HTML5 for Mobile Devices – The Better Choice

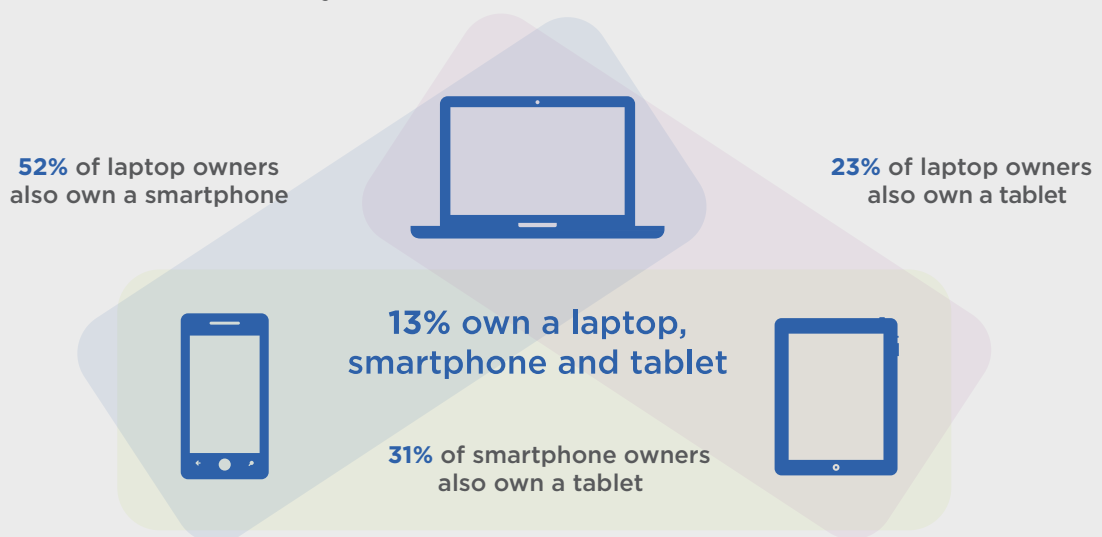*Zero Footprint, Cross-Platform Development at its Best*

Introduction

With the emergence of every new technology, debates and hard decisions are sure to come with it. Those questions usually boil down to one simple root issue: why should I invest in this new technology when what I have already does what I need? With some technologies the superior choice is obvious, but the cost can be prohibitive. When personal computers arrived on the scene, few doubted its advantages over a typewriter, but it took time for the investment cost to drop to a point where widespread adoption was feasible. The mobile device market has crossed the adoption threshold to where the question has shifted from "should we develop for mobile?" to "how do we develop for mobile?"

Smart developers and wise decision-makers look at more than just numbers. They also draw insights from the culture and how their customers operate.

Software developers today have a unique opportunity. Smartphone sales are skyrocketing, unlimited high speed internet is becoming the norm, and public wi-fi is more easily accessible. Smart developers and wise decision-makers look at more than just numbers. They also draw insights from the culture and how their customers operate. Most smartphone users also own additional computing devices, be it a desktop, laptop, tablet, or even a second smartphone. So what is the best way to get the most out of your investment in developing an application for mobile device users?

Many Americans own more than one device

52% of laptop owners also own a smartphone

23% of laptop owners also own a tablet

13% own a laptop, smartphone and tablet

31% of smartphone owners also own a tablet

N's: Desktop/Laptop=2,342; smartphone=1,180; tablet=511

© PEW RESEARCH CENTER'S PROJECT FOR EXCELLENCE IN JOURNALISM 2012 STATE OF NEWS MEDIA
Mobile Devices and News Consumption: Some Good Signs for Journalism 2012
http://stateofthemedia.org/2012/mobile-devices-and-news-consumption-some-good-signs-for-journalism/

Creating Native Apps for Each Platform

This debate naturally hinges on the type of application. 3D graphics heavy applications have a clear advantage by running on the native hardware rather than in a browser. However, for the sake of this article we are specifically addressing the development requirements of raster, document, and medical imaging apps with core features such as image display, annotations, optical character recognition (OCR), barcode, and DICOM. All of these features are advanced enough that they need a significantly robust and interactive development environment, but do not necessarily mandate running at the lowest level possible. But before we dive into how HTML5 makes all of that possible, we must take a look at the traditional multi-platform development approach.

If the end goal for your application is for it to run on multiple platforms, you have a lot of work ahead of you. Research, design, development and testing on a single platform already takes a vast amount of resources. Then you must repeat the process of porting, testing and marketing the application for each platform. This task could be overwhelming for a freelance developer or small company who may not have the time and man power to sufficiently and fastidiously tackle all of those phases.

For some the answer might be to scale back their ambitions and only target one platform. However, when you consider the unique opportunity today's mobile device market and the rapid rate of change, it would be crazy not to take advantage of the times! There has to be a better way to develop an application for all platforms while simultaneously reducing the investment costs. Indeed there is, and that is precisely why HTML5 should be a major consideration on every developer's drawing board.

The Better Solution: HTML5

What sets HTML5 apart as the best choice for developing a cross-platform mobile application? After all, the Internet and web-based applications have been around for a long time. The new enhancements in the HTML5 standard are plentiful, but three facets in particular stand out for developers looking to do more than just create a webpage.

3

HTML5's widespread adoption, the canvas element, and web workers all play a big part in making it one of the most robust, affordable and sensible development environments for mobile devices the world has to offer.

+ canvas element   *+ extremely robust*

<html>   *+ broadly adopted*   *+ very affordable*   HTML
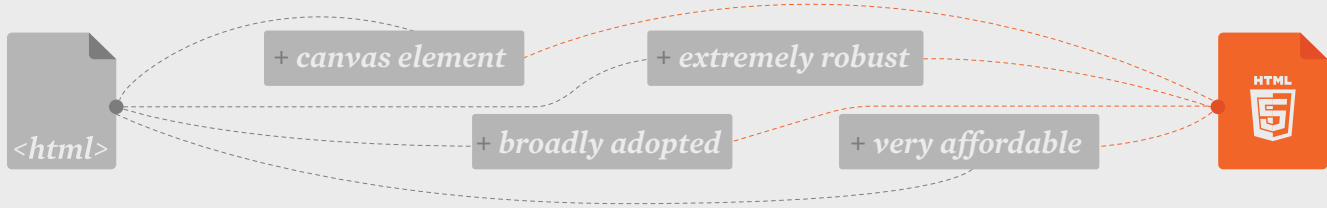
HTML5 "Just Works" 👍

Until now, highly interactive and speedy applications over the web required a plug-in, ActiveX control, or some other solution that required an installation on the client side. Those solutions worked then and still do today, but that approach is losing popularity because it fails to address the growing demand for running across multiple platforms. Many of those solutions have serious limitations when it comes to cross-browser or cross-platform compatibility.

The customers you are targeting already have everything they need to run your new application. This is zero footprint deployment, and it is beautiful.

All of the modern browsers on personal computers, tablets and mobile devices support the new HTML5 standard. Upgrading and adoption might be a small concern for desktop computers within large corporations, but there are very few smartphones and tablets that rely on older web browsing technology. Therefore the customers you are targeting already have everything they need to run your new application. This is zero footprint deployment, and it is beautiful.

The ability to create a single application which is all but guaranteed to run immediately on your client's computing device is a benefit that cannot be overlooked. Your developers will have fewer lines of code to write and maintain. Your quality assurance testers can focus their efforts with greater scrutiny and more effectively analyze the application. Most importantly, your customers have fewer hassles since your HTML5 application requires no installation, updates come automatically, and their all-important storage space is left untouched.

4

Canvas
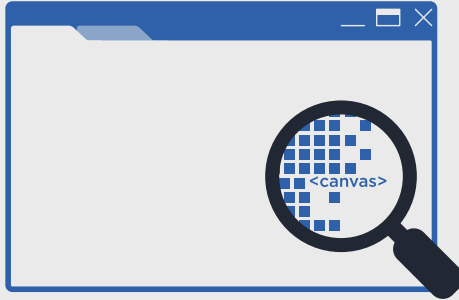
Before HTML5, one of the biggest drawbacks for a non-plug-in based web solution was the lack of true drawing capabilities. This goes far beyond the drawing of a static image; after all, that's what the `<img>` tag is for. The `<canvas>` is capable of drawing *on the fly* with JavaScript, which opens up a myriad of opportunities for raster, document and medical imaging applications.

This isn't to say that the `<canvas>` is the only zero footprint control capable of doing image processing, however it is by far the most efficient. Previous solutions could only accomplish these feats by implementing server side imaging routines. For example, in order for a pre-HTML5 application to clean up a scanned document image prior to recognizing a barcode, the image had to be sent to the server along with the image processing function's parameters, and then wait for the server to send back the updated image.

In comparison, JavaScript and the `<canvas>` element run on the client side, so a well written image processing routine can be done in the blink of an eye. This is a must-have for drawing annotations and markup, window-leveling a 16-bit grayscale DICOM image, and any other operation which demands instantaneous visual feedback.

Multi-threading With Web Workers: the JavaScript Developers Dream Come True

Speaking of speed, HTML5 has even more to offer by way of Web Workers. These new JavaScript objects add client side multi-threading capabilities to web pages. This is a major upgrade to pseudo-threading, asynchronous functions such as `setTimeout()` and `setInterval()`.

Web Workers are the real deal and run an external .js file in a separate thread and use message passing to communicate with the main thread.

Every application clearly benefits from long-running algorithms being spawned off of the UI thread. However, in a touch-screen driven mobile application, responsiveness is king. Since the user is physically touching the screen, there is a heightened sensitivity to the speed at which the application responds to his actions. This crucial aspect of mobile device applications certainly would have disqualified most web applications, but HTML5's Web Workers specifically address that previous shortcoming to make HTML5 a viable solution that meets the tough demands of smartphone users.

Other Benefits of HTML5

Hopefully it is now clear that HTML5 is more than capable of handling the vast majority of personal and business apps for mobile devices. However, that is not the end of HTML5's case for being your mobile development platform. In addition to the technological advantages HTML5 brings to the table, the business benefits and economics of choosing HTML5 should excite management and the decision-makers well.

Labor and maintenance costs can be drastically reduced by developing a single HTML5 application as opposed to a native application for each platform. By developing a single application for all platforms, virtually every financial investment aspect of the application's life cycle is reduced. With an exceedingly smaller code base, it can be developed faster, will have less potential for bugs, can be maintained more easily, and can be accomplished with a smaller engineering staff. All of this minimizes risk while simultaneously increasing the return on investment (ROI).

Using LEADTOOLS as Your HTML5 Imaging Provider

Let's face it, most developers would love to do everything by themselves but some features take a long time to develop. By partnering with a third party SDK provider that has been using their expertise to perfect their specialized set of tools, you can simultaneously save development time and produce a higher quality product. That scenario is often played out for companies that choose LEADTOOLS to implement imaging technology into their applications.

6

LEADTOOLS has much to offer the HTML5 developer. Its `<canvas>` based image viewer control is capable of many features previously thought to be locked down and exclusive to powerful desktop computers and low level native libraries. Image processing, annotations, DICOM window leveling, and more are done directly on the client side with JavaScript. Some features, such as OCR, barcode recognition, and PACS communication, utilize RESTful web services and JSON to offload heavy computing tasks and large installation footprints to the server, further enhancing the flexibility and power of an ultra-lightweight web application developed with LEADTOOLS.

Best of all, and especially so for its DICOM Viewer, LEADTOOLS comes with the full application source code, making it simple to customize the application to your exact specifications. Not only are you purchasing an SDK to fill the imaging gaps in your development project, but you receive a fully operational, OEM-ready web application. This benefit is rare amongst SDKs vendors and gives developers a distinct advantage when they choose LEADTOOLS over other HTML5 imaging SDKs.

Another important consideration when choosing a third party SDK is the company's reputation and experience. Think about your SDK choice in the same way you would fill a position at your company. Do you want the kid straight out of college to work on some of the most difficult and advanced features of your application? Or are you going to seek the long-time veteran with a long list of high profile work experience, certifications, references and accolades? LEAD Technologies has been in the imaging SDK business for over twenty-one years and boasts a healthy, diverse customer base and strong list of corporate partners including some of the largest and most influential organizations from around the globe.

Not Just For HTML5 🛡

Even if you still plan on developing a native application, LEADTOOLS has everything developers need as well. In fact, LEADTOOLS provides native libraries for nearly every major development platform in the world including .NET, Win 32/64, WinRT, iOS, OS X, Android, Linux and more.

7

Conclusion

HTML5 is an excellent choice for developing your image-enabled mobile application due to its adoption rate, easier development, and minimized financial risk. Furthermore, LEADTOOLS is a partner you can trust to empower your developers with the greatest array of imaging technology regardless of the development platform you choose. For more information on how LEAD Technologies can image-enable your application and boost your ROI, visit *www.leadtools.com* to download a free evaluation, or give us a call at +1-704-332-5532.

LEADTOOLS®
THE WORLD LEADER IN IMAGING SDKs

LEAD TECHNOLOGIES
I N C O R P O R A T E D