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DEVELOPING RESPONSIVE WEB  
DESIGN FOR MOBILE DEVICES  
AND TABLET PCs

Bachelor's Thesis  
Information Technology

October 2014



|   |                            |  |  |
|---|----------------------------|--|--|
|    |                            | <b>Date of the bachelor's thesis</b>                         |  |
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| <b>Name of the bachelor's thesis</b><br>Developing responsive web design for mobile devices and tablet PCs  |                            |  |  |
| <b>Abstract</b>   |                            |  |  |
| <p>The aim of this bachelor's thesis was to find out how to create and design a web-site which adapts to any resolution of the device (desktop PC, phones, tablet PC or other). The reason to think about how a web-site will be displayed at different screens comes from popularity of using of the mobile devices.</p> <p>This study can help web-developers to choose one of three alternatives to care about mobile users: mobile version of the site, mobile application and responsive web-design. Comparing of advantages and disadvantages of these alternatives makes clear understanding for developer which method one is suitable for a certain project.</p> <p>In practical implementation normal web-site were modified to responsive web-design. This part could be used as a manual, because after changing the web-site has comfort displaying on desktop PC, on the mobile phone and on the tablet PC.</p> |                            |  |  |
| <b>Subject headings, (keywords)</b>   |                            |  |  |
| <b>Pages</b><br>53 + Appendices   | <b>Language</b><br>English | <b>URN</b>   |  |
| <b>Remarks, notes on appendices</b>   |                            |  |  |
| <b>Tutor</b><br>Matti Koivisto  |                            | <b>Employer of the bachelor's thesis</b><br>MAMK             |  |

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## 1 INTRODUCTION

Today we are living in a world in which anyone who owns a computer will be able to "download" with the help of articles, images, video or audio information on any topic of interest. We are able to get this information when we desire. After a while, the artificial intelligence system - a parallel machine translation, as well as identification and voice recognition will break the latest national and language barriers and make possible free transnational exchange of information.

Very soon, the majority of the population, not only in developed countries but also in developing ones, will use internet every day. Television and radio will not be replaced with computers, but they will have a powerful CPUs, large memories and they actually become in some respects computers.

It seems that the forecasts of comedians that soon all the irons and washing machines will necessarily be connected to the worldwide web, is slowly begin to come a true. And if connectivity of the full range of home devices has not yet fully taken place, the viewing of web sites with all kind of devices such as mobile phones, tablet PCs, readers, music players and even TVs has become commonplace. This imposes additional requirements to the design of the web-sites that ideally should look good, but at least just to be readable on a variety of devices. The aim of my thesis is to find out how to create and design a web site which adapts to different kinds of end devices.

In theoretical part of my thesis, I explain the difference between the mobile version of the site, mobile application and responsive web-design, and compare the advantages and disadvantages of them. Also I define the points which have to be taken into account for being able to create attractive web-page design, which will be the most successful and which will make the site popular and interesting for the users. After that I point out what has to be consider in creating web-site especially for mobile users.

In practical part, I implement web-pages with responsive design for tablet PC and mobile devices according the facts which I will find out in theoretical part.

## **2 ROLE OF INTERNET IN OUR LIFE**

As we all know Internet is a worldwide collection of computer networks that connects millions of computers together. The roots of the Internet can be found from a network called ARPAnet, created in the 1969 year in the United States of America (Educational Portal, 2013)

According to an Internet source called “Corporacia” (2013-2014) this project was very successful and it received interest from other companies and organizations. A great deal of networks based on similar principles have been merged together to form a single information space. Internet performed exceptionally narrow function during long time: to allow users to send mail and news. And it was used exclusively for scientific and technical environment.

The real revolution on Internet took place when the World Wide Web (WWW) was introduced. After that every computer having a connection could have its own web-server with different materials available for public viewing. Choosing a variety of documents and following the hypertext links embedded in them, it was possible to visit in a few minutes dozens of diverse servers. Now the Internet had become clearer and it is no longer used only by the scientific community. Now it started to attract people not related to the computer industry. Numbers of users began to grow exponentially. At the same time the web-pages became places for different kind of information - from politics to advertising and today there is probably nothing, which does not have a virtual explanation. Internet has influenced on all sectors of life including government, media, business, health and more. (Corporacia, 2013)

### **2.1 Internet addiction**

In a bad or a good sense of these words, but we all have an Internet addiction. If we can not imagine life without a mobile phone, what will happen without a source of information. But, of course, we need to share healthy Internet addiction and mental disorders associated with cyberspace (yes, there are such).

When network helps people in life, but does not replace it, it is called healthy dependence on

the Internet. We all know that the net may help a great deal at work or at school when you need to find information, and we use it because it is faster and more comfortable. But sometimes people cross the line. And then we get situation when people replace their life by Internet. It is a disease, an addiction (Saisan et al. 2013). Like some of my friends: when we have a meeting most of the time they are using their phones to visit social networks (facebook.com, vk.com, Instagram). That is really annoying me, because I prefer to communicate with them live.

Science does not deny the possibility of online future of humanity, because, of course, Internet is not a virus. It is a conscious departure from the reality of the human and search for an alternative or other life (for example, the life of the character in the games). We can not say that cyberspace is bad. There are thousands of examples when a person who is not able to cope in everyday life (for example, invalid), makes his life meaningful through the Internet. It is a huge world with the sea of opportunities! (Saisan et al. 2013)

## **2.2 Internet and we**

To not became a person with Internet addiction (in a bad meaning), do we really have to separate Internet life from our real life? Already now, it is very difficult to make the wall between it.

Technologies are developing all the time, and in the future the ability to find an answer to this question becomes even more vague. Information space undeniably will become our second home, as the second small planet we inhabit. It is not necessary to restrict our children or ourselves from the Web. The main thing that we always have to remember being in this world - our personality. Network can easily depersonalize a human. We can let Internet to be your encyclopedia of the life, but not the way to live.

## **2.3 Usual customers**

This section is based on the article “The Information Society. Role of the Internet in people's

lives” (Corporacia, 2013). For now, the society has become completely informational. Communication and various ways of connectivity are so closely integrated into all areas of human life that they have become just a necessity. Now, any information is located in "one-click". If previously the main source of information for the person was live communication, now we can learn quite a great deal in total isolation from people only having an access to the World Wide Web. Internet does not have a specific audience. It is for everyone, without depending on age, social status, ethnicity, personality traits, and other factors.

## **2.4 Business**

Internet plays a major role in business. Knowing the role of internet for business will help to take advantages of the powerful opportunities it offers to develop business and make operations more effective.

Below are presented several ways in which the internet has helped to get the success and growth of businesses (Riley, 2011):

**Communication:** The internet makes communication faster and more cost efficient. Businesses use internet technologies to make communication virtually instant (such as Skype: internet and video calls, email and video conferencing).

**Growth:** The internet plays an important role in the developing of businesses. It gives businesses an opportunity to reach a wider global audience. Promoting through the internet is also a way to increase sales and reach the desired growth level.

**Marketing:** Most businesses are taking advantage of the internet to market their products and services to a global audience.

**Networking and Recruiting:** Social networking websites play a role in business networking by connecting like-minded professionals. Through the internet, people have found business



partners and employees.

**Online Shopping Role:** E-commerce websites and online payment solutions allow people to buy online with the comfort of their own homes.

The role of internet in business cannot be overestimated. New businesses are taking advantage of the powerful role the internet plays in business to grow and succeed at a faster rate than was previously possible. Traditional businesses are also not being left behind as they are creating online divisions.

### **3 DIFFERENT DEVICES - DIFFERENT SITES?**

First of all, I want to point out why we need to think about mobile versions, applications and responsive web-design. There are three main reasons (Izmest'eva, 2013):

**Wide variety of devices from which you can surf the Internet.** Currently there are many devices that people use to surf the Internet. These devices are different in screen size and resolution, and respectively in how web-site can be displayed on it. Therefore it is really important to get nice and correct displaying of sites on any of the user's device.

**The popularity of mobile devices with Internet access and increasing of mobile Internet traffic.** As popularity of mobile devices increased the number of users visiting mobile sites also increased. Therefore, now we can not just ignore them - it is not one or two people in six months, it is a large part of the audience, and their using of sites has to be easy and comfortable (otherwise they would not use it and site will loose customers).

**Emergency information.** If the resource contains news/urgent information, and there is high probability that a user may need to read this information from the phone (because there is no other devices at the moment), you need to make sure that the user has this opportunity.

Yaroslav Perevalov defined two main aspects about problem of viewing “big” site on smart phone or tablet PC in his article “Mobile web-site: good or bad?” (2014). Based on this information I have explained why every developer must pay special attention to the mobile users.

### Effect of "observation slit"

A big site is fully placed on a small area on the smart phone screen, but to read something we need to zoom it. It is very easy to lose the content which is "left behind". A user can not always clearly understand where to go next when site in zooming and view the site by the fragments through the "observation slit" or need to change the scale several times to find the needed information. That is not very comfortable. Mobile version of the website is made so that it fits the screen by width, and does not require the change of scale for comfortable reading. Figures 1 and 2 demonstrate the problem of using a normal web-site with a small screen device.



FIGURE 1. “Big” website fit on the screen, but text is too small to read (Perevalov, 2014)

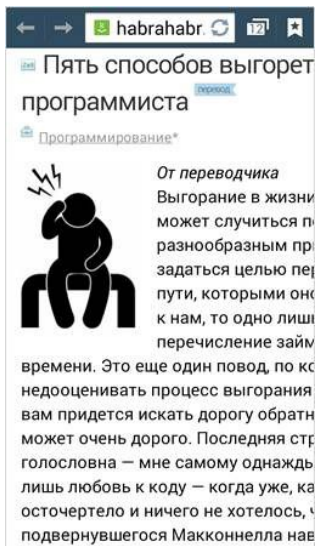


**FIGURE 2.** Zoom view of the “big” site. You can read, but not understandable where you are now (Perevalov, 2014)

### Horizontal scrolling

Most mobile browsers (except Opera browser for Android and native browser of HTC) are made so that they save original layout of "big" site (cares about work of designer) and do not care at all about the comfort and convenience of reading: it has no possibility to format the text by the width of screen. In most cases this causes the need to scale for comfort reading and scroll horizontally every row. In this situation a user becomes easily annoyed after reading just one little paragraph.

In situations when reading is more important than to get enjoy from layout (priority is information, but not aesthetic pleasure), this leads to disastrous results. Figures 3 and 4 show this problem visually.



**FIGURE 3. Need to scroll horizontally every row to read comfortably (Perevalov, 2014)**



**FIGURE 4. Opera Mobile formats text by width what makes reading more comfortable. But it breaks the layout (Perevalov, 2014)**

Based on information above, I am sure that everyone understands now why programmers do extra work. Adaptive (responsive) design for various resolution of gadgets already becomes a standard in the development of modern websites. However, the percentage of such sites in the Internet is still not big. But number of web sites which have mobile version is even less. So, the question is - should a company create a mobile version of the site, mobile application or

responsive web-design for mobile phones and tablet PC?

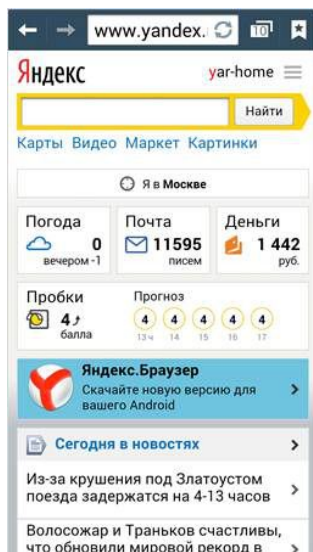
In next sections I introduce these alternatives and compare their advantages and disadvantages.

### 3.1 Mobile version

There are two main types of a mobile version of the site (Kasper, 2014):

- **Identical** to the main site: repeats the structure, content and design. This effect can be achieved by using the special services without the help of developers.
- **Independent** mobile version: structure and functional are totally different comparing with “big” site, repeats only stylistic conformity, partly elements and content, for let user know that he is on the right site.

Mobile site usually formats the text to the width of the browser. But to get this effect, it is necessary to block the ability to zoom. In result, text can be too small, and with no ability to zoom user will not be satisfied. That is why planning of design is an important part of developing.



**FIGURE 5.** Example of typical mobile version (yandex.ru, mobile version)

Figure 5 demonstrates that the mobile site is certainly more convenient and more comfortable for navigation and reading on a mobile gadgets than usual web site. But is it enough to start doing the mobile version? Probably not.

Before planning the context, we need to answer the question: what tasks will visitors do with mobile gadgets? These tasks may be really different from those problems which are solved with large computers. For example, it may be so that the mobile users visit the site to find the phone number of company to make a call. Or they are looking for the exact address and location map. Or just want to have fun, and do not wish to fill out the order form. Research of needs of mobile audience will help to answer this question.

Figures 6 and 7 demonstrate how content is different on the “big” site and on the mobile version of the site. There is no redundant information.



**FIGURE 6. Mobile phone view of usual web-site and mobile version (market.yandex.ru)**

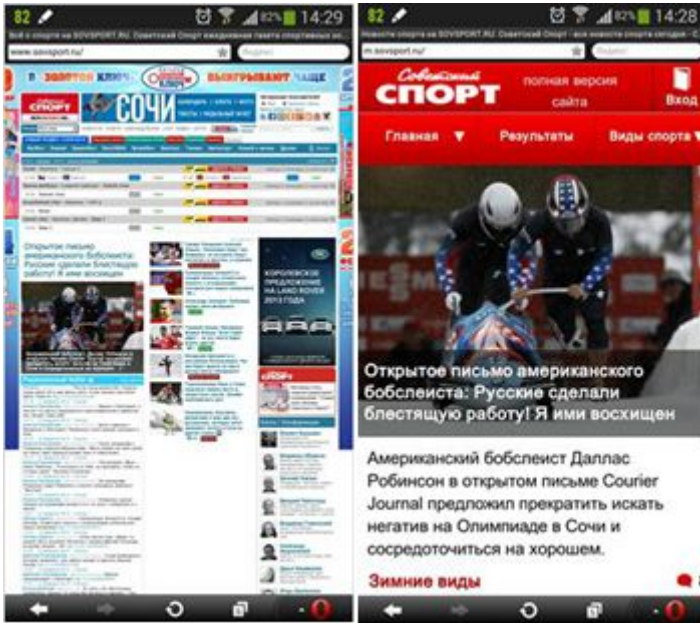


FIGURE 7. Mobile phone view of usual web-site and mobile version (sovsport.ru)

### 3.1.1 What are the main areas of attention when developing the mobile site?

To develop mobile site which will be comfortable for users, you need to think about interface, which include next points (Kasper, 2014):

- **Design:** perhaps the most important component. Latest design trends for mobile sites are the maximum easiness and simplicity.
- **Compatibility:** site should appear correctly on the most popular screen resolutions (240x320, 480x320, and others).
- **Optimizing the content:** images must be light in size and in kilobytes. Also text has to be as short as possible.
- **Usability:** good navigation is the key to successful mobile site!

### 3.1.2 What sites need mobile version?

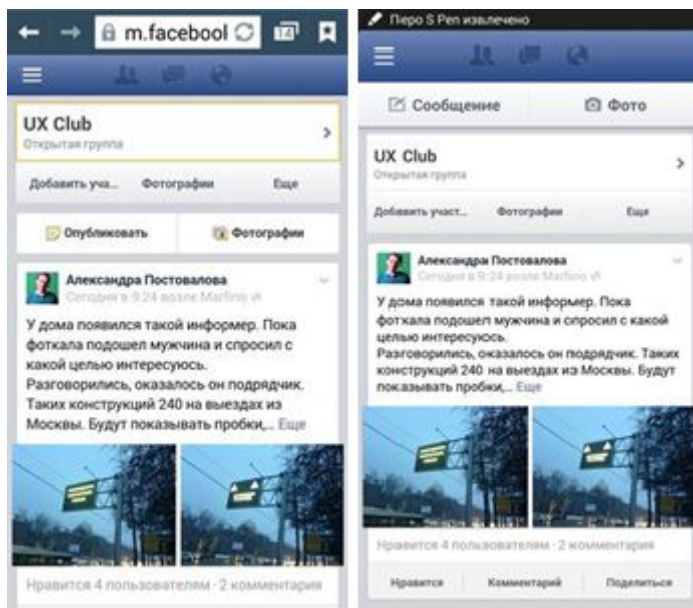
According to the research from the resource “Kasper.by” it is appropriate to create a mobile

version of the site for the following types of sites:

- MSM (Mass Media Smartie) - Internet newspapers, TV-websites.
- Reference site -Online encyclopedia, dictionary. For example: Wikipedia, Yahoo!answers.
- Social networks and services - Facebook.com
- Online Stores - Ebay.com, Feelunique.com

### 3.2 Mobile application

Mobile application is a specially designed application for a specific mobile operation system (iOS, Android, Windows Phone). Typically, an application is developed in high level language and compiled into native OS code, which gives the best performance. (Habrahabr, 2013)



**FIGURE 8. Mobile site and mobile application (Facebook.com)**

Figure 8 shows that mobile site and mobile application have common interface. But in developing they are different.

Because the main topic of my thesis is responsive web-site design I do not cover mobile applications in more details here. However, you can find more information about them for example in next source: <http://www.w3.org/standards/webdesign/>.



### 3.3 Responsive (adaptive) web design

Responsive web design is a relatively new trend in the design of the web resources, but already now it is one of the main indicators of quality of the project (Izmest'eva, 2013).

Responsive web design is a design of web pages, which provide a great perception on various devices connected to the Internet. This means that the same site can be viewed on a different devices with comfort for a user, not depending on the resolution and size of the screen. It offers the same high quality for smart phones, tablets PC, laptops, desktop PC etc.

This design provide the view which is the same for all formats - mobile users, for example, will not be needed to expand some areas of the site to not miss the right link (Izmest'eva, 2013).

Adaptive design is intended to display web pages and its contents according to the device where it is viewed (Figure 9).



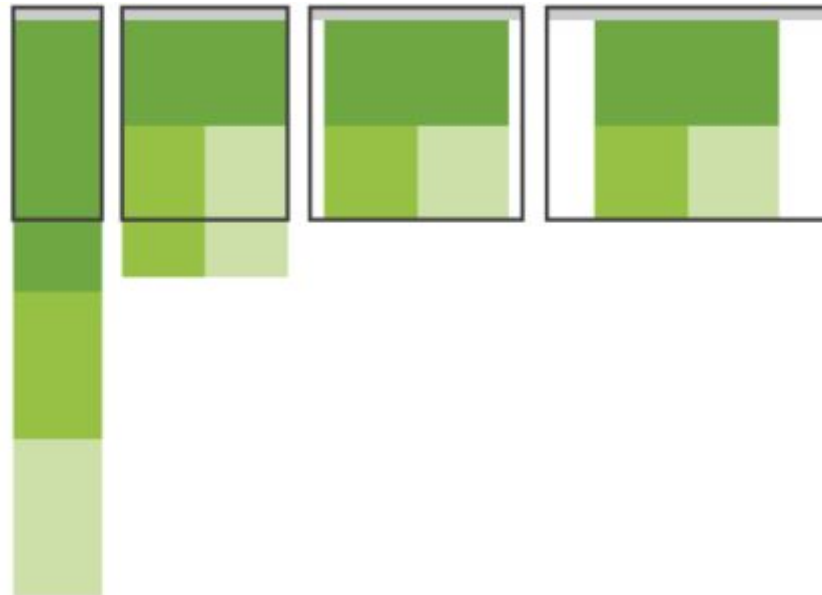
**FIGURE 9. Desktop PC view; tablet PC view; mobile phone view (Izmest'eva, 2013)**

### 3.3.1 Types of responsive web design

Based on the article “Types of responsive web-design” at the Internet source “Habrahabr.ru” (2012) I identified several types of responsive web design:

#### **Rubber**

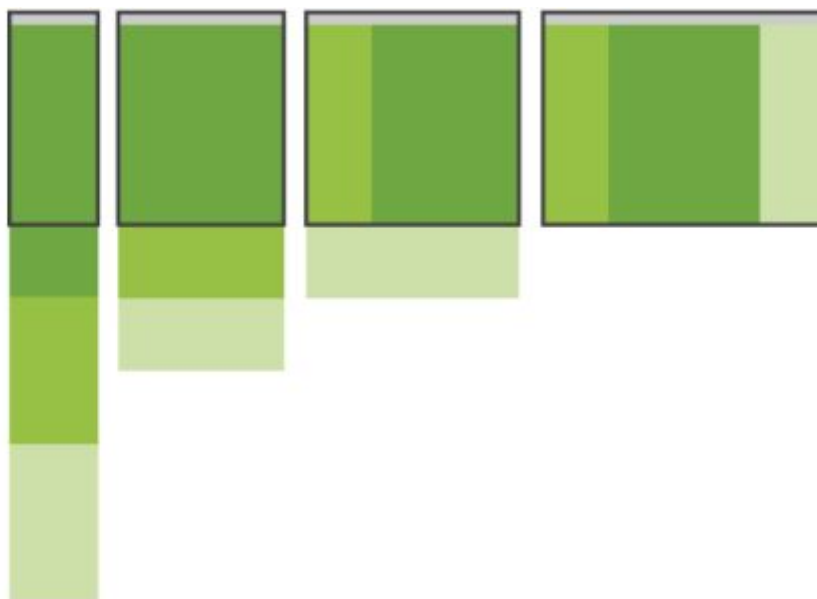
The rubber is a usual design type which is easy for user to understand and simple for a developer to implement. Main blocks are compressed by the width of the screen of the mobile device and if it is not possible they are transformed into one long strip. (Figure 10)



**FIGURE 10. Rubber responsive layout (Habrahabr.ru, 2012)**

#### **Transferring blocks**

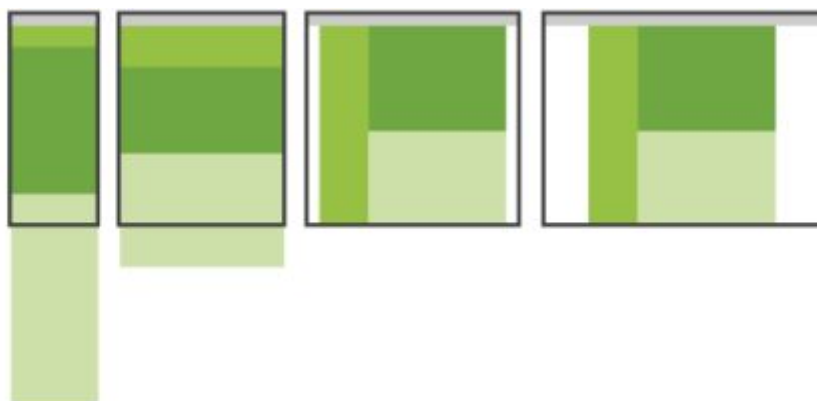
Suitable for multi-column site: when decreasing the width of the screen all additional blocks (sidebars) are transferred to the bottom of the layout (Figure 11).



**FIGURE 11. Transferring blocks (Habrahabr.ru, 2012)**

### **Switching the layouts**

This method is most comfortable for reading the website on different devices: for each screen resolution there is a separate layout. Method requires a great deal of work, therefore it is less popular than the previous two. (Figure 12)



**FIGURE 12. Switching the layouts (Habrahabr.ru, 2012)**

### **Simple method of adaptability**

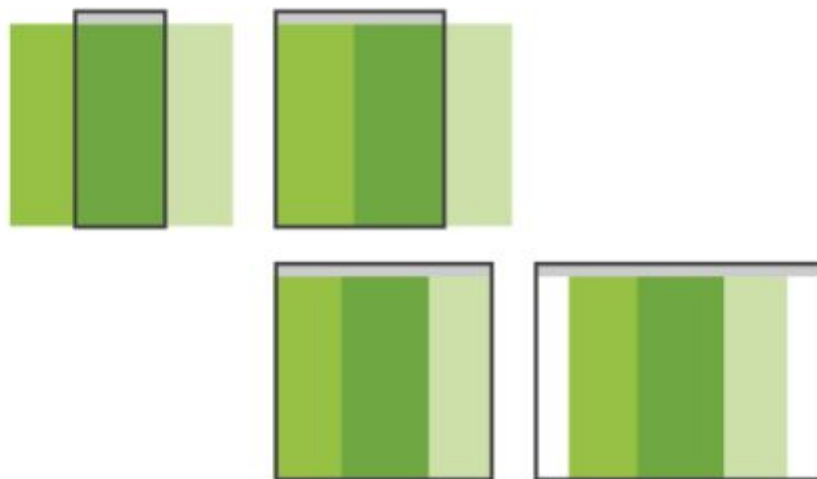
It is the most simple method which is suitable for simple sites. It is achieved just by changing the size of images and text depending on the size of the screen. Is not very popular, because there is no flexibility. (Figure 13)



**FIGURE 13. Simple method of adaptability (Habrahabr.ru, 2012)**

### **Panels**

The method came from mobile applications where additional menu may appear from horizontal or vertical panels. The main drawback is the non-obviousness of action for the user: very unusual to see mobile navigation on the website. But over time, the method can become quite popular. (Figure 14)



**FIGURE 14. Panels (Habrahabr.ru, 2012)**

You need to remember that all these layouts are not universal decisions. For every project it needs to choose more suitable way.

### **3.4 Comparing of mobile site, mobile application and responsive web-design**

Obviously that mobile site, mobile application and responsive web-design have their own advantages and disadvantages. Each of them is suitable for different web-projects. But for understanding what exactly needs to be developed for certain project I have made the comparing of these alternatives in Table 1.

**TABLE 1. Comparing of mobile site, mobile application and responsive web-design**

| <b>Characteristic</b>                           | <b>Mobile version</b>   | <b>Mobile application</b>  | <b>Responsive web-design</b>                      |
|---|---|--|---|
| <b>Compatibility</b>                            | Looks the same on different platforms if developer cares about it | Need to develop separate application for each platform                 | Looks the same on different platforms and screens |
| <b>Devices</b>                                  | Any mobile device   | Just smart phones and tablet PC  | Any device with connection to the Internet        |
| <b>Availability</b>                             | Free access for everyone  | Only for registered customers  | Free access for everyone                          |
| <b>Complexity of using</b>                      | No additional actions   | Needs to be downloaded and installed                                   | No additional actions                             |
| <b>Availability of device functions</b>         | Limited   | Almost fully   | Limited   |
| <b>Availability without Internet connection</b> | No  | Possible on every device   | No  |
| <b>Shortcut</b>                                 | Yes   | Yes  | Yes   |
| <b>Support (update)</b>                         | Modifying is easy   | Possible only in new version, which has to be downloaded and installed | Modifying is easy                                 |
| <b>Loading</b>                                  | Less graphics - less time for loading                             | After installing on the device - loading is fast                       | Less graphics - less time for loading             |
| <b>Time of life</b>                             | No limitations  | Average time of interest to the application is 30 days (Mikheev, 2012) | No limitations                                    |
| <b>Interaction with a user</b>                  | Middle level  | High level   | Middle level                                      |
| <b>Comfort ability during the using</b>         | Middle level  | High level   | Middle level                                      |

Mobile site is suitable for many projects such as big social networks (like facebook.com, it is necessarily), or as companies which are planning to get big audience of mobile users (like internet shops).

Mobile application requires more resources than the other two alternatives. That is why it is not suitable for every situation, even it has many advantages. Application has to be developed only if you are sure that users would use it. For example, if you have small shop in town and sell there shoes, obviously, mobile application is a waste of money.

Responsive web-design is the harmless option. It does not require substantial costs and suitable for every site, does not matter is it a big company like BMW or Google, or it is a small shop in town. But the result will be nice: users can look at your web-pages with comfort from every device they prefer.

### 3.5 Conclusion

Conclusion for this chapter is based on the article “Three disadvantages of responsive web-design comparing with mobile version” (Elekoev, Dranch, 2012). These authors collected the information about availability of mobile version of big companies. (Table 2)

**TABLE 2. Availability of mobile version**

| <b>Company</b> | <b>Mobile version</b>   |
|----------------|---|
| Google         | <a href="http://www.m.google.com/">http://www.m.google.com/</a>   |
| Facebook       | <a href="http://m.facebook.com">http://m.facebook.com</a>   |
| YouTube        | <a href="http://m.youtube.com">http://m.youtube.com</a>   |
| Yahoo          | <a href="http://m.yahoo.com">http://m.yahoo.com</a>   |
| Wikipedia      | <a href="http://ru.m.wikipedia.org/">http://ru.m.wikipedia.org/</a>   |
| Twitter        | <a href="https://mobile.twitter.com/">https://mobile.twitter.com/</a>   |
| QQ             | Not found   |
| Amazon         | <a href="http://www.amazon.com/gp/aw/h.html">http://www.amazon.com/gp/aw/h.html</a>                                     |
| MSN            | <a href="http://mobile.ru.msn.com">http://mobile.ru.msn.com</a>   |
| Yandex         | <a href="http://www.yandex.ru/#hs">http://www.yandex.ru/#hs</a>   |
| WordPress      | <a href="http://wordpress.com/">http://wordpress.com/</a>   |
| Bing           | <a href="http://m.bing.com">http://m.bing.com</a>   |
| Ebay           | <a href="http://hp.mobileweb.ebay.com">http://hp.mobileweb.ebay.com</a>   |
| Babylon        | <a href="http://www.babylon.com/products/mobile/m_iphone.html">http://www.babylon.com/products/mobile/m_iphone.html</a> |
| Vkontakte      | <a href="http://m.vk.com/">http://m.vk.com/</a>   |
| Microsoft      | Not found   |
| Apple          | Not found   |
| Paypal         | Not found   |

Apple, Microsoft, Paypal and Chinese portal QQ decided not to create a special mobile versions of their site. These sites look more or less the same on different devices. Web resources are designed for a mobile browsing also: minimized set of feature and images. Developers of these sites selected layout of elements that display information correctly on any screen size.

Website Microsoft.com - a bright example of responsive web design. On the desktop PC elements are arranged horizontally. On the phone or tablet PC, or on other small screen - elements displayed vertically. Figure 15 shows the difference.



**FIGURE 15. View of Microsoft.com on desktop PC and tablet PC**

Even though most site leaders use mobile version, the choice of Microsoft, Paypal, Apple and others is a responsive design. It shows that there is no single answer to the question “How to adjust to users with mobile devices?”. The debate between web designers will continue for some time more. Some of them demonstrate the advantages of responsive web design, others - of mobile version. Which option to choose depends on the developer.

While fast Internet 4G and big screens of phones are available for a small part of users, the mobile version will continue to dominate in the large and technologically advanced projects. But when browsing from mobile device is no longer a problem, adaptive web design will start gaining ground.

## **4 MAIN ASPECTS OF SUCCESSFUL WEB-PROJECT**

### **4.1 Before programming**

Firstly, you need to evaluate your experience in creating websites. If you absolutely do not understand how to create a website, you will need to read materials or watch special tutorial videos which are available in the internet a big deal.

If you do not have any knowledge in site building, I recommend you to use the special services that will create your site automatically, such as web-constructors. You only have to choose the location of the various elements. This method is rarely used because automatically created sites similar to each other and do not attract visitors.

Next method - use a variety of specialized systems, so-called engines (CMS). According the Internet source called “whatcms.org” the definition of CMS or Content Management System is in the next. It is an application that can be used to manage and organize text, movies, pictures, links and many other types of data. Many of the most popular websites in the world use free and publicly available CMS, such as Wordpress, Joomla and Drupal.

Using this method, you can create a nice web-site that will attract visitors. According the statistics (Builtwith.com, 2014) 47.90% of the sites made on CMS were made by using the WordPress. Second place is taken by Drupal CMS. By using these services website design is achieved by modifying the templates in the admin panel of CMS. Simple interface of admin panel will facilitate understanding of the data and the engines will let you know that creating a website is not such a difficult task.

But how to create a nice website from the scratch? The answer to this question can only be got from experienced programmers. By this method you need to study programming languages such as HTML, CSS, PHP, MySQL. To learn these languages, you will need to spend a few years, so this method is not suitable for everybody.



## 4.2 Classification of web-sites

Before you begin to create a website you need to clearly understand the purpose for which it will be used. Firstly you need to know the classification of sites. That will help you to understand how it has to look like. It will give you an idea about which services are needed and where is the best place to locate them and what kind of design has to be.

Classification, which I use here, is based on the article “Classification of web-sites” (Deaction.com, 2014). The author claims that the classification of sites can be carried out by the method of graphic performance and information content. Such division is quite concerning, because the development of the site implies a close relationship of graphic performance and resource information.

### 4.2.1 Classification by the the visual performance

Performance of website is a very important component. There are several ways to create "decoration" of information that is provided on the website.

**Photo realistic websites.** By the name is easy to understand that the base for the graphic design of this site is real photographic images processed with special programs or used in its original form. (Figure 16)



**FIGURE 16. Example of photo realistic website (taken from the Internet source “webdesignceylon.blogspot.fi”)**

This kind of design is better for specialized companies which want to tell by design to customers what they do. They may produce wood material or make house interior design. Or if background is windows, it could be used for a company which produces good windows for houses.

**Graphic sites.** Interface is based on a drawn graphics. It can vary quite a wide spectrum - from 3D computer images to professional sketches made in the traditional way and then digitized using a scanner or other digital devices. (Figure 17)



**FIGURE 17. Example of graphic website (taken from “niceoneilike.com”)**

If I would some day make the personal web-site, I will prefer to use this kind of design. It is modern style for young people of our period of time. You can use your imagination and draw what ever you want.

**Text sites.** Interface of the site is based on the use of different fonts and sometimes quite complex colors. It should be noticed that such sites have exceptionally fast loading pages. (Figure 18)



**FIGURE 18. Example of text website (habrahabr.ru)**

As an example, I took screen shot of a Russian web-site about programming. People write there articles about new technologies, about hints in web-programming and other issues which are interesting for IT-people. This is informational site and there is minimum of pictures and design.

#### 4.2.2 Classification by the information provided

**Site-card** is the easiest variation of corporate site. Includes several pages (usually 5-7), which are representing the company - business profile, services provided, summary of products, contact information, address, legal details, etc. It does not require complex programming and big cost, as the information rarely changes. Figure 19 is a screen shot of the web-site I made earlier during my practice training for SinunSuomiGroup Oy)

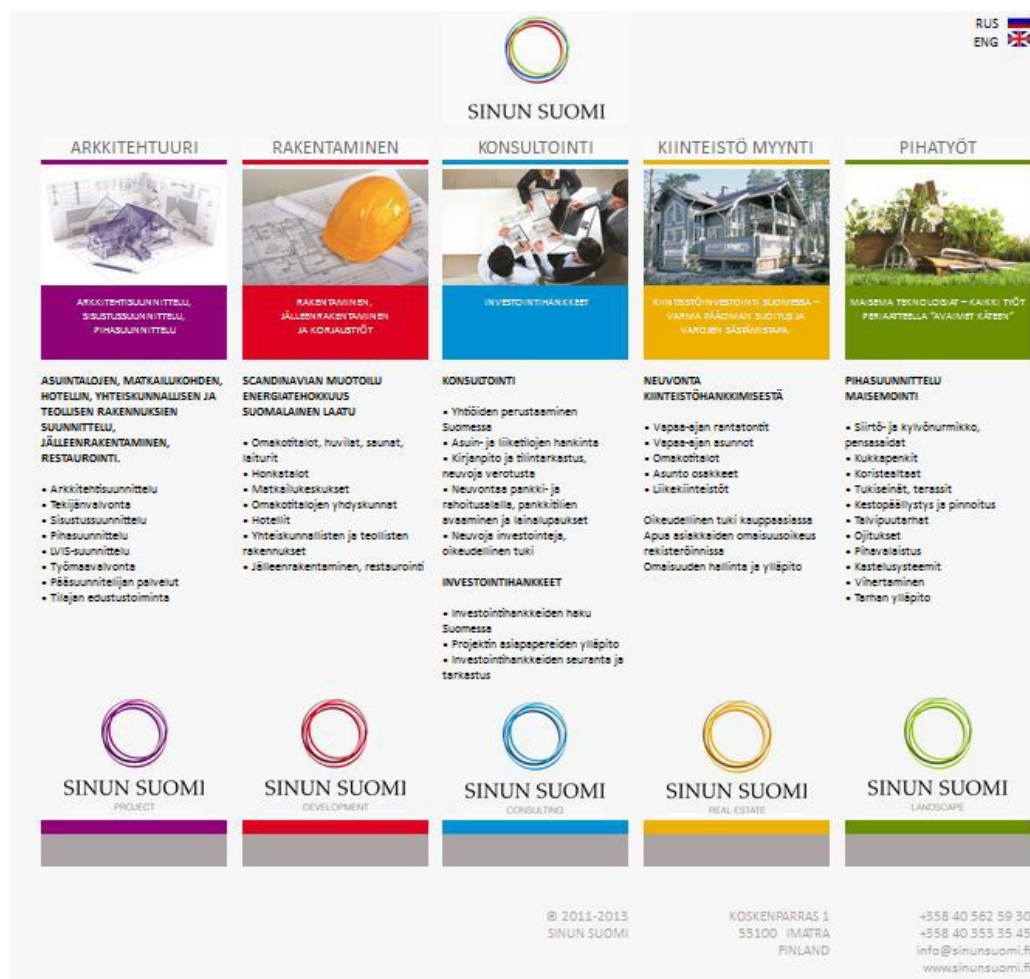


FIGURE 19. Example of site-card website (sinunsuomi.fi)

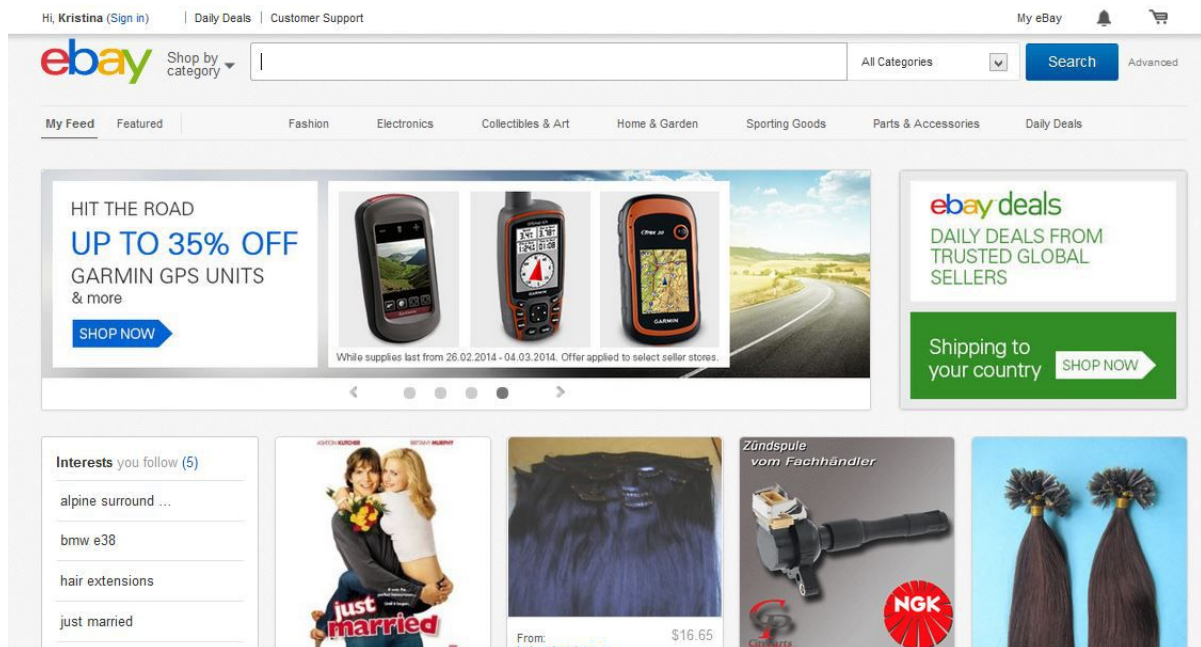
**Promo site** - more complex version, with more branched structure. It may include line of news of company information, more detailed information about the company, its prospects and achievements rather complicated product catalog with descriptions and properties. It usually implies a presence of a certain amount of interactivity to communicate with potential customers and partners more often the system consists of a guest book form and automatically sends e-mail. Such programming of this kind of site is relatively simple, but the support costs are increasing: it is necessary to monitor timely updating of news on the site and if necessary - tracks the user communications through the site. On this site, among other things, it is possible to implement a system of voting for a more detailed study of customer requirements and general market conditions. An example of this kind design is figure 20.

The image shows a screenshot of the MAMK University of Applied Sciences website. The main header features the MAMK logo and navigation links. A large banner at the top right says "Hae päivitys" (Update) with a blue button that says "MAMK on SINUN PAIKAS" (MAMK is your place). Below the banner, there are three columns of information: "Milloä tapahtuu!" (When does it happen?) with a list of dates and events, "Tiedotteet" (News) with a list of dates and titles, and "Tapahtumat" (Events) with a list of dates and titles. A central graphic for "SIVISTYSTASO TESTI" (Civility Level Test) is also present. At the bottom, there is a section for "HAKIJAN OPAS - kevät 2014" (Applicant's Guide - Spring 2014) and a row of partner logos including Talli, Kasarmina, DeXi, Elixiri, and DISEG.

**FIGURE 20.** Example of promo website (mamk.fi)

**Corporate website** - includes information contained in the descriptions of the first two categories of sites and is often complemented continuously updated price for goods and services with detailed descriptions. It requires more sophisticated software and more frequent updates.

**Internet sales** - name is quite arbitrary, it means not only the direct sale of goods (like, internet shops) via Internet order, but also the possibility of doing business over the Internet. That is a possibility of direct communication with business partners, contracts and agreements, as well the system of active search for clients and partners. (Figure 21)



**FIGURE 21. Example of internet - shop website (ebay.com)**

## 5 ADVICES OF SUCCESSFUL DESIGN FOR MOBILE/RESPONSIVE SITES

First of all, I want to point out why the design of the web-site is so important, especially for mobile version and for responsive design. If you think that the appearance of the site is not so important, then why so many companies spend a lot of money for design and do not regret about it. Why web designers spend their days and nights by modifying different things, which at first view are not visible? Because it's worth the cost, which they spend.



Website design it is a necessary and essential element and it will be present in any case. Also the absence of any design - it is also the design. The first task of webmaster is to create design which would not cause negative emotions of targeted visitors. To say in another way, the design should be discreet and neutral (it is suitable for almost any type of site). This kind of web-site can be successful.

It is important to know that there are no objective criteria for beauty, in the sense, that these criteria could be clearly defined and described. Everyone sees beauty in their own way. The same site design can be received differently by visitors. Some of them can think that it is too bright and provocative, some - that it is interesting and unique. It all depends on many factors (gender, age, education, views on life, etc.). Here the conclusion - website design (does not matter how professionally it was made) can not please everybody. In addition, many webmasters forget about the main task of design - focus on the necessary for visitors information but not on design itself.

Of course, successful design is not a one hundred percent attendance of the site. The context of the site also is needed to be checked carefully and correctly be placed on your site.

In this chapter, I will point out the main points of successful design.

## **5.1 Content**

This section is based on the article “Five content marketing best practices to drive your design“ (Aaliyah Madadi, 2012).

Smart phones and tablets PC have small screens compared with desktop PCs and laptops. Because of this, the design of site has to be optimized for mobile users and must be different from the standard appearance of web pages.

Pages should not look over-saturated by text and visual elements, to give opportunity for tablet users be able to quickly find the desired partition and data. You should prefer simple

design and a two-column layout or single. In this case there will no need for horizontal scrolling.

Visual saturation of page is what attracts your attention at first time. According to visualization of the page, the user makes first evaluation, which has enough influence on the perception of the content. It means that text should not look too complicated and cluttered. It is necessary to discharge the text by visual elements that help understand text - tables, pictures and info-graphics.

Visual hierarchy - it is the order in which our brain perceives and categorizes content. Creating a visual hierarchy is an important element in the development of design and can be achieved by creating a contrast between the different elements on the page as shown in Figure 22.



**FIGURE 22. Different visual saturation (Aaliyah Madadi, 2012)**

Obviously, that the right image less cluttered than the left. Using visual hierarchy in the design of content will allow readers quickly extract the main idea and decide continue reading of page or not.

Visual hierarchy can be achieved by:



- Dividing the content into different sections
- Using the visual components
- Using the space between paragraphs

## **5.2 Navigation**

Web visitors do not like to open the page after page to find the desired information. That is why you need to provide them the opportunity to get the necessary data with a single click from any page of the site. This applies to both mobile and desktop traffic.

Easy and clear navigation will help to make the most important sections and pages of the site visible and accessible. Also you need to remember that too small navigational elements are uncomfortable for mobile users because of the small size of the screens of smart phones and tablets PC - website navigation should allow user to make easy click on the desired link or menu item by finger. Clearly labeled buttons with high resolution in navigation is the best choice. Clickable pictures, unobtrusive text links or small dots that are used on the standard sites are not suitable for mobile versions.

From figure 23 it is possible to see, that with only four buttons in the navigation this site is simple and understandable in using.

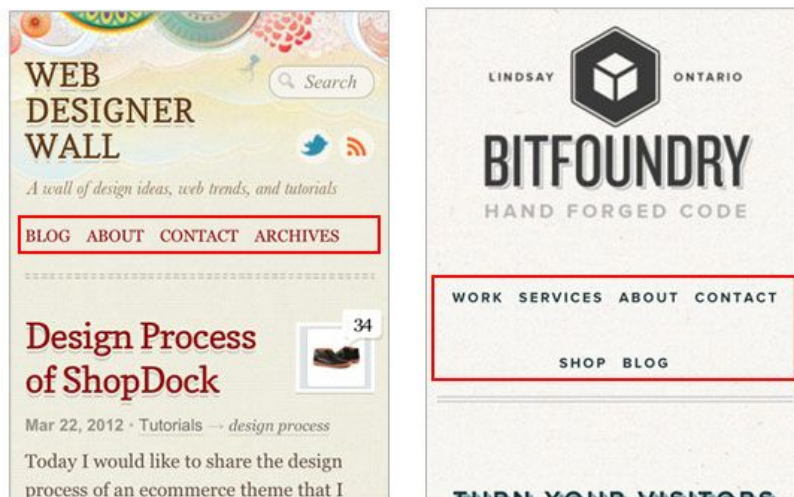


**FIGURE 23. Example of comfortable responsive design (loewshotels.com)**

Harbour (2012) defined several methods which help to improve quality of the mobile web-site:

#### **Method 1: Decreasing the number of buttons in menu**

Limit the number of the main navigation buttons and instead add submenus. (Figure 24)



**FIGURE 24. Decreasing the number of buttons in menu (taken from the Internet source “ruseller.com”)**

### Method 2: Decreasing the number of clicks

Keep the number of actions to be performed on the mobile device to a minimum. Small amount of clicks to find the needed information will always be better. Also it is very easy to make a mistake. That is why there always has to be "back" button, which is easy to find.

### Method 3: Scrolling

Keep the most important elements of the navigation at the top. Mobile devices have different screen sizes, so think about the importance of each category. Categories, which the user has to scroll to find, should be less important.

### Method 4: Adaptive button

Mobile users see site differently than computer users. Therefore adapt the menu for mobile sites in a vertical position. In the menu, it is best to place no more than 5 categories.

### Method 5: Submenus

Submenus are also known as folding navigation. It is convenient to sites that require on-screen display contents. (Figure 25 and 26)

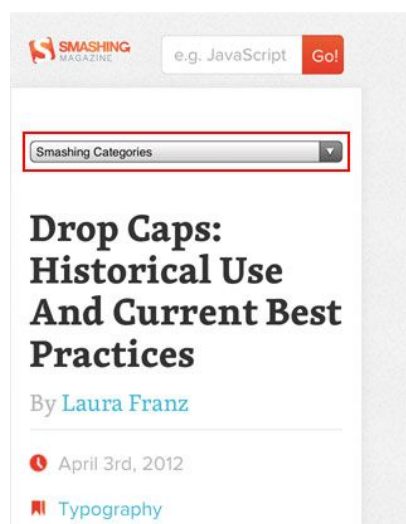


FIGURE 25. Example of submenus (taken from the Internet source “ruseller.com”)



**FIGURE 26. Second example of submenus (taken from the Internet source “ruseller.com”)**

In addition, mobile users may have problems if they need to enter text on mobile devices. Pre-filled form will help visitors to find all necessary information with minimal need to enter letters.

### **5.3 Loading**

According to statistics, 47 percents of visitors expect a website to load in less than 2 seconds, and 40 percents of visitors will leave the website if the loading process takes more than 3 seconds. Therefore we can not neglect the simplicity and easiness of the site. (Work, 2011)

There are additional ways to increase the speed of opening pages. For example:

- No flash animation. Leave it for the basic version of the site (if you implement mobile version) or do not use it at all (if you implement responsive web-design).
- High resolution photos also slow down the opening pages. You need to use only really necessary pictures, and try to minimize their size.

### **5.4 Font and images**

I think that everybody understands that small font size is a bad idea. Especially for mobile and

tablet PC users it is really important. No one will read the text if it is not comfortable. Even if they continue reading, people will think that the company does not care about their customers.

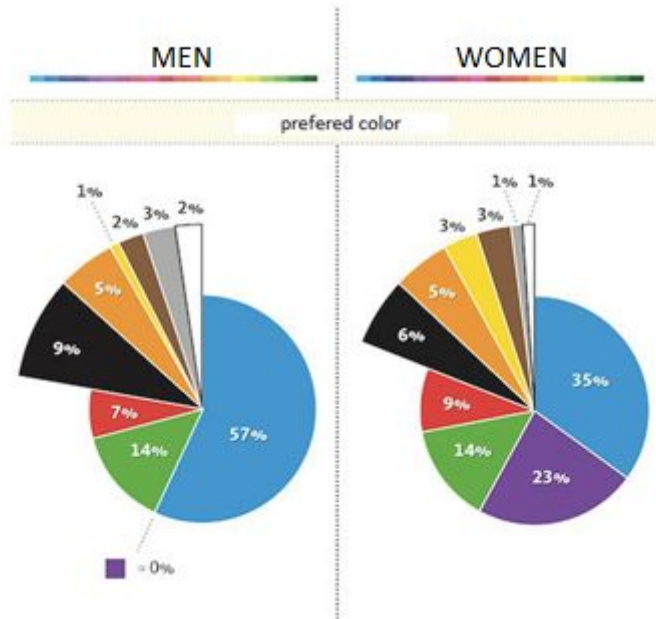
Using of images for the mobile version, or responsive site should be minimal as possible. Of course, if it is a site about the gallery, the large presence of the pictures will take place. But in this case it is necessary to reduce the size of photos, and accordingly have to neglect the quality.

## **5.5 Colors**

Colors play an important role in the overall design of the content. It is clear, that which color to use depends on what color creator of the site likes. But for the success of project you need to consider the opinions of the customers.

In article “How to define color of the web-site” (SkyTeaser, 2014) author writes about colors which people prefer in design of the site. I collected the most important information from this article.

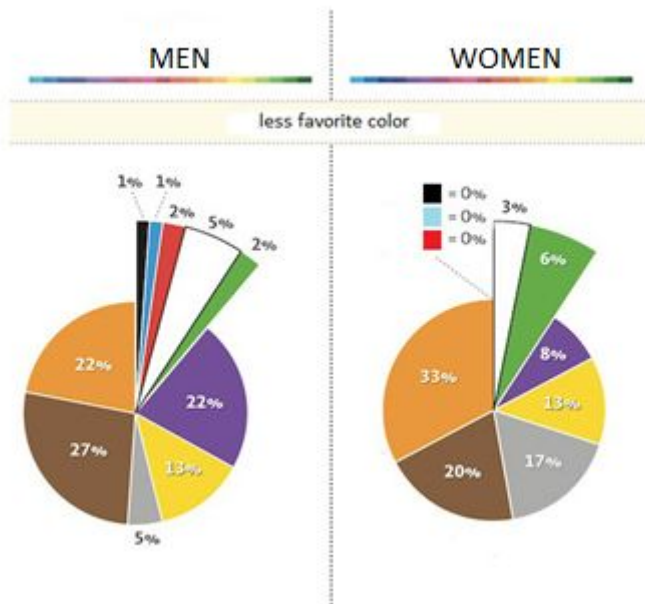
Firstly, women and men prefer different colors, so it is very important before creating a site to understand who is a target audience. Research shows that women are loyal to the blue, purple and green colors on the site. At the same time, men mostly like blue, green and black colors. Figure 27 shows the whole data about preferred colors.



**FIGURE 27. Preferred color for men and women (Skyteaser, 2014)**

Both categories at the same time consider that completely unsuccessful colors are orange, brown and gray, so it's best to avoid them or use to a minimum in the color palette of site.

Figure 28 shows the whole data about less preferred colors.



**FIGURE 28. Less preferred color for men and women (Skyteaser, 2014)**

Mostly, the popular web resources are created for both men and women equally and in this case you need to use a neutral color scheme for website, or colors that are pleasing in both categories, such as blue.

It seems that preference for a particular color is keeping during lifetime, but statistics say that it is absolutely not true. With age, people change not only the view of life, but also tastes. According to studies, young people prefer warm and bright color combinations on the site. So if you create a site, which should be mostly used by young people, combine red, orange, pink and yellow colors in the palette, but at the same time, do not overdo it, because if the site provides a long stay overabundance of these colors it can strain a person.

As older a person becomes as more he loves the calm and cool color combinations. Blue, red and black become associated with the negative, because of the perception of bursts symbolism.

And finally, you must remember about emotions, because most of the specific color combinations produce different feelings. So, before you design the site, think about what emotions it should call and how these emotions will be associated with your services or products. Everything should be in harmony, especially the idea and its realization.

## **6 IMPLEMENTING THE RESPONSIVE WEB-DESIGN**

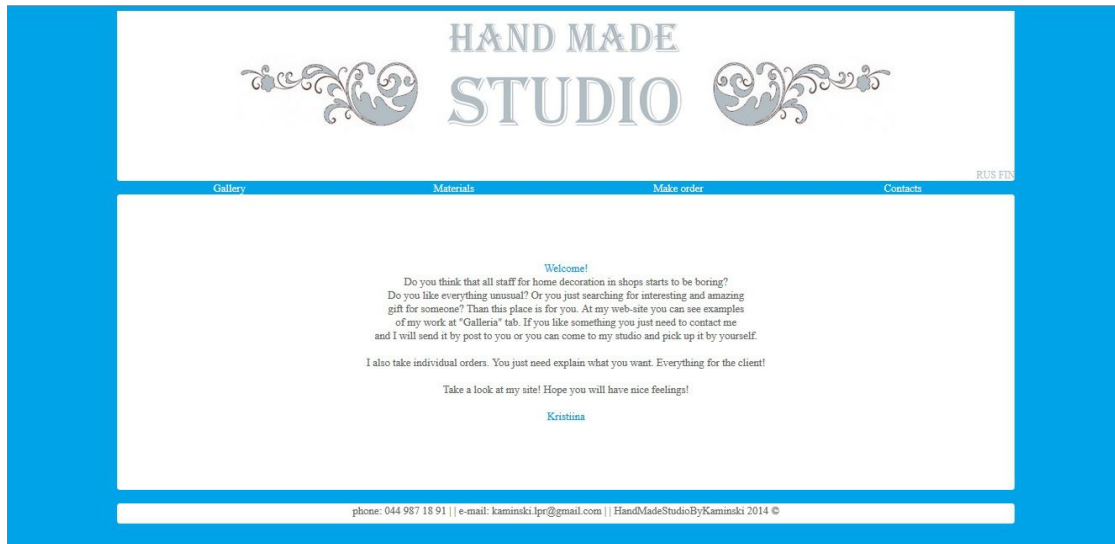
### **6.1 Introduction**

In practical part of my thesis I decided to implement responsive web-design. Mobile version of the site or mobile application is not needed in my case, because there is no big number of mobile users. Therefore, adaptive site is more suitable and also saves the developer's time and cost.

I have the web site "Hand made studio", which can be found at [final.url.ph](http://final.url.ph) web address. This web-site is made according to aspects for successful design which I have pointed out in the

theoretical part.

This site is an example of the site-card category. There is just 5 pages. Figures 29, 30, 31, 32 and 33 demonstrate the desktop view of pages.



**FIGURE 29. “Hand made studio” web-site - Desktop PC view - Main page**

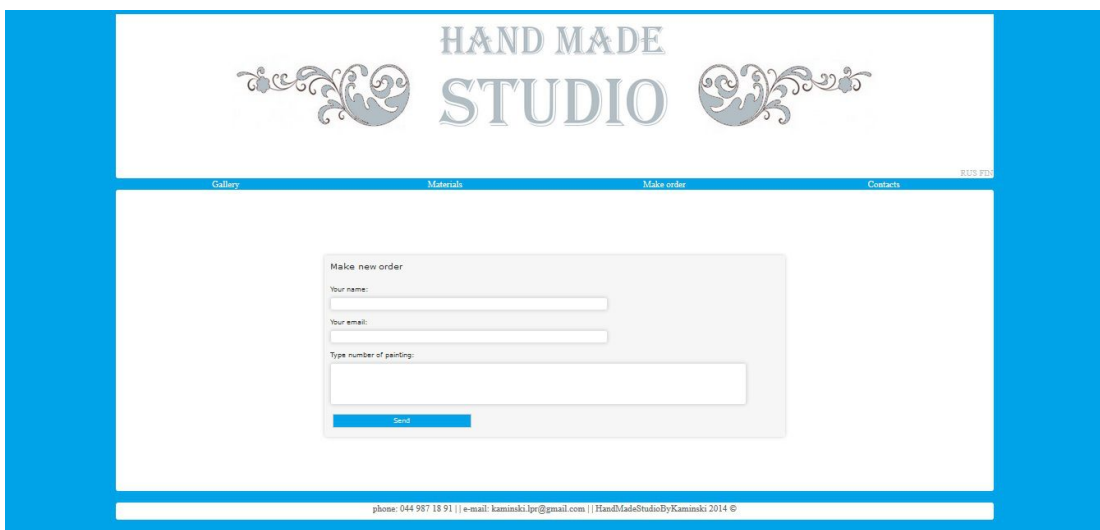


**FIGURE 30. “Hand made studio” web-site - Desktop PC view - Gallery page**

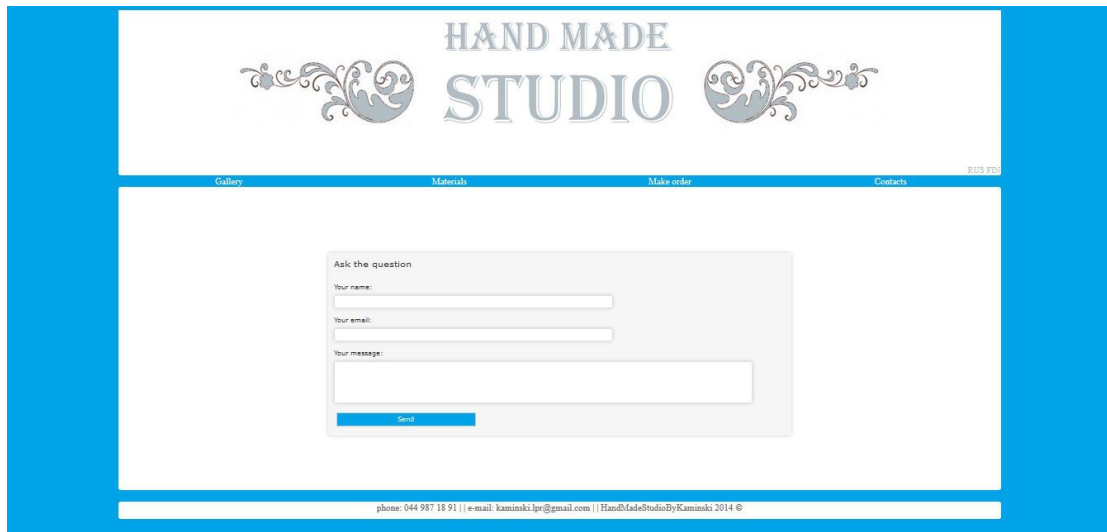




**FIGURE 31. “Hand made studio” web-site - Desktop PC view - Materials page**



**FIGURE 32. “Hand made studio” web-site - Desktop PC view - Make order page**



**FIGURE 33. “Hand made studio” web-site - Desktop PC view - Contacts page**

On this site the content is at the minimum level. There are just a couple of sentences on the main page.

Because the web-site is about hand made things (especially about paintings), it is not difficult to suppose that mostly the visitors of this site are women. But we also should not forget about the possibility that men can be our customers. According to statistics (SkyTeaser, 2014) blue color is the most suitable for our case. That is why I have used simple blue-white style.

I used the default font. It is the most safe way, because sometimes browsers do not support certain fonts. And now we do not need any special design.

In tab gallery I am planning to have a lot of pictures, but I am using Cincopa free virtual gallery, because it reduces the time for loading.

### **6.1.1 Codes**

In this section I describe the programming structure of the project.

In Appendices 1, 2, 3, 4, 5 and 6 I presented all codes which I have now and which are not made according to requirements of responsive web-design:

- Style.css;

- Index.php;
- Gallery.php;
- Materials.php;
- Makeorder.php;
- Contacts.php.

All images are located in the folder called “images”.

I have two forms at the site: for making new order and for contacting the owner. By filling and sending these forms the owner gets e-mails. For making them working several files are needed:

- JavaScript file is located in the separate folder called “js”.
- PHP file is located together with other files in the main folder.

Codes of these files are located in Appendices 7 and 8.

### **6.1.2 Mobile and tablet PC views**

For understanding the problem of HandMadeStudio site, relatively mobile devices, I took some screen shots. Figures 34, 35, 36 and 37 demonstrate that problem. I use [plastilin5.com/tools/](http://plastilin5.com/tools/) for testing web-site in different resolutions.



**FIGURE 34. Mobile view without responsive web-design**



**FIGURE 35. Mobile view without responsive web-design**



**FIGURE 36. Tablet PC view without responsive web-design**



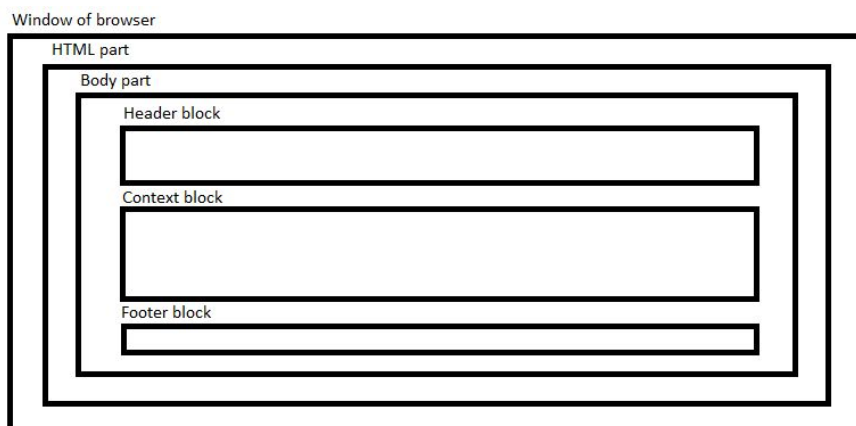
**FIGURE 37. Tablet PC view without responsive web-design**

## 6.2 Responsive web-design

As we can see from Figures 34, 35, 36 and 37 the view of the web-site is not suitable for mobile devices. Now I need to change the existing code according the requirements of responsive design for displaying it correctly. Firstly, I will add next text to the beginning of style.css file:

```
html{
height:100%;
width: 100%;
}
```

For understanding why we need this part in code I have made Figure 38:



**FIGURE 38. Structure of the web page**

When we give width is 100% to any block it stretches according to the size of the parent block. That is why I point out width and height of HTML part as 100%. Now HTML part will stretch to its parent block - window of browser.

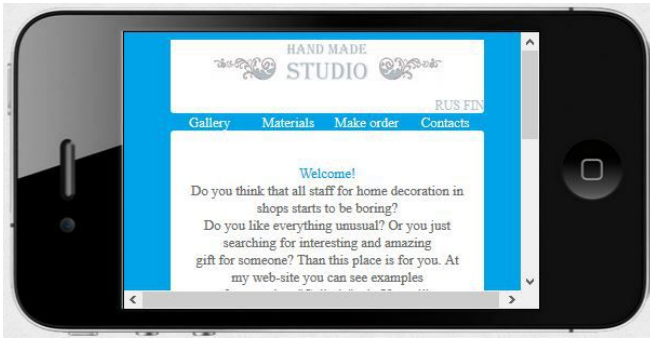
According to this principle you need to modify fixed size of other blocks to percentage value in style.css file. In Table 4 you can see these modifications:

**TABLE 4. Changing to percentage values**

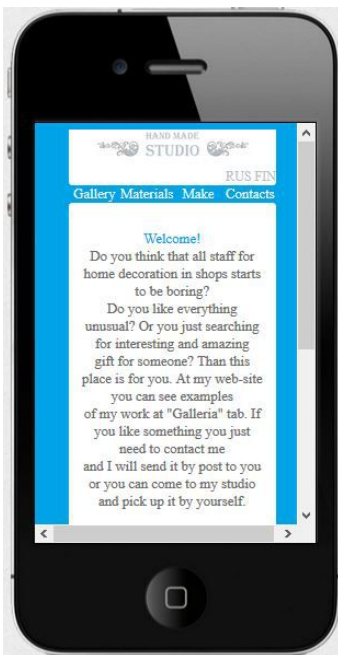
| Before   | After   |
|--|---|
| <pre> body { height: 100%; width: 100%; } #header{ width: 980px; }     #label{ width:980px; }     #langbar{ width:980px; } #menu{ width: 980px; }     .item{ width: 245px;/*980px(the total width of the menu) is divided by 4. We get 245ps per each block*/ height: 20px; }     .item:hover{ height: 20px; }  a:hover { height: 20px; } #context{ width:980px; padding: 10px; </pre> | <pre> body { height: 100%; width: 100%; } #header{ width:80%; }     #label{ width:100%; }     #langbar{ width:100%; } #menu{ width: 80%; }     .item{ width: 25%;/*100%(the width of total menu) is divided by 4. We get 25% per each block*/ height: 100%; }     .item:hover{ height: 100%;/*the whole area of block*/ }  a:hover { height: 100%; } #context{ width:80%; padding: 5%;/*just small value for </pre> |

|  |   |
|--|---|
| <pre> }  .sidebarForm { width: 420px; } .sidebarForm .input { width: 170px; height: 20px; } .sidebarForm .input input { width: 165px; height: 26px; } .sidebarForm .textarea { height: 70px; width: 320px; } .sidebarForm .textarea textarea { width: 316px; height: 66px; } .sidebarForm button { width: 150px; height: 25px; margin: 5px 0 15px 135px; }  #footer{ width:980px; } #galleria{ width:980px; } </pre> | <pre> padding*/ } /*no special calculation for the forms. Just put here any preferable percentage value*/ .sidebarForm { width: 60%; } .sidebarForm .input { width: 60%; height: 20px; } .sidebarForm .input input { width: 55%; height: 26px; } .sidebarForm .textarea { height: 70px; width: 90%; } .sidebarForm .textarea textarea { width: 90%; height: 70px; } .sidebarForm button { width: 30%; height: 25px; margin: 5px 0 15px 15px; /*last value is changed for displaying Send button on the left side, not on the right like it was before.*/ } #footer{ width:80%; } #galleria{ width:80%; } </pre> |
|--|---|

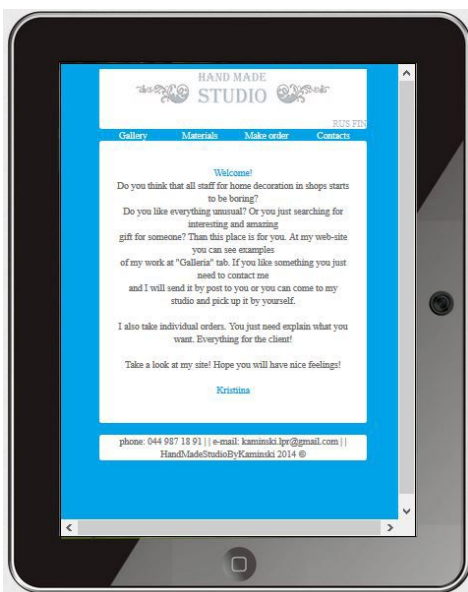
Figures 39, 40, 41 and 42 show the result we got after modifications:



**FIGURE 39. Mobile view with partly responsive web-design**



**FIGURE 40. Mobile view with partly responsive web-design**



**FIGURE 41. Tablet PC view with partly responsive web-design**





**FIGURE 42. Tablet PC view with partly responsive web-design**

On this stage the web-site is somehow common with responsive design. But still user can not read the content with comfort. The text is too small. For solving this problem I will use "Media Types". Learning portal W3school.com gives next definition for it: some CSS properties are only designed for a certain media. For example the "voice-family" property is designed for aural user agents. Some other properties can be used for different media types. For example, the "font-size" property can be used for both screen and print media, but perhaps with different values. A document usually needs a larger font-size on a screen than on paper, and sans-serif fonts are easier to read on the screen, while serif fonts are easier to read on paper.

In my case, I need to use media screen type (used for computer screens). It works by next principle: for each resolution you need to write different design values.

For implementing media screen type you need to know the resolution of screens. The web site, where I test the displaying of web-site on different devices - plastilin5.com - present also the standard resolutions. (Table 5)

**TABLE 5. Screen resolutions**

| Device    | Resolutions     |
|-----------|-----------------|
| Phone     | 320 px * 480 px |
| Tablet PC | 600 px * 800 px |

For making new and more comfortable design for mobile phone with using the media screen type I have to write new values, which will be applied only to resolution, which I specified in the first row. I will add the next code to the end of the existing style.css file:

```
@media screen and (min-width:320px) and (max-width:480px) {
#header{
width:90%;/*I have increased by 10% for making the useful area of site bigger*/
}
#langbar{
font-size: 15px;/*I have increased the size of text also.it was too small for mobile screen*/
}
#menu{
width: 90%;/*I have increased by 10% for making useful area of site bigger*/
font-size: 25px;/*I have increased the size of text also*/
}
.item{/*For making menu more comfortable I have decided to display blocks not horizontally
but vertically. For that I need to write next...*/
width: 100%;/*now width of one category is 100% instead 25%*/
float: none;/*blocks will be displayed horizontally, now they are not connected in line*/
}
#context{
width:90%;/*I have increased by 10% for making useful area of site bigger*/
font-size: 25px;
}
#footer{
width:90%;/*I have increased by 10% for making useful area of site bigger*/
}
#galleria{
width:90%;/*I have increased by 10% for making useful area of site bigger*/
height:100%;
height:auto !important;/*needed for stretch the block according the content*/
```

```

}

/*contact and make order forms*/

.sidebarForm {

width: 90%;/*I increased the width to stretch form in context block*/

}

.sidebarForm .input {

width: 90%;/*I increased the width to stretch input field in form block*/

}

.sidebarForm .input input {

width: 60%;/*I increased the width to stretch input field in form block*/

}

.sidebarForm .textarea {

width: 90%;/*I increased the width to stretch textarea field in form block*/

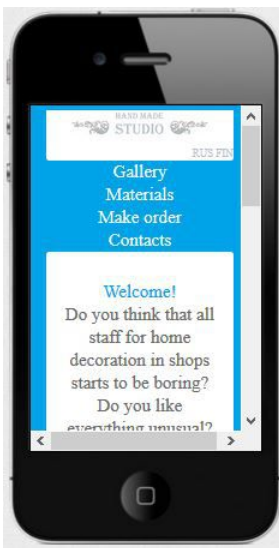
}

.sidebarForm button {

width: 30%;/*I increased the width to stretch button in form block*/}}

```

Figure 43 present the mobile view of the main page after last modification (modification were applied to all pages):



**FIGURE 43. Mobile phone - Responsive view**

After the last modifications only view on the mobile devices has been changed - size of font became bigger and menu became more comfortable for touchscreen. Desktop and tablet PC still have the same view as it was previously.

Now I want to think about tablet PC users. We need to repeat the last procedure but with another resolution type. Next part of code has to be added to the end of style.css file:

```
@media screen and (min-width:600px) and (max-width:800px) {
  /*I have change the resolution- was 320*480 - now 600*800*/
  #header{
    width:85%;/*I increased only by 5% - no need to increase more. Screen of Tablet PC is bigger
    that of mobile phone*/
    font-size: 20px;/*I have made font a bit bigger*/
  }
  #langbar{
    width:100%;
    font-size: 20px;
  }
  #menu{
    width: 85%;/*I increased only by 5% - no need to increase more*/
    font-size: 25px;
    height:30px;/*I increased the height. Because now letters in menu bigger and categories
    are located in horizontal line*/
  }
  .item{/*I did not do any changes here. You can do not add this to the code.*/
    width: 25%;
    float: left;
  }
  #context{
    width:85%;/*I increased only by 5% - no need to increase more*/
    font-size: 25px;
```

```

}

#footer{
width:85%;/*I increased only by 5% - no need to increase more*/
font-size: 20px;
}

#galleria{
width:85%;/*I increased only by 5% - no need to increase more*/
height:100%;
height:auto !important;
}}

```

Now the view on the tablet PC has been changed also. Figures 44 and 45 can prove it.



**FIGURE 44. Tablet PC - Responsive view**



**FIGURE 45. Tablet PC - Responsive view**

I am sure that everyone can agree with me that new displaying of the web-site is much better and more comfortable for the users than the previous one.

## 7 CONCLUSION

Nowadays a big audience of Internet users is mobile customers, that is why the aim of my thesis was to find out how to create and design web site which adapts to the different kinds of end devices, and will be accepted and liked by the customers.

In theory part, I have collected the main points about creating successful web-design such as: which colors to use in decoration, how to place content on the web-page and so on. Also I considered several options to care about mobile users. There are three alternatives: mobile version of the site, mobile application and responsive web-design. I described each of them, explained their advantages comparing to each other, and disadvantages too. In fifth chapter, I mentioned main aspects which have to be taken into account when creating web-site for the mobile audience.

In practical part, I implemented web-site with responsive design, according the advices, which I mentioned in theory part. I explained all the main steps of changing normal web-site to the

responsive. After the modifications the web-site is suitable for comfort viewing also on the mobile phone and tablet PC.

The main limitation of my study was that in practical part only a responsive design was used. Mobile version and mobile application were beyond the scope of my study, but it is important to study all implementation methods.

In future, I am planning to develop mobile version of this site. It will be interesting to compare the creating process and interface difference of responsive web design and mobile version of the site.

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## APPENDIX 1 (1) style.css

```
/*style for body. Height and width are needed for making the border of the window*/
body {
background: #00a2e8;
height: 100%;
width: 100%;
}

/*style for header.*/
#header{
background: #ffffff;
color: #b2bdc4;
width: 980px;/*I have stable width now. I did not write height here, because it will depend
on the height of the picture*/
text-align: center;
font-size: 15px;
margin: auto auto;
border-radius: 4px;/*Make corners of block round*/
}

    /*block with the picture in header*/
    #label{
width:980px;/*I have stable width now*/
    }

    /*include links to other language version of the site*/
    #langbar{
width:980px;/*I have stable width now*/
text-align: right;
    }

/*style of menu*/
#menu{
background: #00a2e8;
color: #ffffff;
height: 20px;/*I have stable height now*/
width: 980px;/*I have stable width now*/
text-align: center;
margin: auto auto;
font-size: 100%;
}

    /*style of category in the menu*/
    .item{
```

## APPENDIX 1 (2) style.css

```
width: 245px;/*980px/4 is 245px*/
height: 20px;
float: left;/*is need to display block at one line, otherwise it will be displayed one
under another*/
border-radius: 4px;
}

/*style of category when user hovers the mouse*/
.item:hover{
background: #ffffff;
color: #00a2e8;
height: 20px;
}

/*style of link when user hovers the mouse*/
a:hover {
color: #00a2e8;
height: 20px;
}

/*style of the context*/
#context{
background: #ffffff ;
color: #696969;
width:980px;/*I have stable width now*/
margin: auto auto;
padding: 10px;
box-sizing: border-box;
border-radius: 4px;
text-align: center;
}

/*Design part for the forms in "contacts" and "make order" tabs*/
@charset "utf-8";

.sidebarForm {
background: #f6f6f6;
box-shadow: 0 0 5px #ccc;/*Makes the shadows*/
-webkit-box-shadow: 0 0 5px #ccc;/*for IE*/
-moz-box-shadow: 0 0 5px #ccc;/*for Firefox*/
width: 420px;
}

#cor5 {
```

## APPENDIX 1 (3) style.css

```
border-radius: 5px;
-moz-border-radius: 5px;/*for Firefox*/
-webkit-border-radius: 5px;/*for IE*/
}

.sidebarForm h4 {
font: 14px Verdana;
color: #333333;
text-align: left;
padding: 10px 10px 0 10px;
}

.sidebarForm label {
font: 12px Verdana;
color: #333;
padding: 10px;
}

.sidebarForm .input {
width: 170px;
height: 20px;
overflow: hidden;/*if content overflow the block it is hidden*/
background: white;
border: solid 1px #DFE2E5;
margin: 5px 0 10px 10px;
box-shadow: 0 0 5px #ccc;
-webkit-box-shadow: 0 0 5px #ccc;/*for IE*/
-moz-box-shadow: 0 0 5px #ccc;/*for Firefox*/
}

.sidebarForm .input input {
width: 165px;
height: 26px;
background: white;
margin: -3px 0 0 -5px;
padding: 0px 8px;
border: none;
background: transparent;
}

.sidebarForm .textarea {
height: 70px;
width: 320px;
overflow: hidden;/*if context overflow the block it is hidden*/
```

## APPENDIX 1 (4) style.css

```
background: white;
border: solid 1px #DFE2E5;
margin: 5px 0 10px 10px;
box-shadow: 0 0 5px #ccc;
-webkit-box-shadow: 0 0 5px #ccc; /*for IE*/
-moz-box-shadow: 0 0 5px #ccc; /*for Firefox*/
}

.sidebarForm .textarea textarea {
width: 316px;
height: 66px;
background: white;
border: none;
resize:none; /*Not possible to change the size of text area by user*/
}

.sidebarForm button {
border: 2px #ccc solid;
width: 150px;
height: 25px;
font: 12px Verdana;
font-weight: 700;
color: #FFFFFF;
background-color: #cc0000;
padding-bottom: 2px;
margin: 5px 0 15px 135px;
}

/*style of the footer*/
#footer{
background: #ffffff ;
color: #696969;
width:980px; /*I have stable width now*/
margin: auto auto; /*Margin display block at the center of the window*/
margin-bottom: 10px; /*makes the padding from the bottom border*/
text-align: center;
border-radius: 4px; /*Make corners of block round*/
height: 30px;
}

/* style for the context block at gallery tab. Needed because there is different style compared
with other tabs*/
#galleria{
background: #ffffff ;
```

**APPENDIX 1 (5)**  
**style.css**

```
color: #696969;
width:980px;/*I have stable width now*/
height: 100%;/*used 100% because in this block is situated the gallery, and number of pictures
can be different*/
padding-left: 4%;
padding-top: 4%;
padding-right: 4%;
margin: auto auto;
box-sizing: border-box;
border-radius: 4px;/*Make corners of block round*/
text-align: center;
height:auto !important; /*to stretch according to the context*/
}
```

## APPENDIX 2 (1) index.php

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title>HM-Studio</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
  <meta http-equiv="Content-Type" content="text/html; charset=windows-1251" />
</head>
<body>
  <div id="header">
    <div id="label">
      <a style="text-decoration: none;" href="http://final.url.ph/index.php">
        </img>
      </a>
    </div>
    <div id="langbar">
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-ru.php">
        RUS
      </a>
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-fi.php">
        FIN
      </a>
    </div>
  </div>

  <div id="menu">
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/galleria.php">
      <div class="item">
        Gallery
      </div>
    </a>

    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/materials.php">
      <div class="item">
        Materials
      </div>
    </a>
  </div>
</body>
</html>
```

## APPENDIX 2 (2)

### index.php

```
<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/makeorder.php">
    <div class="item">
        Make order
    </div>
</a>

<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/contacts.php">
    <div class="item">
        Contacts
    </div>
</a>
</div>

<div id="context">

    <p>
        <font color="#00a2e8">Welcome!</font><br>
        Do you think that all staff for home decoration in shops starts to be boring?
<br>Do you like everything unusual? Or you just searching for interesting and amazing
<br>gift for someone? Than this place is for you. At my web-site you can see examples<br>of
my work at "Galleria" tab. If you like something you just need to contact me<br>and I will
send it by post to you or you can come to my studio and pick up it by yourself.<br><br>
        I also take individual orders. You just need explain what you want. Everything
for the client!<br><br>
        Take a look at my site! Hope you will have nice feelings!<br><br>
        <font color="#00a2e8">Kristiina</font>
    </p>
</div>
<div id="menu">
    <!--is needed for empty line space between context block and footer-->
</div>
<div id="footer">
    phone: 044 987 18 91 | | e-mail: kaminski.lpr@gmail.com | | HandMadeStudioByKaminski
2014 ©
    </div>
</body>
</html>
```



## APPENDIX 3 (1)

### gallery.php

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title>HM-Studio</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
</head>
<body>
  <div id="header">
    <div id="label">
      <a style="text-decoration: none;" href="http://final.url.ph/index.php">
        </img>
      </a>
    </div>
    <div id="langbar">
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-ru.php">
        RUS
      </a>
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-fi.php">
        FIN
      </a>
    </div>
  </div>
  <div id="menu">
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/galleria.php">
      <div class="item">
        Galleria
      </div>
    </a>
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/materials.php">
      <div class="item">
        Materials
      </div>
    </a>
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/makeorder.php">
      <div class="item">
        Make order
      </div>
    </a>
  </div>
</body>
</html>
```

## APPENDIX 3 (2)

### gallery.php

```
</div>
</a>
<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/contacts.php">
  <div class="item">
    Contacts
  </div>
</a>
</div>
<div id="galleria">
  <!--For making nice gallery I have used free source called Cincopa. Part of code
located in the <div id="galleria"></div> provided by Cincopa.com-->
  <div id="cp_widget_ec668070-0608-4375-9294-b99eba029590">
    ...
  </div>
  <script type="text/javascript">
    var cpo = []; cpo["_object"] =
"cp_widget_ec668070-0608-4375-9294-b99eba029590";
    cpo["_fid"] = "AcBAw5bY_Et1";
    var _cpmp = _cpmp || []; _cpmp.push(cpo);
    (function () {
      var cp = document.createElement("script");
      cp.type = "text/javascript";
      cp.async = true;
      cp.src = "http://www.cincopa.com/media-platform/runtime/libasync.js";
      var c = document.getElementsByTagName("script")[0];
      c.parentNode.insertBefore(cp, c);
    })();
  </script>
  <noscript>
    Powered by Cincopa
    <a href='http://www.cincopa.com/video-hosting'>
      Video Streaming Hosting
    </a> solution.<span>Hand
Made</span><span>Works</span><span>height</span><span>
310</span><span>width</span><span> 690</span><span>originaldate</span><span> 1/1/0001
6:00:00 AM</span><span>height</span><span> 359</span><span>width</span><span>
536</span><span>originaldate</span><span> 1/1/0001 6:00:00
AM</span><span>height</span><span> 614</span><span>width</span><span>
1364</span><span>originaldate</span><span> 1/1/0001 6:00:00
AM</span><span>height</span><span> 450</span><span>width</span><span>
450</span><span>originaldate</span><span> 1/1/0001 6:00:00
AM</span><span>height</span><span> 543</span><span>width</span><span>
```

## APPENDIX 3 (3)

### gallery.php

```
468</span><span>originaldate</span><span> 1/1/0001 6:00:00
AM</span><span>height</span><span> 600</span><span>width</span><span>
474</span><span>originaldate</span><span> 1/1/0001 6:00:00 AM</span>
    </noscript>
</div>
<div id="menu">
    <!--is needed for empty line space between context block and footer-->
</div>
<div id="footer">
    phone: 044 987 18 91 | | e-mail: kaminski.lpr@gmail.com | | HandMadeStudioByKaminski
2014 ©
</div>
</body>
</html>
```

## APPENDIX 4 (1)

### materials.php

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title>HM-Studio</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
  <meta http-equiv="Content-Type" content="text/html; charset=windows-1251" />
</head>
<body>
  <div id="header">
    <div id="label">
      <a style="text-decoration: none;" href="http://final.url.ph/index.php">
        </img>
      </a>
    </div>
    <div id="langbar">
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-ru.php">
        RUS
      </a>
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-fi.php">
        FIN
      </a>
    </div>
  </div>
  <div id="menu">
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/galleria.php">
      <div class="item">
        Gallery
      </div>
    </a>
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/materials.php">
      <div class="item">
        Materials
      </div>
    </a>
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/makeorder.php">
      <div class="item">
```

## APPENDIX 4 (2)

### materials.php

```
        Make order
    </div>
</a>
<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/contacts.php">
    <div class="item">
        Contacts
    </div>
</a>
</div>
<div id="context" style="text-align:left; font-size: 20px;">
    Wood panels for frames. <br> <br>
    </img>
    <br><br>
    Fabric for the base of the painting. <br> <br>
    </img>
    <br><br>
    Enamel in cans for colour. <br> <br>
    </img>
</div>
<div id="menu">
    <!--is needed for empty line space between context block and footer-->

</div>
<div id="footer">
    phone: 044 987 18 91 | | e-mail: kaminski.lpr@gmail.com | | HandMadeStudioByKaminski
2014 ©
</div>
</body>
</html>
```

## APPENDIX 5 (1)

### makeorder.php

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title>HM-Studio</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
  <meta http-equiv="Content-Type" content="text/html; charset=windows-1251" />
  <script type="text/javascript"
src="http://ajax.googleapis.com/ajax/libs/jquery/1.6/jquery.min.js"></script>
  <script type="text/javascript" src="/js/js-form.js"></script>
</head>
<body>
  <div id="header">
    <div id="label">
      <a style="text-decoration: none;" href="http://final.url.ph/index.php">
        </img>
      </a>
    </div>
    <div id="langbar">
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-ru.php">
        RUS
      </a>
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-fi.php">
        FIN
      </a>
    </div>
  </div>

  <div id="menu">
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/galleria.php">
      <div class="item">
        Gallery
      </div>
    </a>

    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/materials.php">
      <div class="item">
        Materials
      </div>
    </a>
  </div>
</body>
</html>
```

## APPENDIX 5 (2)

### makeorder.php

```
</div>
</a>

<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/makeorder.php">
  <div class="item">
    Make order
  </div>
</a>

<a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/contacts.php">
  <div class="item">
    Contacts
  </div>
</a>
</div>

<!--Beginning of form for making new order-->

<div id="context">
  <center>
    <div id="cor5" class="sidebarForm" align="left">
      <h4>
        Make new order
      </h4>
      <div id="loadBar" align="center">
      </div>
      <form action="#" method="post" id="cForm2">
        <label>
          Your name:
        </label>
        <div class="input" id="cor5">
          <input value="" id="posName" type="text">
        </div>
        <label>
          Your email:
        </label>
        <div class="input" id="cor5">
          <input value="" id="posEmail" type="text">
        </div>
        <label>
          Type number of painting:
        </label>
```

## APPENDIX 5 (3)

### makeorder.php

```
<div class="textarea" id="cor5">
    <textarea id="posText"></textarea>
</div>
<button type="button" id="send">
    Send
</button>
</form>
</div>
</center>
</div>
<!--End of form for making new order-->

<div id="menu">
    <!--is needed for empty line space between context block and footer-->
</div>

<div id="footer">
    phone: 044 987 18 91 | | e-mail: kaminski.lpr@gmail.com | | HandMadeStudioByKaminski
    2014 ©
</div>
</body>
</html>
```



## APPENDIX 6 (1)

### contacts.php

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title>HM-Studio</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
  <meta http-equiv="Content-Type" content="text/html; charset=windows-1251" />
  <script type="text/javascript"
src="http://ajax.googleapis.com/ajax/libs/jquery/1.6/jquery.min.js"></script>
  <script type="text/javascript" src="/js/js-form.js"></script>
</head>
<body>
  <div id="header">
    <div id="label">
      <a style="text-decoration: none;" href="http://final.url.ph/index.php">
        </img>
      </a>
    </div>
    <div id="langbar">
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-ru.php">
        RUS
      </a>
      <a style="text-decoration: none; color: #b2bdc4;"
href="http://final.url.ph/index-fi.php">
        FIN
      </a>
    </div>
  </div>

  <div id="menu">
    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/galleria.php">
      <div class="item">
        Gallery
      </div>
    </a>

    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/materials.php">
      <div class="item">
        Materials
      </div>
    </a>
  </div>
</body>
</html>
```

**APPENDIX 6 (2)**  
**contacts.php**

```
        </div>
    </a>

    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/makeorder.php">
        <div class="item">
            Make order
        </div>
    </a>

    <a style="text-decoration: none; color: #ffffff;"
href="http://final.url.ph/contacts.php">
        <div class="item">
            Contacts
        </div>
    </a>
</div>
<!--Beginning of form for contacting the owner-->

<div id="context">
    <center>
        <div id="cor5" class="sidebarForm" align="left">
            <h4>
                Ask the question
            </h4>
            <div id="loadBar" align="center">
            </div>
            <form action="#" method="post" id="cForm2">
                <label>
                    Your name:
                </label>
                <div class="input" id="cor5">
                    <input value="" id="posName" type="text">
                </div>
                <label>
                    Your email:
                </label>
                <div class="input" id="cor5">
                    <input value="" id="posEmail" type="text">
                </div>
                <label>
                    Your message:
                </label>
                <div class="textarea" id="cor5">
```

**APPENDIX 6 (3)**  
**contacts.php**

```
        <textarea id="posText"></textarea>
    </div>
    <button type="button" id="send">
        Send
    </button>
</form>
</div>
</center>
</div>
<!--End of form for contacting the owner-->

<div id="menu">
    <!--is needed for empty line space between context block and footer-->
</div>

    <div id="footer">
        phone: 044 987 18 91 | | e-mail: kaminski.lpr@gmail.com | | HandMadeStudioByKaminski
    2014 ©
    </div>
</body>
</html>
```

## APPENDIX 7 (1)

### js-form.js

```
$(document).ready(function () {  
    // Contact form...../  
  
    var regVr22 = "<div><img style='margin-bottom:-4px;' src='../load.gif' alt='Sending'  
width='16' height='16'><span style='font: 11px; color:#00a2e8;  
margin-left:6px;'>...</span></div><br />";  
    $("#send").click(function () {  
        $("#loadBar").html(regVr22).show();  
        var posName = $("#posName").val();  
        var posEmail = $("#posEmail").val();  
        var posText = $("#posText").val();  
        $.ajax({  
            type: "POST",  
            url: "../send.php",  
            data: { "posName": posName, "posEmail": posEmail, "posText": posText },  
            cache: false,  
            success: function (response) {  
                var messageResp = "<p style='font-family:Verdana; font-size:11px;  
color:#00a2e8; border:1px solid #00CC00; padding:10px; margin:20px; border-radius:5px;  
-moz-border-radius:5px; -webkit-border-radius:5px; background-color:#00a2e8;'>Thank you,  
<strong>";  
  
                var resultStat = "!</strong> Your message has been send!</p>";  
                var oll = (messageResp + posName + resultStat);  
                if (response == 1) {  
                    $("#loadBar").html(oll).fadeIn(3000);  
                    $("#posName").val("");  
                    $("#posEmail").val("");  
                    $("#posText").val("");  
                } else {  
                    $("#loadBar").html(response).fadeIn(3000);  
                }  
            }  
        });  
        return false;  
    });  
});
```

## APPENDIX 8 (1)

### send.php

```
<?php
header("Content-type: text/html; charset=utf-8");

if(empty($_POST['js'])){

    $log == "";
    $error="no";

    $posName = addslashes($_POST['posName']);
    $posName = htmlspecialchars($posName);
    $posName = stripslashes($posName);
    $posName = trim($posName);

    $posEmail = addslashes($_POST['posEmail']);
    $posEmail = htmlspecialchars($posEmail);
    $posEmail = stripslashes($posEmail);
    $posEmail = trim($posEmail);

    $posText = addslashes($_POST['posText']);
    $posText = htmlspecialchars($posText);
    $posText = stripslashes($posText);
    $posText = trim($posText);

    //Checking the correctness of name
    if(!$posName || strlen($posName)>20 || strlen($posName)<3) {
        $log.="<li>Incorrect filling \"Your name\" (3-15 characters)!</li>";
        $error="yes"; }

    //Checking the e-mail
    function isEmail($posEmail)
    {
        return(preg_match("/^[-_[:alnum:]]+@((([:alnum:]]|[:alnum:]][:alnum:]-)*[[:alnu
m:]]\.)+(ad|ae|aero|af|ag|ai|al|am|an|ao|aq|ar|arpa|as|at|au|aw|az|ba|bb|bd|be|bf|bg|
bh|bi|biz|bj|bm|bn|bo|br|bs|bt|bv|bw|by|bz|ca|cc|cd|cf|cg|ch|ci|ck|cl|cm|cn|co|com|coo
p|cr|cs|cu|cv|cx|cy|cz|de|dj|dk|dm|do|dz|ec|edu|ee|eg|eh|er|es|et|eu|fi|fj|fk|fm|fo|fr
|ga|gb|gd|ge|gf|gh|gi|gl|gm|gn|gov|gp|gq|gr|gs|gt|gu|gw|gy|hk|hm|hn|hr|ht|hu|id|ie|iil
in|info|int|io|iql|ir|is|it|jm|jo|jp|ke|kg|kh|ki|km|kn|kp|kr|kw|ky|kz|la|lb|lc|li|lk|lr
|ls|lt|lu|lv|ly|ma|mc|md|mg|mh|mil|mk|ml|mm|mn|mo|mp|mq|mr|ms|mt|mu|museum|mv|mw|mx|my
|mz|na|name|nc|ne|net|nf|ng|ni|nl|no|np|nr|nt|nu|nz|om|org|pa|pe|pf|pg|ph|pk|pl|pm|pn|
pr|pro|ps|pt|pw|py|qa|re|ro|ru|rw|sa|sb|sc|sd|se|sg|sh|si|sj|sk|sl|sm|sn|so|sr|st|su|s
v|sy|sz|tc|td|tf|tg|th|tj|tk|tm|tn|to|tp|tr|tt|tv|tw|tz|ua|ug|uk|um|us|uy|uz|va|vc|ve|
```

## APPENDIX 8 (2)

### send.php

```
vg|vi|vn|vu|wf|ws|ye|yt|yu|za|zm|zw)$((([0-9][0-9]?|[0-1][0-9][0-9]|[2][0-4][0-9]|[2][5][0-5])\.)}{3}([0-9][0-9]?|[0-1][0-9][0-9]|[2][0-4][0-9]|[2][5][0-5]))$/i"
        , $posEmail));
    }
    if($posEmail == '')
    {
        $log .= "<li>Please, enter you e-mail!</li>";
        $error = "yes";
    }
    else if(!isEmail($posEmail))
    {
        $log .= "<li>You entered wrong e-mail. Please, correct it!</li>";
        $error = "yes";
    }
    //Checking the existing of text
    if (empty($posText))
    {
        $log .= "<li>Necessary to write the message!</li>";
        $error = "yes";
    }

    //Checking the length of text
    if(strlen($posText)>1010)
    {
        $log .= "<li>Too long text, you have only 100 symbols!</li>";
        $error = "yes";
    }

    //Checking the length of the words    $mas = preg_split("/[\s]+/", $posText);
    foreach($mas as $index => $val)
    {
        if (strlen($val)>60)
        {
            $log .= "<li>Too long words (more then 60 symbols) in the text!</li>";
            $error = "yes";
            break;
        }
    }
    sleep(2);
    //If no mistakes - send the e-mail
    if($error=="no")
    {
        //Sending the message to the admin
```

## APPENDIX 8 (3)

### send.php

```
$to = "kaminski.lpr@gmail.com";//My e-mail
$mes = "Человек по имени $posName отправил Вам сообщение из формы обратной связи
Вашего сайта: \n\n$postText";
$from = $posEmail;
$sub = '=?utf-8?B?'.base64_encode('Новое сообщение с Вашего сайта').'?=';
$headers = 'From: '.$from.'
';
$headers .= 'MIME-Version: 1.0
';
$headers .= 'Content-type: text/plain; charset=utf-8
';
mail($to, $sub, $mes, $headers);
echo "1"; //Everything is fine!
}
else//If there is errors
{
echo "<p style='font: 13px Verdana;'><font
color=#00a2e8><strong>Error!</strong></font></p><ul style='list-style: none; font: 11px
Verdana; color:#00a2e8; border:1px solid #00a2e8; border-radius:5px;
-moz-border-radius:5px; -webkit-border-radius:5px; background-color:#fff; padding:5px;
margin:5px 10px;'>".$log."</ul><br />"; //Not possible to send empty messages  }}

```