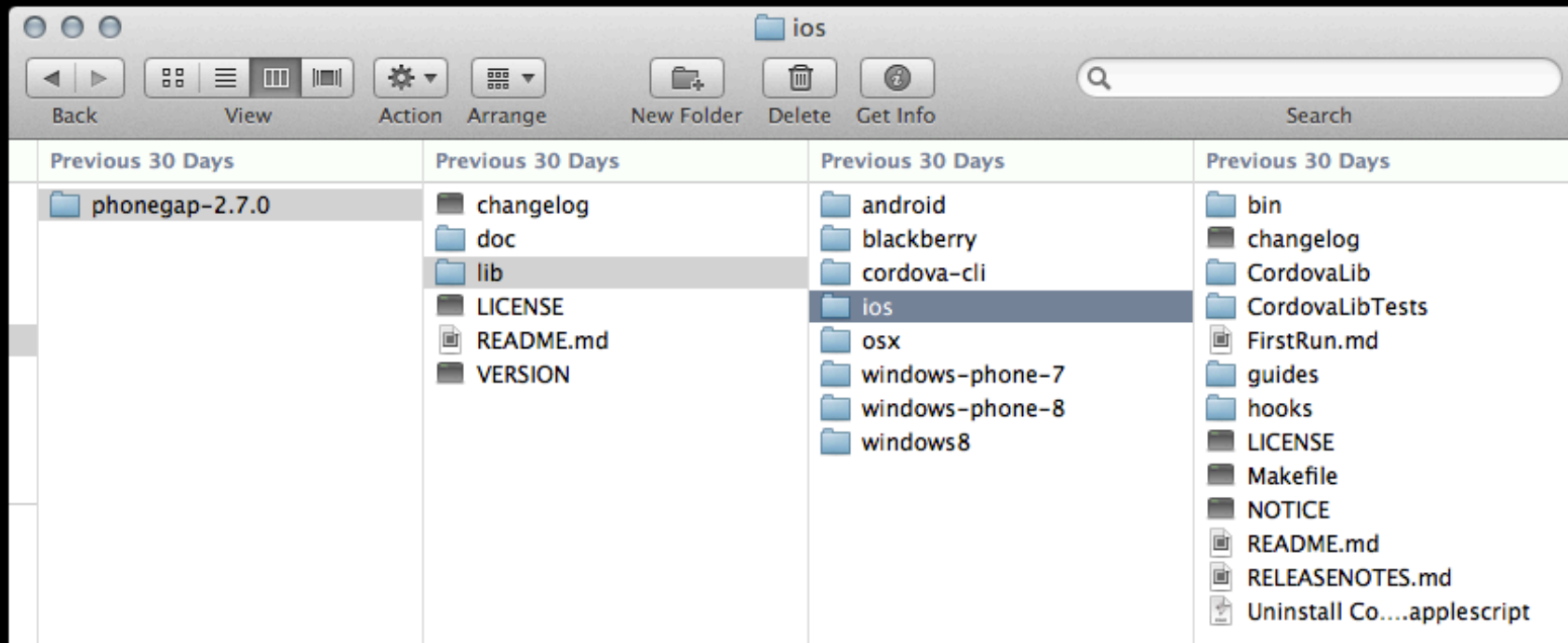
API

Is an HTML5 app platform that allows you to author native applications with web technologies and get access to APIs and app stores.

- Acelerómetro
- Cámara
- Brújula
- Contactos
- Geolocalización
- Almacenamiento
- Archivos
- Notificaciones

What is PhoneGap?

- In short, for me, it's a template for all the SDKs.



| Feature | iPhone /iPhone 3G | iPhone 3GS and newer |  Android 1.0 – 4.2 | Windows Phone |  4.6–4.7 | 5.x–6.0+ |
|---------------------------------|-----------------------------------|--------------------------------------|---|-------------------------------|--|--------------------------|
| Accelerometer | Yes | Yes | Yes | Yes | N/A | Yes |
| Camera | Yes | Yes | Yes | Yes | N/A | Yes |
| Compass | N/A | Yes | Yes | Yes | N/A | N/A |
| Contacts | Yes | Yes | Yes | Yes | N/A | Yes |
| File | Yes | Yes | Yes | Yes | N/A | Yes |
| Geolocation | Yes | Yes | Yes | Yes | Yes | Yes |
| Media | Yes | Yes | Yes | Yes | N/A | N/A |
| Network | Yes | Yes | Yes | Yes | Yes | Yes |
| Notification (alert) | Yes | Yes | Yes | Yes | Yes | Yes |
| Notification (sound) | Yes | Yes | Yes | Yes | Yes | Yes |
| Notification (vibration) | Yes | Yes | Yes | Yes | Yes | Yes |
| Storage | Yes | Yes | Yes | Yes | N/A | Yes |

Source: <http://en.wikipedia.org/wiki/Phonegap>

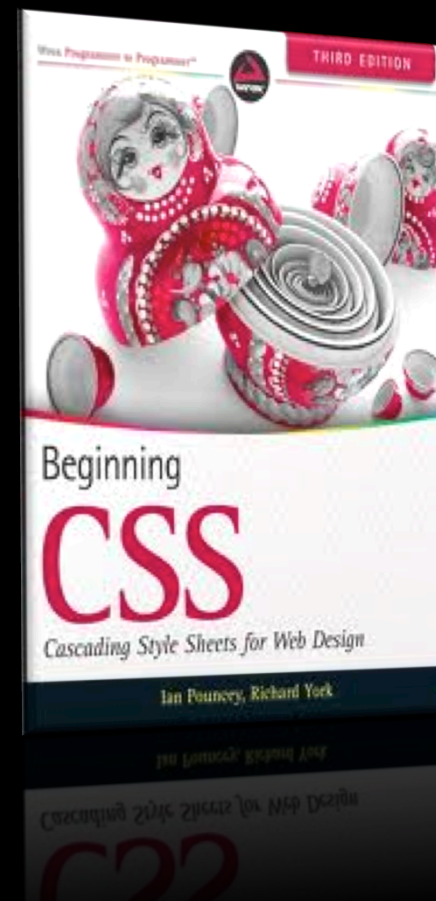
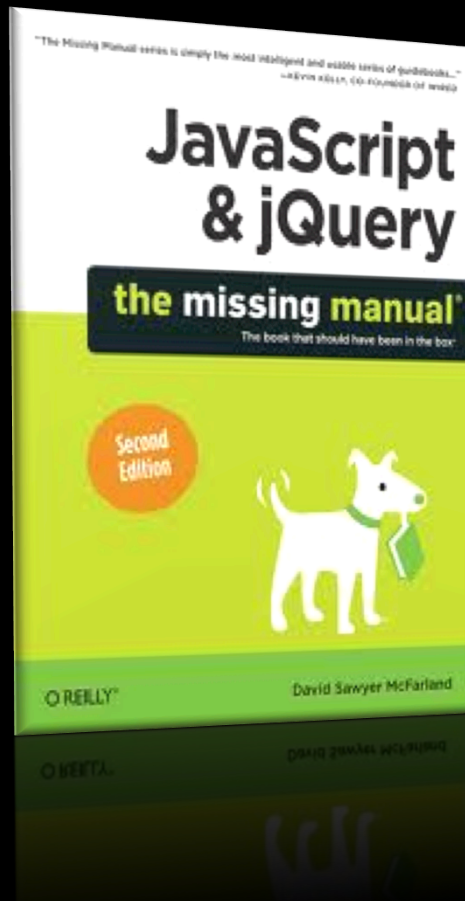
Marketplaces

| | Apple Store | Android Market | Windows Phone |
|---------------------------------------|--------------------------------|---|---------------------------------------|
| Licencia de desarrollo | \$99 USD (anual) | \$25 USD (solo una vez) | \$99 USD (anual) |
| Dificultad de subida al Market | Engorroso (Application Loader) | Simple (web) | Simple (web) |
| Costos asociados (SDK, simulador) | MAC (xCode y simulador) | PC, Linux o MAC (simulador incluido + openSource) | PC (webWork + simulador) |
| % sobre las Ganancias | 70 / 30 | 70 / 30 | 70 / 30 (en la mayoría de los países) |
| Tiempo en Aprobación | +/- 2 semanas aprox. | inmediato | s/i |
| Reportes de Descargas / Instalaciones | Regular (diario y semanal) | Bien (Todo el tiempo) | s/i |

Alternatives to make crossplatforms apps

- **Appcelerator**: Javascript + Titanium API
 - Titanium: Free
 - Platform Public Cloud: U\$D 999 / month
 - Platform Private Cloud: U\$D 2.667 / month
- **Xamarin**: C#
 - Starter: Free
 - Indie: U\$D 299 / developer
 - Business: U\$D 999 / developer
 - Enterprise: U\$D 1.899 / developer
- ...

CDAC's books



Q: This approach (the web base) is the best way to build mobile applications?

A: “No”. depends of a lots of **factors:** app complexity, learning curve of a programming language, speed to run in the hardware (Phone or Tablet), if it's a game: 2d/3d engine, Has a lot of multimedia, etc....

No more words, let's code

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
    <title>Page Title</title>
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1">
```

```
    <link rel="stylesheet" href="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.css" />
```

```
    <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
```

```
    <script src="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.js"></script>
```

```
</head>
```

```
<body>
```

```
</body>
```

```
</html>
```

```
<!DOCTYPE html>
<html>
<head>

    <title>Page Title</title>

    <meta name="viewport" content="width=device-width, initial-scale=1">

    <link rel="stylesheet" href="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.css" />
    <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
    <script src="http://code.jquery.com/mobile/1.3.1/jquery.mobile-1.3.1.min.js"></script>

</head>
<body>

<div data-role="page">

    <div data-role="header">
        <h1>Page Title</h1>
    </div>

    <div data-role="content">
        <p>Page content goes here.</p>
    </div>

    <div data-role="footer">
        <h4>Page Footer</h4>
    </div>

</div>

</body>
</html>
```


Example Code

- Download from here (3 Examples):
 - “Hello Word 1” (1 page)
 - “Hello World 2” (2 pages and transitions)
 - CDAC example (2 pages with content and a Phone call)

<http://visitanyplace.com/india/cdac/code-example.zip>

Be aware with the copyright

- The history of the Window Phone app called: “Mario Jump!” app and the Nintendo sue (almost)



Protocols

href=<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewAlbum?id=287810321&s=143442>

href="<mailto:test@test.com?&subject=Título&body=Mensaje>"

href="<sms:12125551212>"

href="<tel:408-555-5555>"

href="<http://www.youtube.com/watch?v=DWmQEv0oF08>"

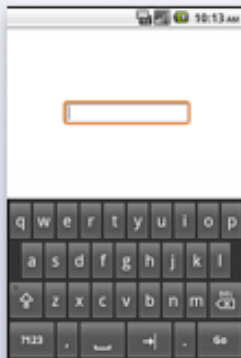


HTML (Ingreso de texto)

```
<input type="text" id="textfield" />
```

HTML Form field types on mobile

type="text"



Android Device

type="number"



Android Device

type="email"



iPhone Device

type="tel"



iPhone Device

Cuidado con “inventar la rueda”

- Motores 2D - ej: WCK {AS3}, Box2DJS {JS}
 - fuerza de gravedad
 - roce,
 - detección de colisiones
 - fluidos
 - eventos para interacción
- Motores 3D - ej: Alternativa3D {AS3}, Coppercube {WebGL}
 - primitivas en 3D
 - importar modelos en 3D
 - texturas, iluminación, reflejos
- OpenSource v/s Comercial ?



That's all Folks!

Next Presentation

- ActionScript 3 (the basis) and
- The MakeyMakey board (an open source hardware)
- Interacting with the MakeyMakey, with ActionScript and the body

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Skype: [miguel.angel.carrasco](#)

Facebook: [miguel.carrasco.quijada](#)

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