

Business case for Mobile Ajax

Louenas Hamdi, Research scientist, SAP Labs Canada.

louenas.hamdi@sap.com

(<http://www.w3.org/2007/06/mobile-ajax/>)

1. Introduction

Since the first days of Ajax, the web community has shown a rapid adoption rate of the new “Advanced Web technologies”. The new capabilities hinge on the support by the new generation of browsers of the JavaScript language and the asynchronous XMLHttpRequest object.

Ajax as one the delivery mechanisms of Web2.0 leverages existing web standards (Http, (x)Html, XML, CSS, DOM, etc.) and the asynchronous nature of XMLHttpRequest to avoid whole web page refreshes, making it possible to update only the relevant parts of a given web page.

Many proven open source and industrial scale frameworks already exist in the desktop market. Their capabilities range from a simple JavaScript API to a complete framework covering all the web applications development angles i.e. server side integration, UI widgets, offline mode, push mode, asynchronous calls, client side caching, etc.

Although one should recognize that mobile browser technology made a giant step in integrating many standard web technologies, the mobile Ajax powered web has not taken off as has been the case for desktop based rich internet applications. The reasons are mainly two: first, mobile technology is very divers in terms of capabilities and technologies and requires always specialized people to make it happen. Second, the nature of mobile networks has been slow and expensive enough to keep users and companies away.

The basic technology in Mobile Ajax is not different from desktop browsers. Basically the XMLHttpRequest object (XHR) or an equivalent ActiveX is used to handle asynchronous communications. The way Ajax could be used in the mobile environment could be different from the way it is used for the desktop. On the desktop, Ajax is mainly associated to user experience using partial updates technique. In addition to user experience, Ajax provides an answer to a basic need that is the communication and data management (This concept will be developer in a later paragraph).

Since we are talking about Ajax, it’s interesting to know which browsers support Mobile Ajax i.e. JavaScript, XMLHttpRequest. Here is the list of currently known and announced mobile browsers supporting Ajax.

- Opera Mobile
- IE Mobile
- S60 3rd edition (WebKit/KHTML core)
- Safari Mobile (iPhone)
- Minimo
- OpenWave
- NetFront

2. Why is mobile web important for service providers?

Mobile devices have already outsold the number of laptops. Gartner predicts that by year-end 2011, the number of mobile handsets shipped per year will exceed 1.5 billion and Gartner also predicts that by 2009, some high-end smart-phones will contain processors with clock speeds exceeding 1.5GHz. In some cultures cell phone is the primary device to access the internet. The end user trend of buying smart-phone devices is growing especially in third world and emerging countries such as India and China. In Nigeria, N70 was the best selling Nokia phone for the year of 2007. There is no doubt that mobile web is already and will increasingly be a huge market.

Mobile devices are always at the point of action, point of inspiration and desire; they are location aware and a hub for many peripherals including camera, microphone, etc. People are by nature mobile and don’t want to carry laptops with them, they have desires and remember things while doing the day to day activities. Enabling people with easily

consumable applications for shopping, collaborating, messaging has a huge return in investment if carriers, service providers and financial institutions could figure out a good business model that helps them all.

Usually developing non web applications and services for mobile devices is hard to impossible due to various reasons. However, web browsers and internet connections that these devices are equipped with can be increasingly used to make mobile services development and consumption much easier. Recent products, such as the Apple iPhone, are showing where the trend is going to be i.e. connected devices with full web browsers and widgets.

We believe that the competition of free broadband networks and the new advances at network level, especially the network stack convergence (WiFi, EDGE, GPRS, 3G, WiMax) will help drive the adoption by companies and consumers.

3. Why is mobile Ajax important for enterprise application providers?

According to the Clipper Group Inc, Ajax may provide the glue holding together the virtual corporation with its growing number of mobile workers toiling on the edge of the business, tethered by sometimes tenuous wireless connections.

Enterprise users need to be productive whether they are online or off-line. They want to have access to the enterprise portal and be on top of the enterprise business processes. They want to collaborate in real time and have quick feedback for their requests.

Because of the perishable nature of the mobile and wireless networks, Ajax can help in managing the connection and in optimizing the data exchange between the mobile application and the enterprise system. Mobile Ajax applications have to be asynchronous and in some cases supportive of client side business logic for offline processing.

We believe that the new mobile browsers' (Opera, Safari, Pocket IE, Minimo) Ajax processing, communication and integration capabilities will be beneficial for the mass market and also beneficial for mobile enterprise users from many angles, including low total cost of ownership, easy distribution and consumption. For Mobile users Ajax not only provides cool user experience but also an easy answer to some basic requirements such as message exchange optimization, dis-connectivity support, simulated push support, data prefetching, client side business logic, etc. Applications could be described in XML and loaded once and then the messages exchange could be achieved using JSON in an asynchronous or synchronous mode. Ajax empowers mobile web clients and hence reduces the load on the middleware and the enterprise systems. In an extreme case one can even imagine eliminating web servers usually used as rendering engines and hence integrating Mobile Ajax applications directly to the enterprise systems.

One of the most important factors for enterprise application providers is total cost of ownership (TCO). Mobile Ajax architecture provides a better development and distribution model than Java and Native technologies. The following figure demonstrates this statement.

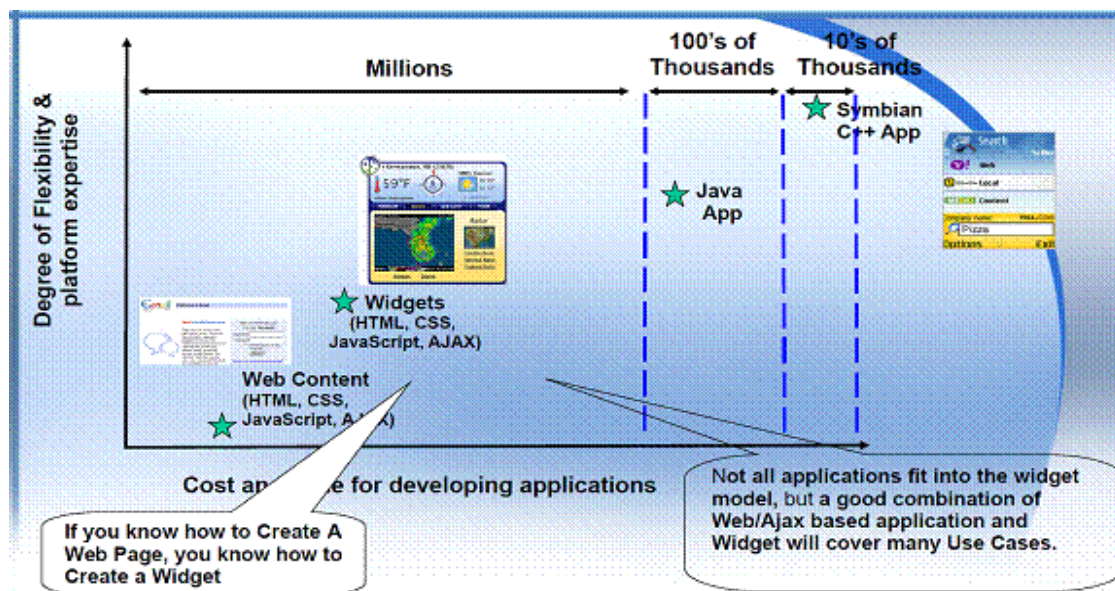


Figure 1 Comparison of cost of development vs. degree of complexity of mobile application

Usually enterprise users have smart-phones, PDAs or laptops. As a rule of thumb people with smart phones and therefore better browsers are much more likely to have a data plan than others. Nowadays the majority of the smart phones have Ajax capabilities. Usually when considering mobile environment, companies chose a subset of devices to support. For Ajax application this subset of devices could be bigger since Ajax relies on the browser technology which is at a higher level of abstraction than native or Java technologies. Browser based applications are relatively easier to distribute and can be used across operators. The browser also reduces the technology fragmentation because it relies on a smaller set of very known and standard web technologies.

The majority of mobile scenarios could be implemented thanks to Ajax. We think that companies should develop for the browser and go for it as far as possible. However, as soon as one should need some advanced functionalities such as persistence storage, GPS, etc. the solutions should be complemented with technologies such as browser plug-ins or mobile servers.

Mobile Ajax Apps

Mobile Web



- * Document oriented
- Click = round trip
- No intelligence
- + No install
- + No management



- + Rich
- + Disconnected mode
- + Less fragmented tech
- + No install/management
- + Dev tools ~ desktop web
- Less Secure
- lack Device assets integration

Installable Apps



- + Richer
- + Offline mode
- + Device assets integration
- + More secure
- Needs download
- Needs management
- Fragmented tech

Figure 2 Pros and Cons for Mobile Ajax applications compared to web and installable applications

- * no opinion
- negative
- + positive

4. Factors driving the adoption of Mobile Ajax

Mobile web has been till lately as secondary, with most of the consideration and effort being dedicated to the PC-based web. But what has been thought as a less or not important may end up proving as a mast to have. The wind of change that attracted more users into mobile web browsing is triggered by:

- *Flat-rate data plans for mobile-data services*
- *Remarkable progress in device hardware and network capabilities*
- *Availability of almost desktop capable browsers on mobile devices*

5. Need for standardization

Mobile applications have to be actionable and context aware. Device assets integration is one of the key requirements that device and browser providers have to standardize in a way device facilities could be easily accessible by JavaScript applications. The most urgent requirement right now is to make use of local file system, PIM data and GPS information.

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