

## **Developing mobile web-applications for the library - an easy and cost-effective entry in the mobile world**

by Stan Bogdanov, Adelphi University

Mobile applications are becoming more and more important as libraries strive to join the Web 2.0 movement. Institutions are faced with a vast variety of options when it comes to the development of such applications. Outsourcing the development of a native application and developing one's own proprietary application framework are two of the most popular options. Adelphi University's Library Mobile Web-Application (Library App) takes a third route which is cost-effective and open to easy and rapid implementation and improvements. The Library App is a web-based application, which was developed completely in-house with direct input from Adelphi librarians. The Library App shows that libraries can use currently available open-source web frameworks to develop apps internally and join the mobile movement in a much quicker and more efficient way than the alternatives. The app is based on an open-source framework called iUI, rather than on proprietary code and therefore benefits from access to the vast resources available from the mobile applications development community. Various outside developers have contributed with free code, which has successfully been implemented in our app. The app uses current best web-design practices and is fully based on simple html, css, and javascript code. Any skilled web designer is able to start building an app without the need to know any platform-specific programming languages. The result of Adelphi Libraries' endeavor is a fully functional, cross-platform application that provides features which rival similar proprietary applications and has inspired a campus wide Adelphi mobile application called AU2Go.

Some background on Adelphi Libraries' development process:

### **Why Adelphi decided to develop a Library App and why apps might be good for you:**

Students have many questions when it comes to school. They need to know a lot of things in order for them to be able to go to classes on time, to buy the right books, get help with research, etc. They want to know what's happening at school right now, when the Library is open, what the number to call for a lost book is, where they should go look for the book they just found in a catalog search at home. So, how do they achieve this most of the time? Well, they can physically ask somebody or they can call the operator and ask for a number. But more recently - they can use their smartphones. Smartphones have just killed regular phones in the recent years when it comes to growth. Smartphones and mobile applications are not just a luxury or an extra. In the society we live in, they have become a standard. There are apps for literally everything we can think of. Nowadays we can watch youtube on our phones, play games, take notes, tune the guitar, check movie times and buy tickets, tweet, check Facebook, edit photos, shoot and edit video, everything! Libraries, however, as huge sources of information have been very much behind the game. Not only are there very few applications from libraries, but they are far from being what we all want them to be. Adelphi Libraries did not want to stay behind and so shouldn't you!

### **How we started:**

The idea for a mobile app came through different discussions in our systems meeting at the Library. I had already seen similar apps from other schools and did not want Adelphi to get behind with development. It turned out that at the same time IT was exploring the possibility of hiring an outside company to develop a mobile app for the school. After getting myself involved with an open-source iPhone user interface project called, iUI – I persuaded IT that there might be a better and cheaper alternative than hiring an outside company and that would be – developing in house. To prove that to them, I started building a Library App that offered some basic information features by using the before-mentioned iUI framework. Soon I had the app ready and after a few votes from our Library Web Committee and the IT department – we had a go for full-on development.

### **Why we developed a web-app versus a native app:**

There are several ways one can approach developing a mobile app. The two most popular ones are to create a Native App or to create what is called a Web-App. I won't go into too much detail about both, but I want to give you an idea of what the differences are and what our Library App really is.

A Native app is an app that is coded in the language that the specific device supports. This means that if we want to make an app for iPhones, we will write in Objective C, which is the major programming language for iPhone app development. However, if we want to have the same app work on other devices, we will have to develop separate apps for each different platform that we want our app to work on. As you might imagine – this is not only time-consuming, but also quite expensive. Distributing native apps would also mean that we have to deal through the actual companies. Be it Apple, Google, or RIM (makers of BlackBerry) – we will have to abide by their rules and requirements of distributions and pay yearly fees for using their channels. Despite those negatives – native apps have one huge advantage to the other alternatives – they can leverage fully the device's hardware. For certain apps like games and complex visual apps – this is a much needed thing. However, for an app, whose purpose is primarily information delivery – being native is not a necessity.

This is why we went with the other route – which is building a Web-App. Before I say anything more about web-apps let me explain to you what they are in one simple sentence. Web-Apps are simply mobile optimized websites that conform to specific design principles. They are just sites and like every other regular website have a web address and can be accessed from any device that has an internet connection. As you might get the hint, this means that ANY device, be it an iPhone, Android, or Blackberry can access the same exact app. Now what does “mobile optimized” mean? It simply means that this website is coded in a special way so it is highly accessible and easily navigable through a small screen. As far as “specific design principles” goes – this is where the iUI framework comes into play. This framework is pretty much a collection of pre-written code and design styles that creates the frame of the web-app so that it simulates the look and feel of a native app. What this means is that once the user launches the Web-App, he should not be able to make a distinction between that app and a native one. Now, there are many other available frameworks to work with, but all of them are pretty much the same – they provide you with a code basis so that your web-app looks native. The reason why we chose iUI was because of the great community of independent developers that supports it. Every time we had a question, we could easily get the answer by asking the community.



## The Library App turns into AU2Go:

The Library App inspired Adelphi's IT department to collaborate with the Library and develop AU2Go – a mobile application suite that has many more useful mini-apps. It is easily accessible at <http://m.adelphi.edu/> and if you access this link from a PC or a MAC, you will get a wonderful introductory video that walks you through the application. AU2Go is in constant development and is adding new features as we speak. Below are some screenshots that showcase some of AU2Go's features.



The following is reprinted from Stan Bogdanov's personal website at PointOh.org:

## **Tools and Links to Help You with Mobile Web-App Development**

There are really no "Number 1" and "Number 10" in this list. All these "tools" (I sometimes hate this word) are quite different from each other and none "does it all." However, they all contribute in a greater or smaller degree to shaping up the final product – a fully functional web-app that can rival any native one. Let me start with the building blocks:

### **iUI – The User Interface Framework for Safari Development on iPhone** (<http://code.google.com/p/iui/>)

iUI has always been the basis for any web-app development I have thought of. It does seem a little unfriendly to the complete beginner (mainly due to the scarcity of documentation on it), but once you've looked at several frameworks and gotten the "hang" of them, you'll start appreciating it more and more. As per iUI's main site – "iUI is a framework consisting of a JavaScript library, CSS, and images for developing iPhone webapps." This just skims the surface though. You should start by checking these helpful links:

Joe Hewitt: "An Introduction to iUI" – a video by the guy who made the Facebook iPhone app and started iUI  
(<http://video.yahoo.com/watch/853528/3491272>)

iUI 0.13 – An Overview – an introductory tutorial from C.W. Zachary  
(<http://www.k10design.net/articles/iui/>)

### **iWebKit – the Simplest Framework to Create Your Own Web-App in Just a Few Minutes!** (<http://iwebkit.net/>)

iWebKit was the first framework I attempted to build Adelphi's Library App with. With their new "5" release, they have introduced a worthy iUI contender. iWebKit is the easiest and most user-friendly way to start developing web-applications! From the plethora of frameworks around there – nothing really beats it in usability. With their new release they have improved so much by reducing bloat and respective load times, introducing more CSS3, better UI, and loads more. For a person who has done no web development at all – iWebKit should be the first thing to see. They also have one big advantage (especially over iUI) – a very good start-up guide that details all the basics and a great support community. Go check it out and be sure to download the user guide – <http://iwebkit.net/http://iwebkit.net/download/UserGuidePrint.pdf>

Now when it comes to web-app frameworks – there is lots of choice! And more and more people opt to develop "their own". I don't think this approach really helps anybody – we just end up introducing more and more similar products that give us little new stuff and lots of "same features". I am big on supporting what's already there and developing a community around it. If you haven't heard – your IQ doesn't mean much anymore – its the community IQ that matters. Where I'm going with this is that whatever you can't do with iUI – you probably can figure out a way to do it with iWebKit! Or better – combine features from both in a way that you contribute something back to them. A patch, a suggestion – everything is welcome in those two development communities! And talking about communities brings me to the next three links.

**iPhoneWebDev – a great community of humble app developers.**

(<http://groups.google.com/group/iphonewebdev>)

**PhoneGap – a great place to discuss questions about PhoneGap (will mention it in a bit), but also general app development.**

(<http://groups.google.com/group/phonegap?lnk=>)

**iWebKit Community – another place for web-app dev questions.**

(<http://community.iwebkit.net/>)

Don't be afraid to post any questions you might have to these groups – especially the first one. They are a great start when you are trying to figure out if someone else has run in the same problem you have.

**PhoneGap – the cross-platform solution to getting your web-app in the App Store**

(<http://phonegap.com/>)

I should have mentioned PhoneGap at a much later stage, but I decided this might be an appropriate spot for it. PhoneGap is a development tool in itself that can take the spot of iUI and iWebKit, but its main aim is to actually port your web-app to a native app. With PhoneGap you are able to use your current knowledge of web-design and JavaScript to build native applications that can install on your iPhone or Android device. It is really a versatile framework that, albeit requiring you to have some programming knowledge of the iPhone SDK, makes it very easy to “go native” and start making money out of your amazing web-app ideas!

**MockApp – iPhone App Design for The Rest of Us**

(<http://mockapp.com/>)

Before you delve in the actual programming part of your web-app development, you should spend a good deal of time laying out your idea in a mock environment. This way, you can spot right away weaknesses in your design or even an idea that might be great, but can turn into a development nightmare or impossibility. This is where MockApp comes in to help. It is a very simple mock-up tool that will let you easily create interactive and usable previews of your apps (or at least their UI and navigation). It runs in PowerPoint and Keynote. Yes – PowerPoint and Keynote can be used to create quite feature-rich mock-ups! Best of it all – you can actually test your app mock-up on your iPhone! For free!

For the people who still need something more robust, there is a solution.

**Fireworks iPhone UI Toolkit by the creators of Notespark**

(<http://blog.metaspark.com/2009/02/fireworks-toolkit-for-creating-iphone-ui-mockups/>)

Pretty self explanatory – go check it out! They have a nice collection of buttons and other user interface elements to create your own mock-ups for easy printing and distribution.

**Building iPhone Apps with HTML, CSS, and JavaScript: Making App Store Apps Without Objective-C or Cocoa by Jonathan Stark**  
(<http://building-iphone-apps.labs.oreilly.com/>)

The title may be a mouthful, but believe me – this is the book to read when starting in the web-app development field! It's a great introduction to pretty much everything you need to know to make a pretty good app and EVEN distribute it in the App Store (via PhoneGap). Best of it all? It is completely free and available online at the address provided. Check it out – it's worth every penny you did not spend...

**Safari Web Content Guide**

(<http://developer.apple.com/safari/library/documentation/AppleApplications/Reference/SafariWebContent/Introduction/Introduction.html>)

A nice little official guide from Apple that will give you an idea how Safari operates in iPhone OS and how you can optimize your web-apps... Now I know I have been stressing a lot on the iPhone OS, but honestly – all the web-apps you make with the iPhone in mind will work 99.99% on any Android device. You might just have to make a few adjustments.

**IconFinder**

(<http://www.iconfinder.net/>)

You will undoubtedly need icons for your app. Whether it is stuff you want to use inside the app or for the main icon on the iPhone's dashboard. IconFinder is a good place to search for any type of icons you might need. The resource below is also a great start.

**iPhoneized Icon Set**

(<http://iphoneized.com/icons/>)

Great place for free icons and some inspiration. Listed below are two links you should always consult when you are deciding on colors and/or looking for some other images you can use in your web-app.

**Colour Lovers**

(<http://www.colourlovers.com/>)

**Deviant Art**

(<http://www.deviantart.com/>)

There are a lot more tools and links you can use, but these should give you a pretty solid start. The most important thing is to get involved in the community and not be afraid to ask questions! You will be surprised by how quickly you can sometimes get answers.