



Pete Helgren
pete@valadd.com

Developing Mobile Applications for i using Open Source Tools

Value Added Software, Inc
801.581.1154

1511 East Harvard Ave
Salt Lake City, UT 84105



What will you get from this session?

- You will know the differences between a web application, a **mobile** web application and a native mobile application.
- How to change your web applications to mobile web applications.
- How to (easily) take a mobile web application and create a “native” mobile application
- How to write a simple Android application (if we have time).



Agenda

To rip off an well known book from the
60's:

Zen and the art of Developing Mobile
Applications using Open Source Tools



Agenda

- Mobile is all about the client (so where does i fit in?)
- Rethinking Web Development
 - Ajax
 - HTML and HTML5
 - Page, page construction and paging.
 - JSON
 - M is for minimalist
- Examples of “classic” web design



Agenda

- Deconstructing “classic” design
- Reassembly as HTML5 and “Web 2.0” techniques
- Tweaking HTML5 for Mobile applications e.g. Building a mobile web application



Agenda

- Mobile application development framework review
- Developing an Android application
 - Natively
 - Using PhoneGap
- Review some examples including a Common Schedule Organizer web application!



Mobile is about the client

Web Apps

Native Apps

i?



Mobile means rethinking web development

Two basic principles:

Don't waste users bandwidth on something they don't need

Be a good citizen – Conservation is good.



Wasting bandwidth

Images
RSS feeds
Tracking Plugins
Whole js libraries



Conserve

Hang on to data with explicit caching
(localstorage)

Refresh only when needed.

We are back at the good old days
(mid 1990's):
Paying per kb and slow connections



Rethinking Web Development

AJAX

(Asynchronous Javascript and XML)

Nothing new here(1999)...move along

Introduced my MS in IE 5 (XMLHTTP)

The much maligned IE 6 further extended capabilities

Thanks to the browser wars....



Rethinking Web Development

HTML5 – New?

Been around since 2004

Big hitter improvements:

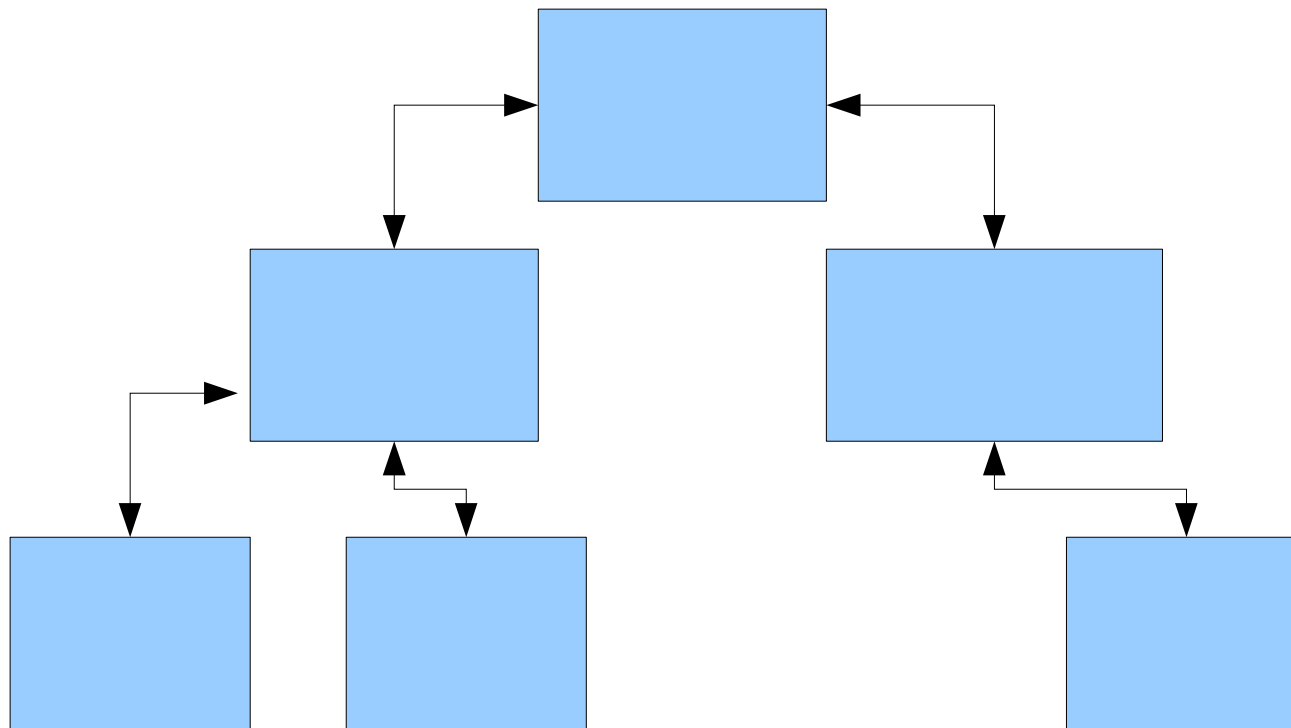
New markup: `<nav>` `<footer>` `<video>` `<audio>` and others.

New features: validation, client side storage.



Rethinking Web Development

Pages and paging



Rethinking Web Development

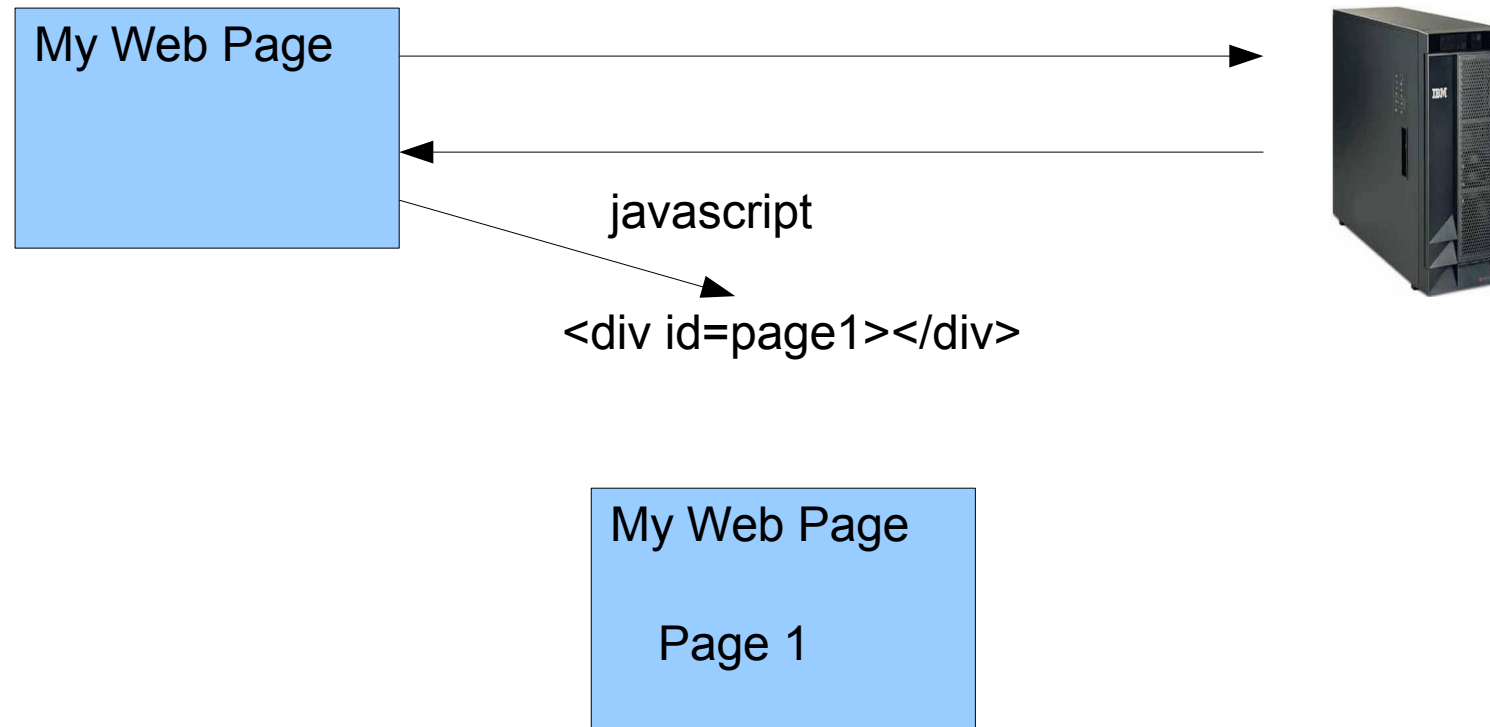
JSON

(Javascript Object Notation)

Lightweight – simple to transport (AJAX)
Javascript already knows what to do with it
(it's an Object!)



Pagination the AJAX way



M is for minimal



Deconstructing “classic” web design

Take a look at this web site (ugly)

[Http://opensourceoni.com/baseDemo/Demo](http://opensourceoni.com/baseDemo/Demo)

Simple app, two pages, gets messages from IBM i



Deconstructing “classic” web design

Another simple example that checks on whether a port is open or not.

Hosted on i. Java App. Calls IBM i API's

<http://opensourceoni.com/baseChkPort/Demo>





Reassembly as HTML5 and “Web 2.0” techniques



http://opensourceoni.com/mobile/cgi_adhstm.pgm



Demo – Walk through

- RPG – 5250
- CGIDEV2 – Ugly web based
- CGIDEV2 – Pretty web based
- CGIDEV2 – Pretty, web based, using local storage (more mobile-ish...)
- PHP – Ugly
- PHP – Pretty
- PHP – Pretty using local storage



Web Server Info

- Apache is the front end to all of these web applications (HTTP Server)
- You need to add Apache directives to map URL's to the CGIDEV2 programs.
-
-
- Lets take a look



So you still want to build a native mobile app?

Choose a framework.

Many are based on Eclipse which is a comfortable transition for the RDp, EGL and Zend Studio folks.



Standard Apache Directives

Configuration originally created by Create HTTP Server wizard on Mon Jul 25 12:31:00 MDT 2011

```
LoadModule proxy_module  
/QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM  
LoadModule proxy_http_module  
/QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM  
LoadModule proxy_connect_module  
/QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM  
LoadModule proxy_ftp_module  
/QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM  
LoadModule zend_enabler_module  
/QSYS.LIB/QHTTPSVR.LIB/QZFAST.SRVPGM
```



ScriptAliasMatch

Map URL's to CGIDEV2 Programs

```
ScriptAliasMatch /mobile/(.*) /qsys.lib/mobile.lib/$1  
Alias /mobilejs /www/mobileapps/htdocs/mobile/js
```

MobileREM directives

```
ScriptAliasMatch /mobilerem/(.*) /qsys.lib/mobilerem.lib/$1  
Alias /mobileremjs /www/mobileapps/htdocs/mobilerem/js  
Alias /mobileremcss /www/mobileapps/htdocs/mobilerem/css
```



Set Access permissions

```
<Directory /www/mobileapps/htdocs>  
  Order Allow,Deny  
  Allow From all  
</Directory>
```

```
<Directory /www/mobileapps/htdocs/mobile/js>  
  Options None  
  order allow,deny  
  allow from all  
</Directory>
```

```
<Directory /www/mobileapps/htdocs/mobilerem/js>  
  Options None  
  order allow,deny  
  allow from all  
</Directory>
```

```
<Directory /www/mobileapps/htdocs/mobilerem/css>  
  Options None  
  order allow,deny  
  allow from all  
</Directory>
```

```
<Directory /www/mobileapps/htdocs/mobilerem>  
  Options None  
  order allow,deny  
  allow from all  
</Directory>
```



More permissions

```
<Directory /qsys.lib/mobilerem.lib>
```

```
order allow,deny
```

```
allow from all
```

```
Options -ExecCGI
```

```
CGIConvMode %%EBCDIC/EBCDIC%%
```

```
</Directory>
```

```
<Directory /www/mobileapps/htdocs/phpdemo>
```

```
Options None
```

```
order allow,deny
```

```
allow from all
```

```
</Directory>
```

```
<Directory /qsys.lib/mobile.lib>
```

```
order allow,deny
```

```
allow from all
```

```
Options -ExecCGI
```

```
CGIConvMode %%EBCDIC/EBCDIC%%
```

```
</Directory>
```



Now lets jump into Code

- RPG
- PHP
- Java (if you want)



Possible Frameworks

- Xcode – iPhone development
- Visual Studio – Windows Mobile
- Eclipse based
 - PhoneGap
 - Titanium
 - Rhomobile
 - Blackberry Eclipse plugin
 - Android SDK – Eclipse Plugin
 - WebOS (Palm) Eclipse Plugin



Possible Frameworks

Most popular target devices:

iPhone
Android
Blackberry

I am using PhoneGap for mobile apps that
require multi-platform deployment.

Write javascript, deploy to:

Android
Blackberry
iPhone

(requires Mac to compile Objective C code)



Build a “native” Android App

Aaron Bartell also has some resources:

<http://www.mowyourlawn.com>

<http://www.SureYouCanHaveTheKeys.com>

<http://www.systeminetwork.com>

(Aaron focuses on Android Native only, so you'll need a little Java background)



Build a “native” Android App

GREAT tutorial on native Android Development:

<http://www.smashingmagazine.com/2010/10/25/get-started-developing-for-android-with-eclipse/>

Two part series and absolutely excellent

(can also Google search for Android and BrewClock to find the articles)



Building “native” android application

Plenty of resources on the web to get you started with Android.

Good resources at
<http://developer.android.com>



Let's build one!



Building a PhoneGap application for Android

PhoneGap is primarily a framework for running javascript enabled web pages as “native” applications.



The anatomy of the PhoneGap application

Create the page using any HTML5 compliant editor and run it in a fully HTML5 compliant browser, like Chrome.

Bring it in as a resource to PhoneGap.

Wire it up to Android or iPhone API's using JavaScript.



The Anatomy of a PhoneGap application.

Let's take a look.



Review

- Mobile development is about the client
- Mobile development uses:
 - HTML5 (could use HTML4- not recommended)
 - AJAX
 - Lightweight data transport
 - JSON
 - XML
 - YAML
- Native app development uses the same components but resides on the device (client-server)



The Common Schedule Organizer

Web version found here:

[http://opensourceoni.com/schedule/GetWeb?
action=HTML5](http://opensourceoni.com/schedule/GetWeb?action=HTML5)

Can be accessed from any HTML5 capable browser. The localstorage option requires webkit based browser



Thanks!

Blog update soon with a step by step:

http://www.petesworkshop.com/blog_wp/

Contact me at: pete@valadd.com

(put “Common” somewhere in the subject line)

