

The New Generation of the Web: Mobile Web

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Abstract

The World Wide Web have changed our lives in the last years and from now on it is going to be more and more "mobile". The mobility means that who is using mobile equipment have access to a better designed web for them, the mobile users. We present in this paper the last web developments built for the mobile users. In this direction, for example, dotMobi represents a major try to make a better world wide web for mobile devices.

1. Introduction

The WWW world have revolutionized the way we interact and publish the information, but till recently only for those with desktop systems. The mobile phones with web support of today will lead to an expected growth of three times the number of today, to a third of the world population [2]. Mobile Web is about web dedicated to mobile devices. In these circumstances, dotMobi represents a try to make a better web world for the mobile devices. The Company mTLD Mobile Top Level Domain, Limited (as known as *dotMobi*) is the official representative of the .mobi domain, a registered domain by the ICANN international organization. Backed up by 13 Internet and mobile communications organizations, .mobi addresses the need of unlimited access to Internet from the mobile phones or any other mobile devices.

DotMobi is the first and only high level domain dedicated to the mobile users. If we consider the fact that in the world are bought four mobile phones for every single PC, we may say that we have a world where the mobile phone is the main access point for the Internet. And these users may trust that the sites ended in .mobi are compatible with their (mobile) devices.

2. Mobile Web benefits

Mobile Web has some important benefits, including the following:

- Can offer access to information, anytime and anywhere there is mobile phone coverage. Eliminating the constraints regarding office connectivity or looking for a WiFi hotspot, people can quickly search, find or exchange information.
- Provides wide connectivity. A third of world's population have Internet access through mobile devices. This number is twice the number of the PCs connected to the Internet. Till 2010 it expects that half of the world's population to have access to the Internet through a mobile device [3].
- It allows services to take advantage of the mobile devices characteristics to click on telephone number to call it or to add to address book.
- Can offer content function of the user's location. Location technologies may provide this easily, reducing the access steps to useful content with minimum of effort.

3. Information architecture for the mobile web

3.1 Introduction

Within the mobile context it is very important to structure information as simple as possible. Putting the information into the right place it is an important part for providing user friendly applications. In the moment we build the information structure for the mobile web we must consider the user's availability about „click investment". Even at 3G speeds for data transfer a mobile phone is much slower than a desktop system and the users can be frustrated about this.

On the other hand, a user which has a precise scope and smart ways to get it can tolerate such aspects. This

means that is important to build the users' expectations. Each link must contain labels that describe clearly what the user can get in the end, reducing the risk that an user can be dissatisfied by the result.

3.2 Simplicity is a scope

The best advice for creating an information architecture for a efficient mobile web is to apply the principle of simplicity. The following approaches are working when dealing with a mobile information architecture:

- Limiting the options. We are using the relevant content for a mobile user avoiding that the user "lose himself" in a multitude of presented information. This approach works well for small websites.
- Creating of a "drill-down" architecture with a well structured content and well known categories as in figure 1.

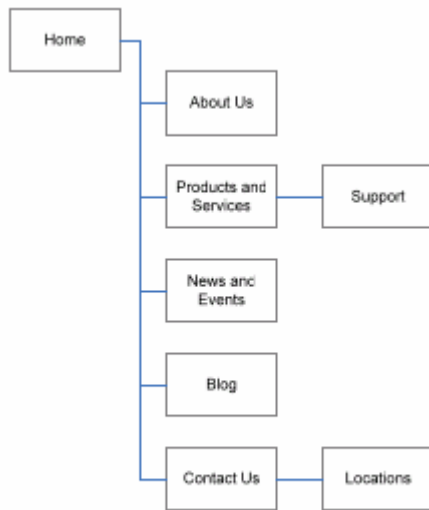


Figure 1. Information structure

We are presenting in the following some recommendations for a „drill-down” type architecture for a website:

- Categories limitations as much as possible: users become disoriented as they advance in the website structure ; a user tolerance concerning navigation on a mobile website stops at level 5 „drill-down”.
- Limiting the maximum number of connections to approximately 10 for each web page: the hyperlinks are coded with access keys as user can navigate in the website using phone's keyboard. It is recommended to use maximum 10 access keys

(numbered 0-9) to preserve compatibility with mobile phones from last generations ; we may use more hyperlinks if we have access to new generation devices.

- Providing content to each page category avoiding the hyperlinks that do not offer content. Placing a hyperlink to some content it can be done by one or two propositions (as shorter as can be) that give user a hint about the webpage content.
- Establishing popularity/activity priorities for different links: this is often referred as "deck placement"[▼]. Sorting the links by access frequency assure that the most often searched content is the first which appears in the list. This is a simple way to improve changes that the user will reach desired destination quickly. The only problem is that we cannot assure the same about low level (or new) priority links. This situation can be avoided by maintaining a sort of control of the categories and of their content.

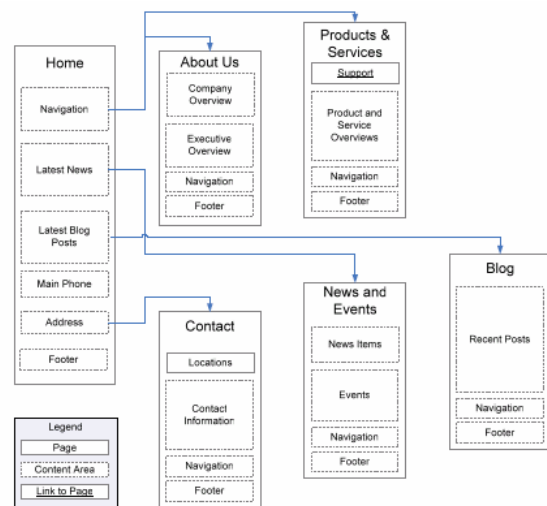


Figure 2. Mobile website map example

Once established the needs for the website content and defined the structure of the categories and labels these must be visualized as a whole by creating the website map (figure 2). This map provides a general view about the information but not about whole functionality because this is done by direct testing on mobile devices.

[▼] In the mobile jargon the term "deck" refers to a mobile website. The origins of this name come from WAP 1.0 and WML where the pages were metaphorically named as playing cards. The term of "carrier deck" is used to describe a web presence managed by a mobile services provider. The first webpage accessed from the mobile device is usually called "carrier deck". The term "deck placement" is used to describe the place where a third parties website or application will appear on the the "carrier deck".

4. Mobile Web design

Although the design for mobile devices looks more difficult than the one for desktop applications, it is important to create a mobile design attractive to the user. It is important also to develop the design looking at the functionalities of the device for which the web application is created. In the mobile case we may encounter problems concerning limited loading time, reduced compatibility of the mobile device or insufficient styling support.

4.1 Design for different screen sizes

Outside the mobile web we may encounter a large number of screen resolutions – most of the PCs support resolutions of at least 1024x768 pixels plus keyboard and mouse for users. On the other hand, there is a bigger diversity in the world of mobile web – the screen dimensions and the keyboards of the devices are varying a lot (see figure 3).

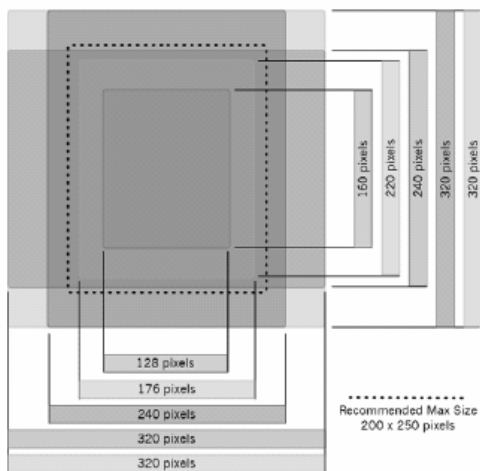


Figure 3. Different screen sizes and resolutions for mobile devices

By separating the mobile devices in classes function of the screen dimension we may reduce the number of the screen sizes and we can reduce this way the design's complexity. In this sense we may consider that the width of the screen defines the degree of functionality and attractiveness of the design. attractiveness a design-ului. Images that look nice on a low resolution phone will cover only one third of a screen with a bigger resolution so we may add a new functionality called *zooming*.

Another two important things to keep in mind are the public to address to and, moreover, what devices it

use. Once known these two characteristics, we may choose resolution.

4.2 Choosing the device

Designing for mobile devices must consider different classes of devices. Because these are not so well delimited, the design is more difficult. There are still some possibilities to know what is the class to consider. The mobile devices available on the market today may be classified as (see figure 4):

- *Feature Phones*: These are the most common devices; they have 12 keys on the keyboard and functionalities for communicate audio, text and data. They have also digital cameras and media players. The producers classifies it as general consumer devices.

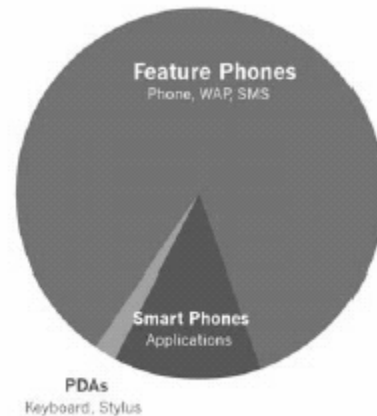


Figure 4. Mobile devices market

- *Smart Phones*: They have similar functionalities with the feature phones but there are two big differences: the ability to run applications and a bigger screen. These phones often use a complete operating system and the producers advertise them as advanced multimedia devices for the general consumer or as productivity devices in the business area.

- *PDAs*: these devices evolved from the PDA's of the '90s and include functionalities for communicating audio, text and data; they have a lot of common functionalities with smart phones but are oriented to organizational applications than to communications. Another difference there is the QWERTY keyboard and a bigger screen with the facility to change the view from landscape to portrait and viceversa.

- *Voice-Only Phones*: Are cheap phones and do not present any relevance within the context of developing mobile web applications.

So called *Feature Phones* are the most popular but we may see in the last year a smaller gap between them and *smart phones* (the last *feature phones* have more functionalities than old generations of *smart-phones*).

5. Mobile web browsing

Generally we are used with a big variety of navigation schemas as pressing the Tab key or by the menus inserted in the main web page. These schemas offer the possibility to realize easier where we are inside the website and the mode to browse within it.

Clearly, this is much harder to do in the mobile context because of the small dimensions of the screens and reduced browsing functionalities of the mobile devices. Although it is not impossible to use the Tab desktop schema on mobile devices in general, it doesn't work good because of the small dimensions of the screen.

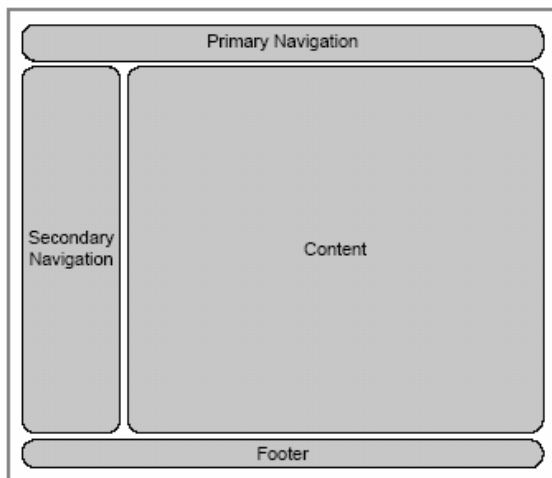


Figure 5. Mobile device browsing example

The preferred method to create browsing schemas for the mobile web (see figures 5 and 6) is by using a vertical list of options which has assigned numbers from 0 to 9 for the access keys corresponding to the access keys from the mobile device keyboard. This can be implemented in different modes by using styles or images. For more sophisticated types of mobile devices can be designed more performant browsing schemas.

Showing multiple levels of browsing in a list usually doesn't work correctly because it offers user too many options and covers a big part of the screen. A better way is the one to present only the options that have a direct connection with the viewed web page. There must exist ways of browsing outside the current page like "next page" or "main page". These links are

positioned at the end of the page and provide users the possibility to access it without going back to the top of the page.



Figure 6. Another mobile web browsing example

6. Conclusions

As mobile devices become more prevalent, it's only natural that people will use them to access the Web. That means that web developers and designers will need to produce web sites that they can use. It is not really a very big transition; it is important to think compact, but still can be creative.

We have presented in this paper a short introduction about the dotMobi concept and about mobile web browsing. It is very interesting what will reserve the future in this permanent dynamic field - the mobile technologies, as from the hardware, as from the software part of it.

7. References

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