USABILITY OF E-GOVERNMENT WEBSITES, EVALUATION OF THE HUNGARIAN E-GOVERNMENT PORTAL

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ABSTARCT
The aim of this paper is to show the growing importance of usability of e-government portals. It will focus on usability guidelines, the issue of accessibility – especially from the viewpoint of the screen reader users –, and gives an account of how to create usable forms and write for the web. The study examines the results of an evaluative usability test of the Hungarian e-government portal (www.magyarorszag.hu). The findings suggest that while the site provides a wide range of information and services, some work still needs to be undertaken in order to make it more user-friendly.

KEY WORDS
web usability; e-government; electronic public administration; web portals; web usability test; accessibility; information technology; best practice; usability guidelines; screen reader users; forms; ICT; Hungary; online legal information; online law database[1]

INTRODUCTION

The Internet and the info-communication technologies are an integral part of the human society. On one hand, the public sector, the state appears on the Web, offers electronic services and information, databases to the citizens, on the other hand the private sector runs an important part of its business on the Internet. Concerning the public sector to fulfill the requirement of e-inclusion, to bridge the digital divide it is essential for the governments to develop websites, which can improve the citizens' lives, and serve them by providing electronic transactions. For the private sector – for example: law firms, online legal consulting, online legal advice services – it is out of question that it is inevitable to present themselves on the Internet.

The rapid advances in the field of info-communication technologies had a huge impact on the global economy and efficiency of the private sector. In recent years, there has been an increasing necessity of implementing public sector services, interactions and transactions. Therefore a significant expectation has appeared towards the governments to keep abreast with developing information society.

As the e-government portals serve as gateways to access information and services managed by the states, it is becoming increasingly difficult to ignore the issue of usability, and the findings of usability experts and researches. The e-government portals need to be usable, user-centered, in other words: easy to use by every citizen, including people with disabilities.

This paper has been divided into two main parts. The first part deals with some aspects of usability (for example how to write for the web, design good web forms) and accessibilty, while the second part examines the findings of an evaluative usability test of the Hungarian e-government portal, providing some recommendations to help the developers to make the site more user-friendly.

I. USABILITY OF E-GOVERNMENT WEBSITES

I.1. WEB USABILITY – DEFINITION, FUNDAMENTALS

Reviewing the related literature, the most frequently cited definition of usability is the following: "The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use."[2] To apply it for websites, Nielsen (2003) states that "usability is a quality attribute that assesses how easy user interfaces are to use."[3] According to Nielsen's definiton, usability refers to: learnability (the factor of understanding the behavior of the site), efficiency (how effective the user in completing the tasks), memorability (if the page is usable, the users do not have to learn how to accomplish tasks again, when they return after a certain period of time), errors (the number of errors should be low, and in case of an error, the users should be able to recover easily from the errors), satisfaction (this element refers to the satisfaction of the users).

Krug (2006) claims that the most important advice that someone who wants to make a website easy to use should take is: „Don't make me think". It means that a website should be self-evident, obvious. The user should be able to „get it". However, he reminds us that in some cases, if a site is highly complicated – a good example for this is an e-government site –, the goal to achieve is to make the page self-explanatory. It means that it will cause a small amount of mental effort, but still easy to use. He underlines the importance of being self-evident, or at least self-expalantory, since every content on the Internet is competing for the users attention. If a site looks good, and designed well, the users will devote their time to „look around".

Considering an e-government site, to apply this idea, to try to be self-explanatory is inevitable for two reasons. One reason is that the state, the government should establish a credible website, and provide useful and efficient services, transactions, and information to its citizens. In doing this, it should avoid to make the user frustrated. In addition, people often underestimate the capabilities of the government's website. Therefore, it should be a priority to persuade the citizens to use the online services and transactions, because it can make the government and the public administration more efficient. By building a user-friendly website, people will choose to contact with the government electronically, rather than using a phone or doing transactions by going to the authority in person. The second reason for constructing a self-explanatory website is that if users like using it, their satisfaction and good impression may cause them to run a business, or to discover some regulations, so it can result in the increasing of the competitveness of the country, and maybe it may make the citizens aware of more and more law rules.

I.2. USABILITY GUIDELINES

Applying usability guidelines is like "standing on the shoulders of giants": it means that in constructing a website, one should take advantage of rules that are proved to be effective. There are many kinds of guidelines published on the Internet. For instance, Nielsen (2001) established 113 guidelines on how to construct homepages, and arranged them in to topics, such as: Communicating the Site's Purpose; Content Writing; Revealing Content Through Examples; Links; Navigation; Search; Graphic Design; Welcomes.

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[2] Source: http://www.usabilitynet.org/tools/r_international.htm (Available: 19.04.2011.)
[3] Source: http://www.useit.com/alertbox/20030825.html (Available: 19.04.2011.)

Some examples of Nielsen's (2001) guidelines are the following: the links should be differentiated and scannable; the primary navigation of a site should be placed on a highly noticeable part of the page; and over-designing a site should be avoided, because too many font styles, other text formatting and design-elements can detract the user's attention from the main message of the content. An example of an e-government website using too much graphic design is the government site of the Taiwan.[4]

Generally, it is important to follow the conventions (Nielsen (2004), Krug (2006)). For example it is a convention that if something is blue and/or underlined then it is clickable, it is a link. The users may get frustrated if they are clicking on text appears like a link, but it does not navigates anywhere, since the color and the underlining are only font styles, part of the design.

Not only usability experts, but governments publish usability guidelines to make the public administration's agencies designing more user-centered pages, and to make the private sector's performance better, and as a result, foster the competitiveness of the whole country. For example the U.S. Department of Health & Human Services manages a U.S. government website on usability: the www.usability.gov. On this page there is even a downloadable book about usability guidelines[5]. Another example is the Government of Tasmania, which also provides advice on usability matters.[6] It includes a very descriptive truth about the characteristic of a complicated website: "A web site is like a dark multi-roomed mansion where the user can enter at any level and must then not only understand where they are but move to the actual room (web page) that contains what they want − navigation and consistency of approach across your entire web site are critical −".

I.3. USER FRIENDLY WEB FORMS

Creating forms easier to use is extremely important in the area of e-government. To make the citizens' lives easier, to develop an e-democracy, it is not avoidable to offer a wide variety of online forms. There is a very detailed book on this topic called "Forms that work", it can be useful not only for those who work in the public sector or public administration, but for those who have any kind of form on their legal website.

To quote the authors of this book: „We've done a lot of work on government forms, and we've noticed that people don't like them before they've even seen them. They don't even like the idea of having to tackle forms." Jarrett et al. (2008) introduced the concept of three layers of the form.

The first layer is called "*relationship*", which indicates the interaction between the creator of the form, and the person, who is using it. A recommendation − given by the authors − related to this layer is for instance that one can persuade people to answer with reducing social costs. It means that a form should be short, and it should contain a status indicator to make the users feel that they are in control of the filling process.

The second layer is about "*conversation*", which includes the way of how the form interacts with the users. As an example, it covers the method of grouping the information logically. As a recommendation, the authors suggest that one should write useful instructions,

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[4] http://www.taiwan.gov.tw/mp.asp?mp=999 (Available: 23.04.2011.)
[5] In: www.usability.gov: The Research-Based Web Design & Usability Guidelines (PDF, 20.64 MB)
(Available: 23.04.2011.)
[6] http://www.egovernment.tas.gov.au/web_publishing/creating_and_maintaining_a_website/web_guidelines
(Available: 23.04.2011.)

and in doing this, plain language should be applied. The term of plain language[7] refers to a kind of communication, which is understandable for the receiver for the first time of listening or reading.

The third layer consists of the "*appearance*" of a form, which involves the colors, the organizing of the elements (for instance fields), and in general the overall looking of it. One guideline set by the authors is to take care of details, for example the design and the font style should assist the legibility of the content. It implies that in constructing the form, the rules of typography sould be applied. For instance, it is a proved fact that the sans-serif fonts, such as Arial, Helvetica, Tahoma, Verdana are more legible on the screen.

I.4. HOW USERS READ ON THE WEB

In fact, most users never read on the web, instead, they are scanning the sites, glancing across the content of it. Nielsen (1997) found, that 79 % of the users always scan the pages, while only 16 % of them read every word of the text. Moreover, Nielsen (2008) estimated the time users spend with every additional 100 words, and he identified that it is 4.4 seconds, it means, that counting with the reading speed of higher literacy users (250 words per minute), the users will read only 18% of this additional part.

Another interesting finding of Nielsen (2008) is that there is connection between the amount of text on a page, and the amount, which users willing to read. He found that the curve indicating this connection is rapidly declining: on a page, that contains 111 words or less, the users will read half of the content. On a page, which displays 593 words (that was the average in Nielsen's research), the visitors will read 28 % of it. The implication of these findings is – as Nielsen argues – that "If you target a broader audience (…) you'd be wise to put your word count on a strict diet."

To analyze how users read on the web, the concept of „F-shaped pattern" should be examined. Eye-tracking[8] studies (for example: Nielsen (2006, 2009)), show that the avearge user's reading pattern is the following: two horizontal, and one vertical stripes. It means, that after entering a page, users first scan through the lines of text at the top of the page, then they restart this process after jumping down some lines, and finally they glace at the left side of the screen, scanning through the starting words of each lines. However, it needs to be noticed, that the number of horizontal movements can vary: sometimes users make a third horizontal stripe, making the pattern look like an „E", other times they just scan through once, making the pattern look like an „inverted L" These patterns appear on a picture called heatmap, in which different colors indicate where users looked most. Usually, the red color shows the most viewed areas, then yellow is for fewer glance, blue indicates the fewest, while grey areas show the „invisible" parts of the page (Nielsen 2006). Jarrett et al. (2008) published a heatmap of a form. They found that users looked most at the labels and fields of the form (and almost never scanned the rest of it), and demonstrated that the participants read the left end of the fields.

Another interesting finding is mentioned by O'Connell (2010), who refers to a research conducted by Nielsen, in which the impact of the word formatting was investigated. The findings of this research showed that although the users scanned the information carried by big red letters, they actually did not read it.

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[7] The U.S. government published even a list of words that should and should not be used: http://www.plainlanguage.gov/howto/wordsuggestions/simplewords.cfm

[8] A generally accepted definition of Eye-tracking: a method observing what the user looking at, and measuring the movement of the eye relative to the head. (Source: http://en.wikipedia.org/wiki/Eye_tracking, Avaliable: 02.05.2011)

Accordingly, several implications of the above-mentioned studies can be stated. Firstly, it shows that the visitors do not read the content of a page, instead, they scan it through. Secondly – as a consequence of the two horizontal stripes – the first two section of the text should contain the main message. Thirdly, – implied by the vertical stripe of the „F" – every paragraph, section or article should be constructed in a way that the most important words are in the beginning of the lines of text (Nielsen 2006). As for the findings of the eye-tracking study concerning filling in forms, it needs to be remembered that the labels should be placed on the left side of the fields (Jarrett (2008)).

Considering an e-government site, these implications help to construct the information-carrying pages. Using these guidelines, the users can save some time by finding the information quickly, and it can make them satisfied, and make a good impression on them, which can result in increased credibility of the state's services.

Another aspect of reading on the web is the reading behavior of the lower-literacy users. Dealing with lower-literacy users is important when designing an e-government website. Since the target audience of an e-government page is the whole population of the country, the states should construct a portal, which is usable and understandable even for the lower-literacy users. It helps to bridge the digital divide, and accelerate the inclusion of these people.

The term „lower literacy" is not equivalent to „illiteracy", since lower-literacy users are able to read, but it is not easy for them, they encounter problems. To sum up this issue, there is an inconsistency between the reading level of a significant part of the population, and the level of the texts on the Internet. Summers et al. (2004) point out that the half ot the American citizens read at the eights grade level, or even below, while the webpages usually contain information written at least at the twelfth grade level. Nielsen (2005) indicated that the reading behavior of the lower-literacy users is completely different form the behavior of higher-literacy users. The above-mentioned scanning-rule cannot be applied for them, instead of scanning they plow the text, which means that they have to go through each word to understand it.

It implies a narrower field of view, and has other important consequences. For instance, if a page contains a big wall of words, these users have two choices: they can read it through in a word-by-word manner, or completely avoid it, there is no other option. Similarly, on a search engine result page, these users have difficulties in choosing the results which are most suitable for their needs. In fact, they usually choose some of the first results, since they are not patient enough or do not have time to read through each line. In addition, they often have difficulties in interpreting the search results, because a search engine sometimes produces results not really related to the query terms. Moreover, lower-literacy users can have problems even at the starting point of a search, since it can be difficult for them to spell the query terms properly (Nielsen (2005)).

In order to make a website more usable for lower-literacy users, the following should be considered. Nielsen (2005) indicates some guidelines to apply, for instance the most important information should be placed in the first paragraphs, the animations should be avoided, the navigation should be easy to understand, the search option should help in case of misspellings, and give short results. Summers et al. (2004) suggests that an intra-site search result page should contain lots of white space, simple and large titles, and limited number of results displayed. They also claims that flat site hiearchy and a guided paths provided can highly increase the usability for lower-literacy users. It has to be mentioned, that making sites usable for lower-literacy users will result in improved usability for all users. Setting guidelines for lower-literacy users leads to the next area of discussion which is writing web content.

I.5. WRITING WEB CONTENT

Since an e-government page usually contains an extreme amount of information (lots of text and words), it must make the content writing a priority. There are so many aspects of writing web content, for instance: it should be scannable, take into consideration the F-shaped pattern, meet the requirements of lower-literacy users and accessibility. Redish (2007) defines the most important elements of writing for web: it should be like a conversation, answer the questions of the visitors, and support the idea of "grab and go". Discussing every aspect of this issue is beyond the scope of this paper, therefore in this chapter only the factors closely related to e-government sites will be examined.

To make a content scannable, the site should for example apply highlighted keywords, the inverted pyramid style (which means that an article or page begins with the conclusion), and it should contain 50% less words than normal writing (Nielsen (1997)).

Since an e-government site contains a lot of text, so many words, it is also important to omit the needless words (Krug (2006)), because users do not have time to read everything. However, on an e-government page, this recommendation can be applied with limitations, because some articles are explaining law rules, which have strict wording and expressions. As a result, a goal to achieve on such pages is to omit the words, which are just taking up space (Krug (2006)). Accordingly, the benefits of doing so are the following: it lowers the level of noise, it highlights the most important messages and information, and it results in shorter texts, thus the users are not forced to scroll too much (Krug (2006)).

Redish (2007) introduces the idea that each site has a personality, expressed by the visual elements, the fonts, the colors (to sum up: by the design) and the writing style. The personality and the overall message of the site should match; in case of discrepancy, the user might be confused, and that can ruin the site's credibility.

To illustrate this issue, Redish (2007) uses the following example: the Internal Revenue Service (IRS) had a webpage looked like a tabloid newspaper a few years ago. This appearance did not serve the site's goal and overall message, a tax collector organization should express credibility and professionalism. After several reconstructions, the current design of the site looks more credible, for instance the main color of it is blue, which is associated with intelligence and stability (especially the darker shades of it), and it also represents knowledge, power, integrity, and seriousness.[9] It should be mentioned, that the Hungarian e-governmet portal's homepage applies a lots of dark blue as well. However, the color is only one element of a sites's personality, choosing an appropriate color is important, but – as it is mentioned below – it can serve only as an additional feature.

This idea of personality is supported by Furman (2009), who writes that in a research The Stanford Persuasive Technology Lab found that 46 % of the participating 2440 users evaluated the credibility of a site according to a site's overall visual design, which consists of the layout, the typography, the font size, and the color schemes. For instance, reviewing the importance of the typeface (fonts) applied by a webpage, Furman (2009) mentions a study expressing that „The Web pages presented in either a neutral or inappropriate typeface resulted in lower ratings for trust, professionalism, and believability. Even a typeface that was seen as neutral resulted in decreased trust, professionalism, and credibility."

As it was mentioned above as a recommendation related to constructing usable forms, and in discussing the needs of lower-literacy users, it is important to use plain language. In a

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[9] Sources of the meaning of the blue color:
http://www.onextrapixel.com/2010/01/22/anatomy-of-colors-in-web-design-blue-and-the-cool-look/ ,
http://www.color-wheel-pro.com/color-meaning.html (Available: 02.05.2011.)

study aiming to improve the public access to the law in Canada by using graphic design principles and methods, Berman (2000) claims that using plain design – in accordance with the application of plain language – to publish law rules can increase the public understanding of the law, and it can result in a more accessible legislation, and can improve the Canadian democracy.

In addition, Redish (2007) points out that the personality and the corporate culture of an organization should be expressed by its website. As a part of this idea, it is important to keep the wording of the webpage's content consistent, and use words and expressions, which are in accordance with the organization's type and role. It means that for example an e-goverment site should not use informal words. To support the consistency, such organizations should apply a style guide, which can lead the content-writers. Since an e-government page contains so many pages and information, its content is likely made by more than one author, to keep their writing stlye consistent, the government should issue regulations concerning the wording, the grammar, the punctuation, and the writing stlye.

The Plain Language Action and Information Network (PLAIN) is an American organization of federal employees and specialists. They maintain a website called PlainLanguage.gov, which contains guidelines, tips, tools and other resources on how to write usable web content. They issued a document called „Federal Plain Language Guidelines" in March 2011. It is divided into five main topics, the forth has the title „Write for the Web". For instance, it recommends avoiding meaningless formal language: „Many government websites (...) contain meaningless formal language such as flowery welcome messages (...) It conveys the impression that you are insincere. Don't waste your users' time."

Another example of guidelines of writing web content is published by the U.S. Department of Housing and Urban Development called „HUD Web Publication Standards and Style Guide". For instance, it introduces the following guideline: use words and terminology, which are appropriate to the target audience. One element of this guideline is that considering a site, which provides content for the public at large – such as an e-government site – the content of it should be written at an elementary reading level. Another factor is that everything should be explained, it should not be assumed that the target audience has a knowledge required to interpret the content. This aspect is even more important in writing for an e-government page, since it contains many legal text and expressions the citizens may never heard of before entering the page.

Finally, another recommendation closely related to writing contents for an e-government page is introduced by Redish (2007), who expresses that information should be gathered from the target audience, and as a part of this, before contructing the site, the developer should „watch and listen to people". As she points out: „If yours is a government site, realize that government agencies often have „brick-and-mortar" equivalents. Spend time in a local office of the agency watching and listening for whatever is relevant to your web content. This might mean watching as people come to renew their driver's license or get a permit or sign up for benefits or ask for tax forms."

I.6. THE ISSUE OF WEB ACCESSIBILITY – SCREEN READER USERS

The term web accessibility is generally understood to mean an inclusive practice of websites allowing the disabled people to have equal access to every feature and information of a site. The disabilities covered by this this issue can be listed as follows: visual, auditory, physical, speech, cognitive, and neurological disabilities. Moreover, accessible websites can improve the usability for the aging users as well. Since the population over the age of 65 is growing, and by 2020, the number of these people will be one billion, it is important to design

websites usable for this demographic segment (Sibley (2008)). To support this statement, Theofanos et al. (2003) published a paper in which they mentioned six reasons of dealing with needs of people with disabilities in designing websites. One of these reasons is that the number of these people is growing, since the likelyhood of being affected by disabilities is increasing when someone is getting older, and it is a well-known fact that the whole population worldwide is aging.[10]

Currently some international organizations and national legislations deal with the problem, and setting guidelines and rules for it. The World Wide Web Consortium (W3C) introduced the Web Accessibility Initiative (WAI) in 1997, which aiming to develop stategies and guidelines to make websites accessible and usable by disabled people. The WAI issued a document called The Web Content Accessibility Guidelines (WCAG) in 1999, which includes recommendations on how to make understandable and navigable content. It was followed by the WCAG 2.0 in 2008. Some examples of the introduced guidelines: Make all functionality available from a keyboard; Help users avoid and correct mistakes; Provide ways to help users navigate, find content, and determine where they are.

The legislation of the United States also deals with this issue: the Rehabilitation Act Section 508 (as amended by the Workforce Investment Act of 1998) contains that every federal department and agency shall provide comparable access to and use of information and data to individuals with disabilities when developing, procuring, maintaining or using electronic and information technology. The public agencies are obliged to ensure this kind of accessibility since June 2001.[11] Next to the U.S., other laws deal with this problem throughout the World.[12]

To support the compliance with the WAI guidelines and the Section 508, there are tools provided to analyze if a website is accessible or not. The first such service was Bobby, which was a free online software launched in 1995. Currently the Web Accessibility Evaluation Tool (WAVE)[13] provides this service for free (http://wave.webaim.org/). Interestingly, analyzing of the main Hungarian e-government page (www.magyarorszag.hu) produced the following result: „WAVE has detected no accessibility errors". In contrast, checking another Hungarian e-government[14] page provided the result of detecting 17 accessibility errors. For example, one of the detected errors is that alternative text is not provided for images. The examination of the issue of web accessibility as a whole goes beyond the scope of this paper, therefore the discussion is limited to the aspects of making a website accessible for blind and low vision users.

Theofanos et al. (2003) made a usability test with 16 blind users, who were testing U.S. government sites. They were working with screen reader softwares (13 used JAWS, 3 used Window-Eyes). In their study they introduced 31 guidelines divided into 3 groups to help designers to make a website usable for blind people. In the following some of their findings and the related guidelines will be presented.

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[10] Concerning the Hungarian population some striking facts should be mentioned: „The proportion of the population over 65 years of age will increase by 40 percent by 2025, so that more than one in every five Hungarians will be over 65." (Banerji et al.)

[11] The U.S. goverment has a separate website for understanding and implementing Section 508: http://www.section508.gov/index.cfm (Available 02.05.2011)

[12] For instance Australia and New Zealand, Canada, France, Germany, Ireland, Italy, Japan, Portugal, Spain and Switzerland has legilsation related to web accessibility.

[13] The tool is provided by a non-profit organization called WebAIM within the Center for Persons with Disabilities (Source: http://webaim.org/about, Available 20.05.2011)

[14] www.kormanyablak.hu

The first group of guidelines consists of the findings related to „Using a screen reader". Interestingly, Theofanos et al. (2003) identified that the blind and low vision users scan with their ears: entering a website, they just as impatient, as the people without such disabilities, they are only listening until they can decide whether to leave the page or not. As a result, they examine the first few words of a line, or first few lines of a text, and if it does not seem to be relevant, they skip the content. To take into consideration such behavior, the sentences of the content should be clear and short, and the paragraphs should start with information-carrying words.

Concerning the second group, which is „Navigating through Web sites", one of the most relevant findings is that many screen reader users jump from link to link, and many of them use a Links List box. When a sighted user is scanning through a page, which is primarly used as a stage in achieving a goal (navigation page), she usually searches for something that blue and/or underlined, because she wants to get to the destination page. Similarly, the blind users are also paying attention to links, since they want to find certain information. To support this aim, the links should be descriptive and start with relevant keywords. To make browsing easier for blind users, a list of links should be written in a way that the links start with different words or expressions, since if many links start with the same phrase or words, the users are forced to listen to so much redundant information to decide which link is suitable for their needs.

An example of the findings related to the third group, which is „Filling out forms", the most crucial point is that the first problem the users encounter with is finding the form. In cases the form was placed at the bottom of the page, or was far to the right, it took more time to the participants to find the form (or they gave up), since they had to listen through the whole page. To remedy this situation, Theofanos et al. (2003) recommend to not put a lot of text on the same page as a form, and to not put a form far down or far to the right on the page.

I.7. INTERNATIONAL ENVIRONMENT – EU & OECD; OTHER COUNTRIES

As a final chapter of the first part of this paper, it needs to be mentioned, that dealing with web usability issues is a well-known practice in the European Union as well. The European Commission's annual e-Government benchmark is measuring the public sector's performance. The most recent survey[15] was conducted over the period of May to December 2010. The 2010 benchmark includes usability as a part of user experience. France (100%), Malta (100%), The Netherlands (96%), Spain (95%), and Portugal (94%) have the best portals as regards usability, user-centric design, and service bundling. As for Hungary, the examined portals attain 90% on usability, 100% on adequateness of portal design and 82% on service bundling (as compared to the EU 27 and Croatia, Iceland, Norway, Switzerland and Turkey (Eu27+) averages of 77%, 89% and 77% respectively). With these results Hungary is the 17th form 32.[16]

The OECD (2009) also expressed that the goverments should focus on ensuring user

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[15] Digitizing Public Services in Europe: Putting ambition into action - 9 th Benchmark Measurement, December 2010,
In:http://www.umic.pt/images/stories/publicacoes4/DigitizingPublicServicesinEuropePuttingambitionintoaction-thBenchmarkMeasurement.pdf (Available 03.05.2011)
[16] Another EU paper, which contains data about Hungary's performance in the area of usability is an eInclusion Factsheet, December 2010,
In: http://www.epractice.eu/files/eInclusion%20in%20HU%20-%20December%202010-2%200_0.pdf (Available 03.05.2011)

take-up of using e-government services. In discussing this issue, the OECD (2009) mentions that one key element of achieving this goal is to consider „easy-to-use" approaches, for instance user friendlyness and usability for groups with special needs (for example disabled people). To sum up the importance of such approach, the e-government services will not be used unless the users can have proper access. The OECD (2009) provides results of the European Commission-supported Top-of-the-Web survey conducted in 2003, which measured the quality and usage of public e-government services. It found that „usability is the most important factor in users' overall evaluation of e-government services".

Finally, it should be underlined, that considerable amount of literature has been published on the issue of usability and accessibility of e-government portals, aiming to evaluate for instance the portals of India, Uganda, the United Kingdom, Saudi Arabia, Trinidad and Tobago, Turkey and Zambia [Abanumy et al. (2005), Arpaci et al. (2009), Asiimwe et al. (2010), Barnes et al. (2003), Bicharra Garcia et al. (2005), Eidaroos et al. (2009), Farhangian et al. (2011), Golubeva et al., Hoi-Yan et al., Huang (2002), Joseph (2010), Klaassen et al. (2006), Matera et al. (2006), Pilling (2010), Roach et al. (2010), Sharma et al. (2008), Villarroel et al., Withrow et al. (2000)].

II. EVALUATION OF THE HUNGARIAN E-GOVERNMENT PORTAL

II.1. INTRODUCTION TO USABILITY TESTS

There are different testing methods to follow to check if the site is usable or not. For example the technique called „Focus Groups", which means that some people, who represent the potential users of the product, are having a discussion about the tested work. Another example is the inspection method called „Heuristic Evaluations". It involves usability experts examining the site and its compliance with the previously identified guidelines or principles. Some other examples to mention are: „Individual Interviews", „Personas, Online Surveys", „Task Analysis". The expression „Usability test" refers to a method that proved to be highly effective in evaluating websites and therefore was chosen to be the technique of the test conducted by the author of this paper.

A simple way to describe the essence of a usability tests is the following: it is observing someone who is using the subject of the usability test. First of all, some limitations need to be stated considering the discussion of this method. There are many kinds of usability testing, for instance qualitative and quantitative, formal and informal, large sample and small sample and so on. In a quantitative test, you are measuring certain, measurable metrics. These can vary from the time of completing a task to the number of the errors and so on. The aim of such test is to prove something by valid results. Therefore, it needs to be stressed that the quantitative tests are similar to scientific experiments, they have to be rigorous to get compareable and correct findings. In a qualitative test, your goal is to find what can be improved. To a limited extent, and compared to the quantitative methods, such test is quite informal. Despite of these facts, the qualitative tests are quite appropriate in testing websites, and enable the facilitator to reveal the main problems and disfunctions of the product.

Among the qualitative tests, the easiest and – in spite of being low-cost – one of the most effective inspection methods is – as Krug (2010) defines it – the „do-it-yourself" usability test. Basically, this term refers to a process, which includes an inspector (who can be a usability specialist, or a designer, an enigineer, or anyone who is able to listen patiently and take notes effectively), a participant, and some tasks to complete. During the test, the participants are asked to think out loud, which allows the inspectors to determine to most serious weaknesses of the tested website.

In his work, Krug (2006) identifies some basic principles about usability tests to stress the importance of such evaluations. Firstly, testing one single participant is in any case better than testing no one. As Nielsen (2000) concludes, testing zero users gives zero insight, however collectig data from at least one participant enables the inspector to learn almost one third of all information collectable about the certain website, so the difference between testing nobody and one user is substantive. Secondly, the importance of selecting representative participants, who are the members of the target audience of the website is overestimated. In addition, dealing with an e-govermnet site, which has a broader target audience (almost the whole population), it is appropriate to test with anyone willing to participate, since every citizen has to be able to use the site in the future. Thirdly, usability testing should be an iterative process. The reason of this fact is that after one usability test, although some problems can be fixed, some disfunctions will remain unrevelead, in addition, the changes aiming to fix the problematic parts can cause further, completely new errors.

As regards to the number of participants, Krug (2006) offers a highly descriptive figure (Figure 1) which shows, that testing with eight participants once is less effective than testing three users two times. While eight testers may find more things to improve for the first time, during the second test – assuming that the problems found during the first session are fixed – the three participants presumably can find the disfunctions they could not have seen during the first test.
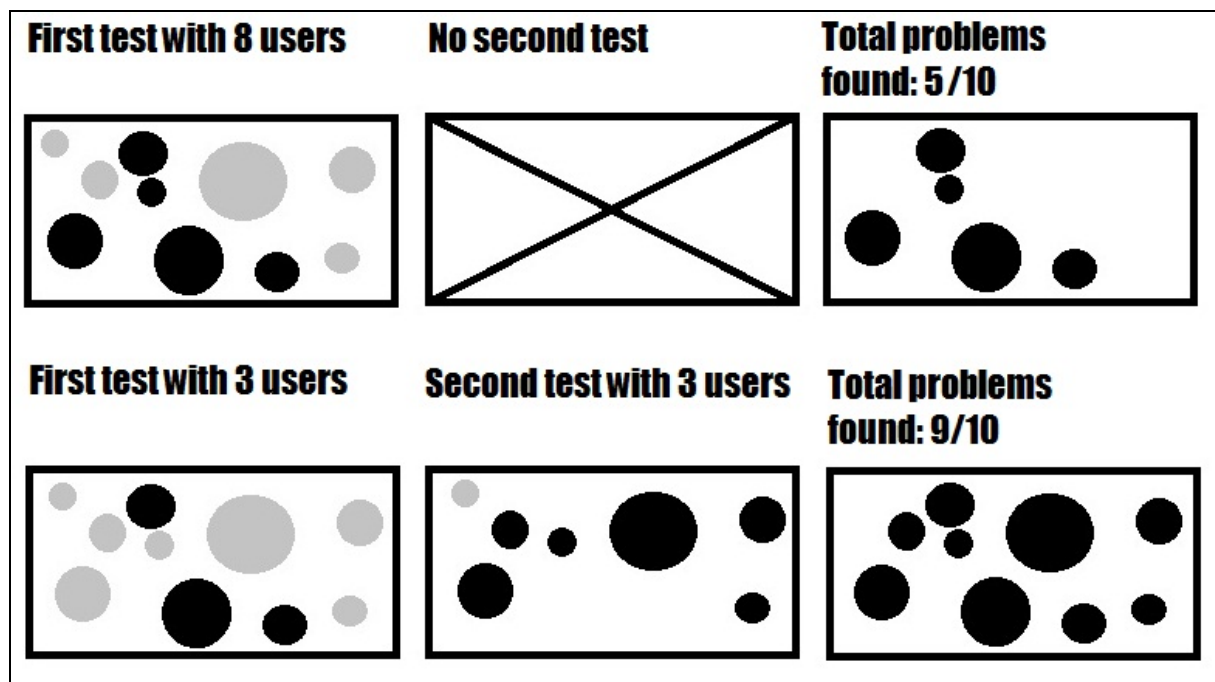
Figure 1: The number of users and the number of problems found (Krug)[17]

Another important finding needs to be mentioned in discussing the issue of number of participants. Nielsen (2000) performed a series of tests and found that with three users almost 75% of the problems can be revealed, and thus adding more participants is making the process less and less effective. To support this argument, Nielsen (2000) used a curve to demonstrate his results (Figure 2).

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[17] Redrawing and reconstructing of the original figure found in Krug (2006), page 139.
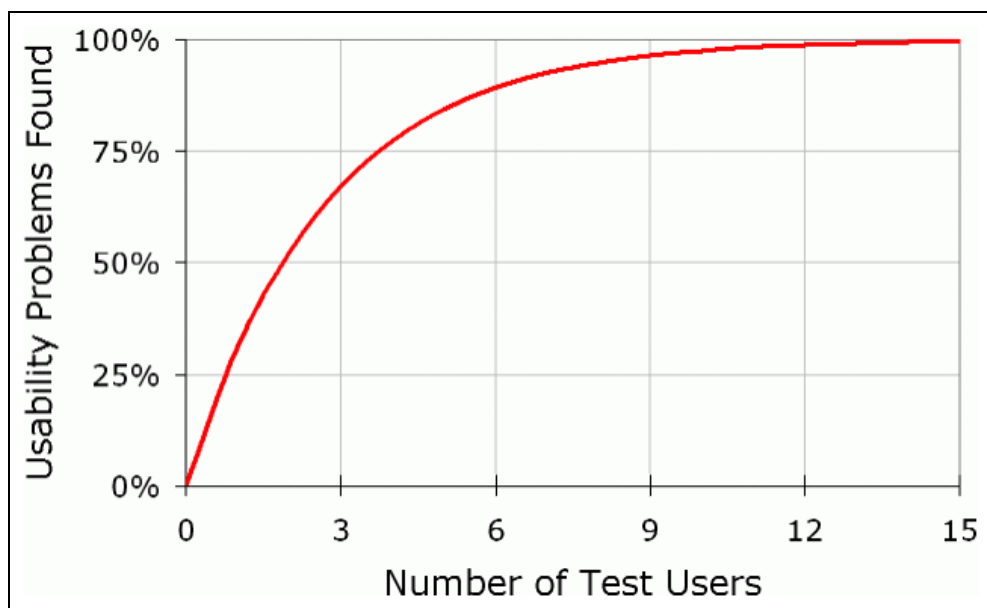
Figure 2: The number of users and the number of problems found (Nielsen)[18]

Next to the above-mentioned factors, another important aspect of a „do-it-yourself" usability test is that such tests are easy to conduct, and are extremely low cost. The inspector only needs to have a room, two chairs, and a PC. Optional tools are the following: a screen capture program, a camera, a cable, a room for other observers (if other people willing to observe the user during the test, it is recommended to sit in another room, where they can follow the session by a screen, which shows the test recorded by the camera or by the screen capture software).

As it was discussed already, the process of this usability test is quite simple. First of all, the conductor asks some questions about the participants (who they are, what are their jobs, their Internet-using habits), to make the user feel more comfortable. Secondly, the facilitator underlines the importance of „thinking out loud", asking the user to tell everything, which comes to her mind related to the page. Thirdly, the homepage of the website is shown to the user, and the participant is asked to tell whose site is it, what is interesting about it, what would she click on, what is she thinking about the layout, the design, the structure of the page. Finally, the user is asked to conduct certain tasks (the tasks are previously planned, and the same for each participant). During the test, the facilitator is taking notes, and/or using a screen capture program, which records everything happening on the screen (including cursor movement). Recording not only the voice of the user, but her face can be highly effective in showing the most frustrating points of the process, the hardest parts of the tasks.

II.2. BACKGROUND

One aim of this study was to evaluate the Hungarian e-government portal (www.magyarorszag.hu). The website was launched in September 2003, replacing the previous portal, eKormanyzat.hu[19], which started to operate in 2001. The homepage of this first Hungarian e-government portal looked like this:

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[18] The figure is form this source: http://www.useit.com/alertbox/20000319.html (Available 16.04.2011.)
[19] eKormanyzat means eGoverment.

Figure 3:eKormanyzat.hu[20]

Evaluation of the first Hungarian e-government portal is beyond the scope of this paper, the aim of describing some characteristics of this old page is to create a starting point for further examination.

It can be seen that the design of the site did not fulfill the requirements of legibility: the background colors were light and dark grey. Nielsen (2001) published 113 guidelines for homepage usability. The „Graphic Design" section includes guidelines, which recommend to use high-contrast text and background colors. It also contains a recommendation to limit font styles and other text formatting. The portal's design did not follow some substantial web navigation conventions as well (for example the box for logging in should be at top of the page, on the right corner).

The previous layout of the magyarorszag.hu portal was the following:

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[20] This screenshot was made in 13.12.2001., the picture is taken form Csuhaj-Varjú (2002).

Figure 4: magyarorszag.hu - previous[21]

The design of this page was far better than the one of eKormanyzat.hu, however, the graphics of the site still did not follow some quite important guidelines. So far there has been little discussion about the usability of e-goverment websites in Hungary. In reviewing the literature, only one prior research was found that have noted the importance of improving e-government's websites usability by empirical methods. Herendy (2008, 2009) reviewed to most common methods of planning and constructing a usable website, and she also conducted a small-sample focus group discussion and an eye-tracking test as well on the previous version of www.magyarorszag.hu. In her study she reached the conclusion that according to the feedback from the participants, the homepage of the website is too complicated, not clear enough, the colors are too grey and boring. While some functions were placed in accordance with the conventions, therefore the users could easily find them, some parts of the primary navigation (top level of the site's hierarchy) were not put at the expected point of the page: the participants could not find them easily (some of them even gave up searching).

To show the development of the design, here is a picture of the new version of the website, which was launched more then one year ago (in March 2010):
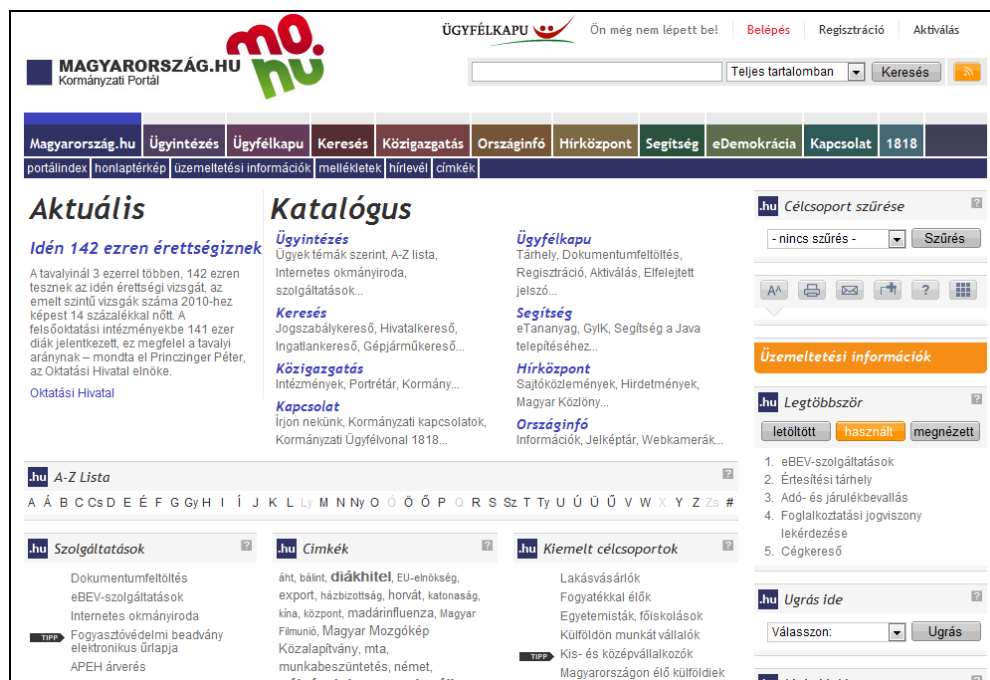
Figure 5: magyarorszag.hu – the current version[22]

II.3. METHODOLOGY

The Hungarian e-government website, www.magyarorszag.hu (hereinafter called: the Site) was chosen to be assessed upon its usability. In choosing the most approproiate and effective method, it was considered that a qualitative analysis has several advantages compared to a quantitative measuring. Using a qualitative inspection method enables to conduct a low-cost, low-sample, but highly effective test, which can lead to establish certain

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[21] This screenshot was made in 21.05.2007., the picture is taken form Herendy (2009).
[22] The screenshot was taken in 09.04.2011.

recommendations for future development of the website. On the contrary, a quantitative test would not serve the purposes of this study, since such tests are most suitable in cases when the current version of a product is to be compared to the previous version. For these reasons, the above discussed „do-it-yourself" usability test was chosen to serve as the evaluation method. The research process consisted of nine steps:

1. Literature review
2. Choosing the most suitable method for the evaluation
3. Testing the website to point out to weaknesses and strengths
4. Setting the research questions
5. Participant selection
6. Conducting the usability tests
7. Data analysis
8. Identifying results
9. Drawing conclusions

To identify the main strengths and weaknesses of the Site, first it was tested by the author (in the terms of testing methods, this test had the characteristics of a heuristic evaluation and a cognitive walkthrough). The aim of this preliminary inspection was to find what kind of tasks should be asked during the usability test.

As a result of this inspection, ten tasks were set. Some of the tasks were about finding certain information on the Site (for example: information about the law drafts of the Ministry of Public Administration and Justice), one was about finding a form and fill it out (applying for a temporary access to the Client Gate[23]), one was to search in the database of law rules in effect, and some were about finding a document and download it. The design of the tasks were based on the following aims: they should not take more than one hour to complete in order to maintain the same level of attention and concentration of participants; they should cover the whole spectrum of services and information categories in order to explore the whole structure of the site; they should be „real", which means that they should contain services and information that are popular, and finally they should be designed for an average citizen, for non-lawyers (for a lawyer, it is easier to find a law rule or a legal information).

Krug (2006) argues that the ideal number of participants of a usability test is three, at most four. To follow this idea, three users were recruited to conduct the test. In selecting the participants, it was decided that high literacy users will be asked to participate. The demographic datas of the participants are the following: two male and one female user was involved; one of them was 23, one was 31, and one was 56 years old. The professions of the users are: student; IT engineer; chemist. All of them are from Budapest (Hungary), and use the Internet every day. One of them has never seen the Site before, one has Client Gate access, but used it only several times, and one of them visited the Site before, but inspite of this it seemed to be quite new for him. For the first user it took 55 minutes to complete the tasks, for the second it was 68 minutes, and for the third one the length of the test was 60 minutes. During the test, a screen capture program[24] was used in order to collect data about the cursor movement and to record the voice of the participants, and notes were taken as well.

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[23] „This gateway allows users to securely identify themselves online and gain access to transactional eGovernment services through the portal. Any user who completes a temporary registration procedure online can access a number of services made available through the Client Gate, but an authenticated registration is needed to fully access transactional services (…) The number of registered users of the Client Gate rose to 760 000 in April 2009". Source: http://www.epractice.eu/en/document/288264 (Available: 19.04.2011.)
[24] Freez Screen Video Capture, available here:
http://www.smallvideosoft.com/screen-video-capture/download_screen_video_capture.php
(Available: 19.04.2011.)

In the beginning of each test, the participants were asked to think out loud. After that, they were shown the homepage of the Site. They were asked to tell whose site is it, what are they thinking of the design, the structure, the order of the elements, what would they click on first and what are their feelings, first impression about the Site. After this introductory part, they were asked to complete the ten tasks indicated above. They were given the instruction not to use the Site's own search box until they would give it up otherwise. The reason for this instruction is that the aim of the tasks was to examine the structure of the Site, the organisation of the elements, to assess whether to hiearchy is logical or not.

II.4. RESULTS

The information and data collected during the usability tests can be organized in many different ways. The findings presented in this study will be discussed in a task-by-task basis. This approach allows comparing the participants' performance. Hereinafter the study refers to the users as Participant 1, Participant 2, and Participant 3. In describing the results, the participants' comments are reproduced verbatim.

The introductory part – general questions about the homepage

Interestingly, Participant 1 mentioned the same weaknesses of the design that were indicated in Herendy's (2008, 2009) study about the previous version of the Site. In her study, Herendy also reproduces verbatim what her participants expressed about their first impression of the previous version of the Site, to give some examples: „boring", „monotonous", „pale", „burocratic". Particpant 1 commented that the homepage is „not friendly", „the colors are pale". Participant 2 noted that the white background is a good choice, but with the grey fonts there is not enough contrast, „it can be hard to read for low-vision users". Participant 3 expressed that „there is too much information, it is not clear, what can be done on this page, I don't know what is it for". Participant 1 did not like, that on the tabs the fonts are bigger than the fonts indicating the second level of the hierarchy. Participant 2 found it disturbing that it is not obvious, what is clickable. He thought that the grey colored words are not links, but in fact, they are, almost every text clickable on the homepage. He expressed that the content, which is calling for his attention is the „Actualities/News" section, however, it only shows one piece of news at the same time. The participants noted some ambiguities as well, for instance the function of some icons was not clear. Another example is that moving the cursor above the „tipp" button, the „icon" word appears in the tooltip[25]. Participant 2 commented that the „subscribing for newsletter should not be on the bottom of the page, because it requires too much scrolling to get there". The main strength of the homepage – according to the participants' opinion – is using tab dividers for navigation.

Task 1 – to find information about „őstermelői igazolvány", which is an agricultural sole proprietorship or private enterprise

In completing this task, Participant 1 tried to use the alphabetical browser, and clicked on the „Ő" letter, then tried to search by the word „Vállalkozás" („Enterprise" in English). After these attempts, he tried the „Filter by target groups" function (it filters the content of the whole site) by choosing the „Agricultural workers" option. Surprisingly, he did not notice that

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[25] Appendix Figure 20

the search results can be filtered by some more options[26] (these options were on the left, but they proved to be ineffective in calling for the user's attention). He mentioned that the content of the „Catalogue" should be in alphabetical order. For Participant 2 it appeared to be obvious how to filter the search results. He commented on the „Most popular" function, which is a box on the right side of the page, in his opinion it can be highly usable in giving hints about what is the Site for. Participant 3 found the information in a different way: instead of using the filter function, she browsed in the „Catalogue".

It was part of the task to find one certain information about this enterprise (What is the maximum amount of money that can be earned by this enterprise, which is still tax-free?). The aim of this question was to examine the legibility and the scannability of the content. The results suggest that the text is not formatted enough, the participants could not scan it effectively. Moreover, the little „paragraph icon" (§) inserted in the text did not work well.[27] The purpose of this icon is to navigate the user to the law rule related to the content. The problem was that neither Participant 2, nor Participant 3 noticed that it even exists. As Participant 2 expressed: „the design of the icon is not appropriate, the main characteristics of a paragraph symbol are: round, curved, but this sign looks like stairs". Participant 3 explained that it should have a frame to be more noticeable, and the color of it also does not serve the noticeability.

Task 2 – to gain a temporary access to the Client Gate, tell the opinion about the design of the application form[28]

For two participants it was quite hard to even find the form, Participant 3 noted that „considering the importance of this function, it should be located in a more obvious place". She finally found it by using the „eTananyag" function („eLessons" in English). Concerning the form, Participant 2 expressed that „the design of the form does not fit in the design of the whole page, and the grey fonts with grey background are not so legible". Participant 3 also stated that „the grey color is not good".

For two participants, the description of the first field was disturbing (instead of „Name" it is „Used Name", which is not a legal term and not used in everyday speaking). Participant 2 noticed that a helping instruction (which appears when the user moves the cursor above the field) asks the user to write thier mother's currently used name (instead of the birth name), it is quite unusual, it made the participant think, he did not know what should he write in the form. Participant 3 noted that the instructions are too long, „I don't have time to read all of this". On the contrary, Participant 2 found the instructions to be a good practice, however, he noted that „the instructions should not disappear when the user starts to type in the form".

Task 3 – to find and download a sample of a room rental contract

Using the alphabetical browser, for two of the participants it was easy to find the document. For Participant 3, the main difficulty in completing this task was that she did not know the proper term for such a contract. Participant 1 stated that it is not logical what should be clicked to download the document. He mentioned that the type of the downloadable file (.rtf) is „good, because it can be opened by any kind of text editor". Participant 2 also commented on the button, which needs to be clicked in oder to download the contract. He said

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[26] Appendix Figure 1
[27] Appendix Figure 5
[28] Appendix Figure 2

that „it is not like a button, it does not fit in the design". „When I come to this page, I always have to think about it, again and again".[29]

Task 4 – to find the form of applying for a health insurance card („TAJ-kártya igénylőlap")
and download it

In connection with this task the biggest concern of the participants was that the Site offers two documents with almost the same name („TAJ-kártya igénylőlap 1." and „TAJ-kártya igénylőlap 2."). Participant 1 noted that „it is disturbing that there is no description about what is the difference".[30]

Another thing that made the participants think is that the descriptions of the documents are almost the same, but the first contains 13 additional words. Only Participant 3 found the main difference between the two documents after looking at both of them: it is only a difference in the format of the file, one of them is .doc, the other is .rtf.

Task 5 – to find information about how to initiate a proceeding of the Constitutional Court
dealing with the ex post examination for unconstitutionality of laws

The aim of this task was to examine whether the first level hierarchy of the Site is logical, clear, or not. To find the information indicated in the description of the task, the participants needed to categorize this very special activity. While for Participant 3 it was quite obvious that it should be in the „eDemocracy" page, the other two participants tried to find it first by the „Constitutional Court", and therefore clicked on the „Public Administration" tab. It was not logical for them that this tab only contains descriptions about the listed authorties. Participant 2 expressed that „it is not a good practice to make links, which takes you to the same point. However, I like that the color of the already clicked link is darker."[31] Participant 3 found the proper link at the bottom of the page (with scrolling a lot), she did not see the link nearer the top.

Task 6 – to search in the database of law rules in effect to find laws about the building permit
for constructing and building a house; in case it can't be found that way, search for
information related to this in the Site in order to find the title or number of the related law
rules in the descriptions

It is not surprising that this task was the most difficult to complete for the participants, since they were non-lawyers. However, the findings of this part are striking: the users – in spite of being highly educated – had no idea how to choose the type of the law rule (it is noticeable that it is not obligatory to choose a type, for two of the participants it was not clear). Participant 1 tried the searching by words, it resulted in too many search results. After some attempts in trying to get less results, he went on browsing. Finally – after going through the „Portalindex" and the „Public Administration" page – he got frustrated and used the „Search" function of the Site. The chosen search result navigated to the „FAQ" section, where in one description he found the act about the topic in question (note: some links of the „FAQ" page lead to 404 error message).

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[29] Appendix Figure 3
[30] Appendix Figure 13
[31] Appendix Figure 14

Participant 2 had difficulties even with finding the search function allowing to search in the database of law rules in effect, he associated this database with „eDemocracy". It was disturbing for him that the list of the types of law rules contained this: „Tv Törvény"[32]. „Tv" is a common abbreviation of the word „törvény" („act" in English), but the user thought that it is a special type of act, so he refused to choose it. He also failed to find the act, which contains provisions for buliding permit, therefore started to search for it in the alpabetical browser. He expressed that it is very confusing that in the „Catalogue" only some topics of each category are listed, and only a number in brackets shows the total number of topics in the given category. Participant 2 did not notice this number, he thought that the category only contains the listed elements, so he could not find right link[33]. As a result, Participant 2 also got frustrated and used the „Search" option. He commented that „it is a very good practice that every keyword of my search is indicated with the color red"[34] (on the page, where the users get by using the "Search" function, and by picking one from the search results)[35]. He also mentioned that the descriptions always should contain links to the related law rules (the page where he could find the information in question did not contain the red „paragraph icons").

Participant 3 started to look at list of the types of law rules, she was searching for a type that contains the word „building". As a result, she found a type of decree of a minister called Minister of Building and Urban Development, this ministry existed during the last decades of communism. Zero search result was found for the word „building permit" and this type of law rule, so she realized that maybe the type is not correct. After some unsuccessful attempts she found – using the „Catalogue" function – a description about building permits, but it did not contain any information about the related law rules, or any of the above mentioned „paragraph icons". At this point, Participant 3 got frustrated and used the „Search" function of the Site. The red colored words – indicating the keywords – in text confused her, she thought that they are clickable links. Clicking on one of the „paragraph icons" she could manage to find the related regulations, however, it was not clear for her that the text appeared in the popup window contains the whole law rule, not only the section related to the sentences next to the „paragraph icon". It should be noted that Participant 3 had the same problem with the „Tv Törvény" type: „If it was only „törvény", I would choose it. I thought that it is something special, so I did not apply it."

Task 7 – to find and download the sample of denunciation in the case of shoplifting

Finding the indicated document was quite difficult for Participant 1, after he tried the search in the alphabetical browser and in the „FAQ" section, finally found it very deep in the site hierarchy, using the „Catalogue": it needed five clicks to get there. As he commented: „If it was not a test, I would give it up earlier". After completing the task, he was shown an easier way to reach it, the item in question can be found among the „Documents" in the „Ügyintézés" section. The word „Ügyintézés" refers to administrative procedures, matters or steps someone has to deal with or go through to achieve a certain goal, for example applying for a new ID card. Participant 1 noted that „it is just not logical to put information and

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[32] Appendix Figure 8
[33] Appendix Figure 4
[34] Note: The color of the keyword is not always red, it depends on the color of the first hierarchy page, for example the page „Public Administration" has red colors, while „eDemocracy" is light green. The difference between these marks may can cause some confusion.
[35] Appendix Figure 15

descriptions in this section, these should be in a section called for example „Knowledge base"".

After downloading the document indicated in the description of the task, Participant 2 examined the text of the sample as well, and commented that „it is not clear what can I change in this sample, and what is a compulsory part.". As regards to Participant 3, the problem of not knowing the proper legal term occured again, she did not know the word „denunciation", and searched for „stealing". After looking at the downloaded document, she expressed that „the sample is funny, I would not do it that way, in my opinion it would be enough to provide an empty space for writing down the case and the facts."

Task 8 – to find information about the timetable of the Hungarian Airlines (MALÉV)

The purpose of this task was to test the effectiveness of the site structure. Each participant was able to find the right tab for the first guess. However, they were disturbed by – the – above discussed – illogical listing of the „Catalogue" (although there is enough space on the page to list each of the six elements, there were only three, the users had to click on the name of the category to reach to additional three). Participant 3 did not notice the number in the brackets showing that there are more elements than listed.[36] She recommended that „it should contain three points („…") to indicate that there are more". (It should be noted, that in some pages the Sites applies this solution.) Participant 2 mentioned that „it is highly disturbing that the information about MALÉV is not divided into sections, it is hard to read".[37]
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Task 9 – to find the database of posted/public notices (which are used in a public administration procedure[38])

The participants did not know that this kind of notification exists. Participant 1 first associated this topic with the „Search" tab, then with the „News Center" tab, where he could find it (it is on a second level of the hierarchy). He commented that he did not expect that the link navigates him to another page, then mentioned that „it should contain a „back" button".

Participant 2 first tried the „Public Administration" tab. After looking at the „Catalogue" of the page, he commented that next to one category the brackets with the number indicating the number of elements are missing. Then he expressed that in the previous part of the test he did not notice, ignored that there is a „More" button at the bottom right corner of the lists. Interestingly, after clicking on the right tab („News Center"), he did not glance at the menu below the tabs indicating the elements of the second level hierarchy. Instead, he found the database near the bottom of the page in a box. After testing the search function of the public notices database, he noted on its slowness.

Participant 3 also did not glance at the menu bar below the tab, and found the right link at the bottom of the page in the „Recommended links" box. She commented that the form of the search engine is not clear enough, it should contain which field is compulsory[39]. She also mentioned that the meaning of some fields was not self-evident, therefore „it would be good to place some help there".

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[36] Appendix Figure 7
[37] Appendix Figure 6
[38] In Czech Republic the section 144 of the Act N. 500/2004. Coll. on Administrative Procedure Code contains provisions for public notice (in the original language: „Účastníky v řízení s velkým počtem účastníků lze o zahájení řízení uvědomit veřejnou vyhláškou.")
[39] Appendix Figure 16

Task 10 – find the page, which contains the law drafts of the Ministry of Public Administration and Justice

Participant 1 clicked on the „Public Administration" tab, where he easily found an information page about the Ministry of Public Administration and Justice. On the contrary, he expressed that at the top of the page there are three links, but the first of them is a sentence that does not make sense, therefore he could not decide at a glance if it is one link, or three[40]. On the left he found a link to the website of the ministry, where he had serious difficulties in finding the drafts (the link to it is at the bottom of the page, and the title of it not really self-explanatory).

Participant 2 found the page quickly by clicking on the „eDemocracy" tab, while Participant 3 had difficulties with this task. Her first guess was that it should be in the „News Center" section, then she tried the „Public Administration" tab, then looked at the „Recommended Links" box, then got frustrated and used the „Search" function of the Site. Finally she gave up, and recommeded to place a link at the information page about the ministry (in the „Public Administration" section), which navigates to the drafts.

Some remarks of the participants after completing the tasks

After completing the tasks, the participants were asked to express their overall experiences, opinions about the Site. Participant 1 mentioned that it is a good practice that some of the contents of the Site are reachable in different ways, by going through different paths. He also liked the large amount of information that is collected on the portal. He also stated that he cannot mention a really substantial problem. On the contrary, he expressed that there are several small, but highly disturbing errors. Finally, he commented that the Site should contain some content for foreigners, for users who cannot speak Hungarian, since some information can be useful for them (for example it should contain a section for expats, another section for tourists and so on).

Participant 2 stated his belief that the Site's general structure is „quite good, the tasks could be done within a relatively short time". Moreover, he expressed that he did not know that so much information and so many samples can be found on the Site, approximately „three-quarters of the content was a surprise" for him. In addition, he mentioned that he normally does not click further than two clicks, completing this exercises required to go too deep into the Site's hierarchy. He also looked at the sitemap, which was proved to be inefficient, since it shows only two levels of the hierarchy. Finally Participant 2 summarized that the government should promote the Site more often, and it should communicate that it contains so much information, so many downloadable samples of contracts and other documents, services and transactions. Next to these comments, he recommended a „Did you know?" box for the Site's self-promotion.

Participant 3 was highly satisfied with the tabs, however, she expressed that the Site should use text aligned to the position of the related/attached tab instead of using left-aligned text for the indication of the second level site-hierarchy because she often did not even glance at the menubar below the tabs, since it appeared „far" on the left, where she did not expected. As a result, in cases the required tab was in the center or nearer the right side of the page, it

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[40] Appendix Figure 17

was easy to miss the menubar below it.[41] She also mentioned that the colors of the tabs and related elements should be more intense, since it helps to recognize what belongs together.

II.5. DISCUSSION

The findings of this research demonstrate how efficient can be a low-cost, „do-it yourself" usability test. Testing three users has revealed some highly disturbing problems, which are relatively easy to fix; correcting these ineffectivenesses can result in improved user experiences. However, there were a lot of comments from participants praising some characteristics of the Site. For instance, each of them liked the tab-based navigation. Another example for good comment is that one user commented on the effectiveness of a box called „Most used"[42]. It contains links to contents, which are most popular among users. This box can give hints to the visitors, so they can get to know parts of the Site that are new for them. A third example for good practices is the breadcrumbs, which showing the path for the homepage to the current page, the participant used it several times during the test. It needs to be mentioned, that when a user visits a site, she usually is trying to find something. There are two groups of users: some of them will almost always browse first, searching only after running out of possible links to choose, while others will use the search function right after entering a website. The Site offers a wide variety of searching and browsing options, fulfilling the needs of both groups.[43] Finally, the Site's navigation, the organization of the elements proved to be relatively effective, since the participants almost always found the correct Tabs. Overall, the participants were surprised by the amount of information reachable on the Site. Moreover, each of them expressed that the Site has not only lived up their expectations, but it has exceeded the presumed degree of usability and user-friendlyness.

As for the criticisms, the core areas of difficulty in providing a usable e-government page based on the results of this usability test appeared to be the following: on the homepage it is not evident where to start; the colors should be modified to improve legibility and navigation; some parts of the browsing options should be reconstructed. Based on the evaluation of the results detailed in the previous chapter, a **set of recommendations** can be drawn to improve the usability of the Site. These can be classified into many categories, but the following main categories are apparent: Graphics and design; Communicating information; Content, Writing for the Web; Links; Navigation; Forms.

A) Graphics and design

- The participants expressed the inappropriateness of text colors. These findings further support the idea suggested by Nielsen (2001): it is recommended to use **high-contrast text and background color** to make the content more legible. The Site has currently white background with grey fonts, therefore it needs to be reviewed to establish enough contrast.
- It is important to **show what is clickable** by using different colors, so that way the user is able to distinguish the links immediately.
- It proved to be a good idea to insert **„paragraph" icons** into the text, which navigate the users from the descriptive information to the related laws, but the appearance of the icon is not serving this aim, it should be redesigned.

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[41] Appendix Figure 18
[42] Appendix Figure 11
[43] Appendix Figure 12

- The **colors** of the tabs and the related contents **should be more intense** to make the connections between the elements belonging together more self-evident. However, it needs to be noted, that Krug (2006) offers some limitations about using different colors for the sections: „Color coding is a very good idea – as long as you don't count on everyone noticing it. Some people (roughly 1 out of 200 women and 1 out of 12 men – particularly over the age of 40) simply can't detect some color distinctions because of color-blindness. More importantly, from what I've observed, a much larger percentage (perhaps as many as half) just aren't very aware of color coding in any useful way. Color is great as an additional cue, but you should never rely on it as the only cue."

B) Communicating information

- The participants did not know that the Site provides downloadable documents (samples), they were not aware of the fact that the Site contains so many descriptions and information. To remedy this situation, the Site should contain **some self-promotion** on its homepage (for example a „Did you know?" box), and the government should promote it on other different forums.

C) Content, Writing for the Web

- Redish (2007) recommends to **„break down walls of words"**, which means that the text on the page should be divided into small paragraphs, and each of them should have headings. Using this approach allows the user to scan through the page easily. Having big blocks of unbroken content can make the user leave the page. For instance the description in the „eDemocracy" page is not scannable enough, it creates a „wall of words", it is recommended to use lists or divided paragraphs.
- One of the most interesting result of the test was that the **content of the Site is not always obvious for non-lawyers**. Concerning Task 3, one of the participants had difficulties in completing the task, because she did not know the proper term, the jargon. Since the target audience of an e-government site is almost the whole population of a country, it is of paramount importance to make the language used by the site clear and understandable. To support this aim, it would be a good solution to provide a „**dictionary", which can give the users hints about the proper terms**. For example – considering Task 3 – if the user gives the following inputs: „room", „rent", this function should suggest the expression „room rental contract".[44]
- Task 4 gives a good example of the statement that usability tests can reveal annoying problems, which are quite disturbing and ruins credibility, and at the same time very easy to fix. It should be checked whether the Site's content includes **redundant elements**, and if yes, the unnecessary items **should be eliminated**.
- The Site should not contain links to **404 error messages**, because these kind of problems also can result in decreasing the Site's credibilty.
- **The hierarchy of the „Catalogue" function is illogical**, even if there would be more space on the screen to list every element of a category, some topics can be seen only in case of clicking on the name of a category. Using numbers in brackets to indicate the number of elements in the category and to suggest that there are more elements proved to be ineffective.

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[44] In Hungarian it is more complicated, since the word for room („szoba") does not start with the same letter as rent („bérlet"), and the name of the contract starts with a third, different letter („albérleti szerződés"). It means, that in this case for example using the alphabetical browser will not be effective without knowing the right term.

As Participant 3 recommended, the text should contains three points („…") to show that there are more content.[45]

- Another problem related to the browsing options of the Site is **the illogical use of definite articles in the alphabetical browser**, in which many elements start with a definite article (in English it is „The", in Hungarian it can be „A" or „Az"). For example, instead of "A házasság" („The Marriage") the users will search for "Házasság" („Marriage"), but they won't find it below the letter „H".[46]

- It would be more logical if the Site contained a **„Knowledge Base" section** for pages, which only contain information.

- The **downloadable documents** need to be reviewed: these samples should be clear in the sense what is compulsory element and what is optional.

- In general, therefore, it seems that the whole content of the Site needs to be reviewed with respect to the accuracy and appropriateness of the texts, documents and other elements. Similarly, in the future it should be reviewed on a regular basis, because the content of an e-government site is often modified.

D) Links

- The Site contains a lot of **links to other websites**. In some of these cases, clicking on the link the user does not expect to leave the Site. According to Krug (2006), „One of the most crucial items in the persistent navigation is a button or link that takes me to the site's Home page. Having a Home button in sight all times offers reassurance that no matter how lost I may get, I can always start over, like pressing a Reset button". For this reason, it would be efficient to include **a „Back" button or link** on these other websites. Another solution would be the implementation of a pop-up message dialog box, which could warn the users about the leaving of the Site.

- To make the Site navigation more logical and usable, **it should contain more links to its own contents**, establish a net of connections, for example the findings of Task 5 shows the need of links in the „Public Administration" page.

- Every page, that contains information about a certain topic should contain not only „paragraph icons", but at the top of each page there should be listed every **related law rule with clickable links**.

E) Navigation

- What each participant indicated at the first glance of the homepage of the Site was that **it is not clear, what should be clicked for the first time**. In fact, there is **too much noise** on the site. Some website use a good practice in solving this problem: their homepages contain a „Start here" button on the upper left corner of the page.

- Another important finding was that the tabs work well on the homepage of the Site, as Krug (2006) describes this solution: tabs are self-evident, visually distinctive, and they create an illusion that the active tab is really in the front, while the inactive ones are beyond it, and that creates a physical space. On the contrary – as one of the participants mentioned – the **alignment of the text** indicating the second level hierachy makes the menubar only slightly noticeble for the first glance.

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[45] Appendix Figure 9
[46] Appendix Figure 10

F) Forms

- The findings of the research suggest that the ambiguity in **the form's helping instructions** in the Task 2 needs to be clarified. In a situation what is detailed above, the user has to decide between the rational answer, which is suggested by common sense, and the irrational answer, which is in the description of the page. This kind of situtations can result in harming the credibility of a website.

- The **forms of the Site should be redesigned**, they should fit more in the design of the whole site. In addition, the grey fonts on a grey background do not serve the legibility.

- The search function, which allows searching in the database of law rules in effect should contain **more help about the types of law rules**, about the levels of the rules, and in the form it needs to be stressed in a more obvious way that choosing the type of the law rule is not an obligatory/required field. Jarrett et al. (2008) recommend to follow the conventions and use an asteriks (*) to indicate which field is required. Similarly, the form of the public notice database should indicate which field is required, and it should contain some help about the meaning of each fields.

- The **list of the types of law rules needs to be reviewed**, for instance the „Tv Törvény" expression (and the „Tv" abbreviation for the word „törvény" – „act" in English) is not obvious for non-lawyers.

To sum up, the information collected during this usabiliyt test has important implications for developing the Site, and the findings can be applied to construct other e-government websites as well.

II.6. LIMITATIONS

When interpreting the results of the analyzed usability test, a number of important limitations need to be considered. The most important limitation lies in the fact that the test was conducted by asking higher literacy users to participate. Since the target audience of an e-government site consists of people with different level of literacy, a future research should therefore concentrate on the investigation of the usability of the Site with the participation of lower-literacy users.

Another limitation of this study is that while the tasks conducted by the particpants were based on activities that real users do/have done, a usability test is unable to perfectly show what users would do if they were in a real life situation. For example, there were some comments by the participants during the test that they would give up trying to complete a task if it was not a test.

Thirdly, these findings are limited by the instruction of not using the Site's „Search" function, in some situations the participants expressed that they would use it. As it was mentioned above, the aim of this instruction was to make the participants discover the Site's navigation and structure, and therefore evaluate if it is logical, self-evident enough, or not.

Another limitation that needs to be mentioned is that – as Krug (2006) showed – a usability test with three users is the most effective when it has a second round. In this case, it was not possible, since this idea assumes that the usability problems found during the first test are fixed before the second test.

It would also be interesting to conduct an eye-tracking study. The findings of such research would be comparable with the results identified by Herendy (2009). Moreover, since she analyzed the previous version of the Site, the effectiveness of the reconstruction would also be evaluated.

Finally, the study did not examine the accessibilty of the Site, therefore further work needs to be done to decide whether it meets the requirement of web accessibilty, for instance, a usability test should be undertaken by participation of blind and low-vision users.

CONCLUSION

This paper demonstrates that building a user friendly e-government portal is of paramount importance in the information society. The main e-gorvernment portal of a country should apply the findings and results of prior studies and researches on web usability. In doing this, such main sites can serve as a benchmark for best practices for other governmental webpages (such as ministry websites).

To establish legitimacy and credibility, the governments' aim should be to make a good impression on the users. As a result, it can encourage the citizens to use electronical ways to contact with the public administration. Moreover, next to constructing user centered websites, the governments should publish usability guidelines and maintain a site on usability issues. These guidelines can help not only the public agencies to build usable sites, but it can improve the performance of the actors of the private sector.

The findings of this research demonstrate that a simple usability test in the field of government portal designing is valuable, since it is easy to conduct, however it can reveal problems, which can result in harming the credibility and can make the users leave the site. These problems usually are not substantial errors, correcting them requires little effort.[47] In addition, in spite of not being crucial errors, eliminating them can result in a highly improved user experience. Accordingly, special emphasis should be placed on the communication with the user, on the analysis of the visitors' behavior, and usability tests should be conducted on a regular basis, since it is most effective if it can be an iterative process.

The results of this evaluative research are not only intended to provide some ideas about what should be fixed on the Hungarian e-government portal, but also aimed to underline the importance of web usability, and to offer useful guidelines and aspects for public and private actors as well on how to develop user friendly websites for the citizens.

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[47] Appendix Figure 19

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APPENDIX

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Vonat: A Budapest-Nyugati pályaudvarról Ferihegy 1. terminál között 100 járat - köztük InterCity vonatok - könnyíti meg a városból a repülőtérre való kijutást, illetve a városba való bejutást. A fél óránál valamivel rövidebb út ára 300 forint. (A **Budapest Kártyával** rendelkező utasok 20% kedvezményt kapnak.) Érkező utasaink a menetjegyeket az 1-es terminálon található Tourinform irodában vehetik meg reggel 9-től este 10-óráig. A nyitva tartási időn túl a szerelvényeken, a jegykezelőnél is megváltható a jegy. A Ferihegy 1 termináltól autóbuszok szállítják tovább az utasokat a 2A és 2B terminálokhoz. A pontos menetrendjéről a **MÁV Start Zrt. honlapjáról** tájékozódhatnak.

Minibusz: A **Budapest Airport** minibuszai a két terminál, illetve bármely cím között szállítják az utasokat.

1 fő részére   2 990 Ft (retúrjegy 4 990 Ft)
2 fő részére   4 490 Ft (retúrjegy 8 490 Ft)
(Gyerekkedvezmény 6 éves korig.)
Ferihegy 1 és Ferihegy 2 között a transzfer díja 700 forint / fő.
A szolgáltatás megrendelhető a **296-8555**-os telefonszámon, illetve a **296-8993**-as faxszámon. Jegyek válthatók az érkező vámterületen, illetve a repülőtéri várócsarnokban lévő Budapest airport Airport Passenger Service pultoknál. A szolgáltatásról részletes információk érhetők el a **www.airportshuttle.hu** honlapon.

Taxi: A Zóna Taxi a Budapest Airport és a Zóna Taxi között fennálló szerződés alapján zónák szerint, kötött tarifákkal szállítja az utasokat. A tarifákról és a szolgáltatás részleteiről a **Budapest Airport honlapján** tájékozódhat.

Gépkocsi bérlés, illetve bértárolás őrzött parkolóhelyen mindkét terminálon igénybe vehető.

Reptéri információ
Járatinformáció:
Telefonon: **296-7155** (érkezés, indulás)
Faxon: **296-6000** (érkezés, indulás)
Internetes járatinformáció érkezés, indulás
Poggyászkereső szolgálat:
Ferihegy 2A: **296-8108, 296-7217**
Ferihegy 2B: **295-3480, 296-7690**
Minibusz szolgálat: **06 80 296-855, 296-8555**
Váminformáció (8.00-16.00): **296-9696/8306m.**
Air Cargo: **296-8708**, Fax: **296-8007**
Telefonos helyfoglalás a MALÉV járataira:
Hétfőtől-péntekig: 7.30-18 óráig,
szombaton: 7.30-14 óráig: **235-3888, 235-3804, 06 40 212121** (kék szám)
(forrás: Magyar Turizmus ZRt., Magyar Légiközlekedési Zrt. Budapest Airport Zrt.)

Figure 7

Országinfó » Információk Magyarországról »

Turizmus

Országának területe nem éri el a 100 000 négyzetkilométert, nyelvét sehol másutt nem beszélik, népdalai nem hasonlítanak másokéra, mégis több mint 1100 éve él Európa közepén a magyar nép. Történelmének gyakori ember- és értékpusztító sorsfordulói ellenére olyan értékeket mondhat magáénak, amelyek miatt messze földről is felkeresik.

Magyarország turisztikai régiói (9)
Budapest
Budapest környéke
Dél-Alföld

Aktív turizmus (7)
Golf
Horgászat
Lovaglás

Közlekedés (6)
Autó
Busz
Hajó

Figure 8
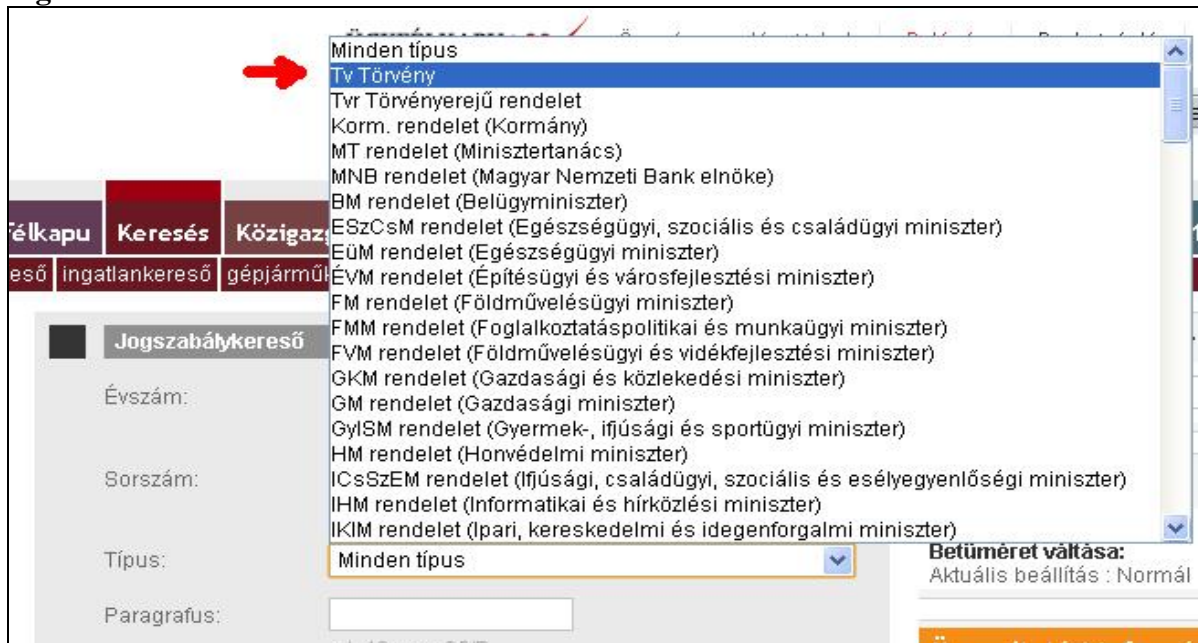
Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18

Figure 19

Figure 20