

PORTUGUESE WEB ACCESSIBILITY

Portuguese Enterprises Websites Accessibility Evaluation

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Abstract: The use of the web is quickly spreading to the majority of the society. In many countries the use of the web in government services, education and training, commerce, news, citizenship, health and entertainment is significantly increasing. The web is extremely important for the dissemination of information and the interaction between the various society elements. Due to this, it's essential that the web presents itself accessible to all, including those with any kind of disability. An accessible web may help the handicapped citizens in their interaction with the society. With this in mind, an evaluation of the accessibility levels of the Portuguese websites is, essential, for an assumption on the availability of these websites to all disabled citizens.

1 INTRODUCTION

The content of this document is the result of research and work done under a research project, whose theme was the evaluation on the accessibility of the Portuguese enterprises websites.

The introduction of new Technologies and methods for, treatment and utilization of information makes, our society, more complete and fit for evolution. This evolution will create better life conditions and best professional performances.

The development of the information and communication Technologies - ICT in the last two decades of the twentieth century and, their mass availability within the population, lead to a profound change in the economical and social activities. These changes had, and still have, an impact in the citizens quality of life, competitiveness and productivity of enterprises (Socrates 2007b).

The information society is a society for all. The ICT bring a clear and important influence, in the various domains of the new way of life in society. Its applications cover the entire spectrum of social groups. Never the less, there are barriers to overcome, opportunities to explore and benefits to be collected. Therefore it's not correct to create a brand new group of e-excluded people, just by abandoning the unprotected. It's extremely important to promote the universal access to e-literacy and e-competence (Gurstein 2000).

The growing need of access to the online information impels for a warranty of accessibility to this same web content. According to the 2001 communication of the European Commission (EU 2002a), there are 37 million disabled European citizens who need to be granted, a full access to web content.

The ICT offer great potential to citizens with mental and physical disabilities. Through the use of these technologies, they can be better integrated in their societies. It is however necessary, to increase efforts to adapt the technology to certain groups of people with disabilities (Wenner 2008).

2 WEB ACCESSIBILITY CONCEPTS AND CONCERNS

The term accessibility can easily be defined as the possibility of disabled people interact with a product, resource, service or activity has normal people would. In what concerns the ICT, we can define accessibility as the creation of interfaces that are perceived, operable and easy to understand for people with a wide range of features. This includes all disabilities, such as visual impairment, hearing problems, and physical, cognitive or neurological limitations. In this set, also should be included conditions of temporary incapacity, such as the loss

of glasses or the breaking of an arm. Beyond this, accessibility also makes the products more accessible to people who do not have any kind of disability (W3C 2008c).

According to the European Commission, ICT are a powerful engine for employment and growth. A quarter of the GDP of the European Union and 40% of the productivity growth is due to the ICT. These facts show the importance of proactive policies to react to the deep technological changes (EU 2002b).

Jim Thatcher and Shawn Henry claim that the web accessibility goal consists in, providing to all the disabled citizens, the ability to perceive, understand, navigate and interact with the Web, even if they have visual, hearing, physical, cognitive, speech or neurological impairment (Thatcher, Henry et al. 2006).

2.1 Web Accessibility – World Perspective and Regulation

In the year 2002, the Portuguese National Institute of Statistics - INE promoted a demographic study named “Censos 2002 – População residente com deficiência segundo o grau de incapacidade e sexo”. According to this study, there were 634000 Portuguese citizens with some kind of disability. This number represents 6% of the entire Portuguese population (INE 2002).

The World Health Organization – WHO claims that about 10% of the world population suffers, from some kind of disability or incapacity. This number clearly shows the existing need for health and rehabilitation services. Due to this, the WHO created an action plan called “Disability and Rehabilitation Action-Plan 2006-2010”, whose mission goes not only, for trying to disseminate and create awareness of this reality throughout the world community, but also to create initiatives that help in the process of recovery and re-integration of disabled people back to society (WHO 2006).

The first time web accessibility was matter of business, in the European Union, was in September 2001, through a communication made by the European Commission. This communication was the result of the analysis made to the “eEurope 2002” action-plan, that was approved in the Feira’s European Council (EU 2002b). After 2001, and as the web accessibility importance was growing, the European Commission launched the “eEurope 2005” action-plan. This plan goal was the creation of modern public websites and the creation of a dynamic environment for e-business. According to the same action-plan, the referred creations would be

made with the help of an enormous amount of broadband access offers, with competitive prices and through a secure info structure for information (EU 2003).

Web content accessibility has been order of business to various world entities, such as the W3C consortium that, in the year of 1999, created the World Accessibility Initiative – WAI. This initiative was created aiming to be a parallel organization to the W3C. Its mission should be developing guidelines (that would be understood as the international standards for web accessibility), developing support materials for a better understanding of the web, developing web accessibility and developing new resources, through international cooperation (W3C 2008a).

Since the year 1999, WAI has been aiming for the increase of web content accessibility, by creating several tools that allow it. An example of these tools is the Web Content Accessibility Guidelines. These guidelines are an explicative document of how to create web content, so that it can be accessed by just anyone, including those who have some sort of disability. According to these same guidelines, web content is all the information within a web page or web application. These accessibility guidelines are characterized by three main aspects, the guidelines checkpoints, the priority levels (level 1, level 2 and level 3) and the conformance levels (level A, level AA and level AAA) (W3C 2008c).

The world awareness, for the web content accessibility issue, is growing every day. This same awareness is globally penetrating the enterprise markets. This has been happening because, disabled people are using ICT in a more regular basis, and their economical influence is also growing. As a consequence of this global “movements”, the Portuguese enterprise market should also adapt itself to this new reality.

2.2 The Importance of Accessible ICT

The ICT allow speeding up the pace of technical progress, modernization and economical structural adjustment. Since ICT stimulate, in a large extent, the competitiveness, the European Union must take every opportunity offered by them (EU 2005).

The ICT currently have a very high penetration rate in the Portuguese enterprise market. The Agency for the Society of Knowledge confirms this statement in the analysis made to the Portuguese National Institute of Statistics inquiry, according to which 95% of the enterprises, with ten or more employees, are computer users, and 84% of these

same enterprises use e-mail and 83% have internet access. For medium-size enterprises (50 to 249 employees) these three indicators have the value of 99%. For big enterprises (250 or more employees) the three indicators all have a value of 100% (INE 2007).

Currently in Portugal, there are about 400000 employees in enterprises directly related to the ICT. This value, according to the claims of the Agency for the Society of Knowledge, will increase about 3%. Other value that, according to this same Agency, will also increase in the future, is the number of people working with a computer in their place of work, that will increase from 19% (in the year of 2004) to around 40% (UMIC 2007).

Due to this, it's very important to have accessible ICT so that, all of the people that work or that will work with them, have the means to really take the best advantage of these technologies.

The World Wide Consortium is currently present in the World regulation of web accessibility. The W3C 1.0 version of the accessibility guidelines is currently, the standard used for the creation of rules that encourage, the creation of accessible Web content. Although the widely acceptance of the directives of the W3C as the standard to use, this same consortium is developing a second version of guidelines for accessibility, in order to define a new set of criteria and techniques, appropriately adjusted for the current technological levels. According to the recommendation of the W3C, the 2.0 version of the directives for accessibility cover a large number of recommendations to make Web content more accessible. Following these guidelines will make web content accessible to a larger number of people with disabilities (including blindness or low vision, deafness or hearing loss, learning disabilities, cognitive limitations, restrictions of movement, difficulties in speech, photosensitivity and combinations of these). Following this new set of directives, the final result will be a Web content more accessible to all user (W3C 2008b).

3 WEB ACCESSIBILITY EVALUATION

3.1 Web Accessibility Evaluation Proceedings

For undertaking the evaluation of the accessibility levels presented by the Portuguese enterprises

websites, we chosen to use the method proposed by the W3C's WAI.

In what the WAI concerns, the accessibility evaluation of a website is a process made by the following steps: definition of the evaluation scope, definition of the evaluation tools, definition of the proceedings for the manual evaluation and definition of witch reports will result from the evaluation process (W3C 2006).

For the definition of the evaluation scope, we had to choose what criteria would the accessibility evaluation follow and who would be part of the target group. For the criteria to use, we decided that the best way to achieve good results was, following the "AAA" accessibility level announced by the W3C (W3C 2008b).

For the definition of the target group we realised the impossibility in evaluating all of the Portuguese enterprises, so we decided to evaluate the 1000 biggest Portuguese enterprises during the year of 2005 (INE 2007). Even though this was our initial target group, after a research on the websites of these enterprises, we reached to the conclusion that only 777 of them had online websites and 223 of them didn't had an available website or had one that was "in construction" or one that was incompatible with the evaluation tool we've chosen. For this reason the "final" target group was only composed by 777 of the initial 1000 enterprises.

For the evaluation tool to use, we've chosen the TAW3 tool (CTIC 2008).

This was the chosen web accessibility evaluation tool because its execution is done according to the following points:

- The evaluation is based on the W3C Web Content Accessibility Guidelines 1.0;
- It's free to use by anyone;
- It automatically evaluates all the pages of a website;
- It creates a report with all the accessibility failures encountered in a website.
- It's available in several languages, including Portuguese and English.

For this project we decided that the manual evaluation, of entire target group was something that we wouldn't be able to achieve in the period of time that we had, for the resolution of this project. As a result of this situation we decided not to manually evaluate the referred websites.

In what concerns the kind of reports that would result from the evaluation process, we decided to do a group of simple statistical studies (average, standard deviation, maximum and minimum), that

would represent the reality of the web accessibility levels presented by the Portuguese enterprises.

3.2 Evaluation Results

The first analysis made was pointed to the target group. This initial process consisted in verifying the number of Portuguese enterprises that had an available website. The result of this process was that 82.8% of the initial 1000 enterprises had an available website has the figure 1 shows.

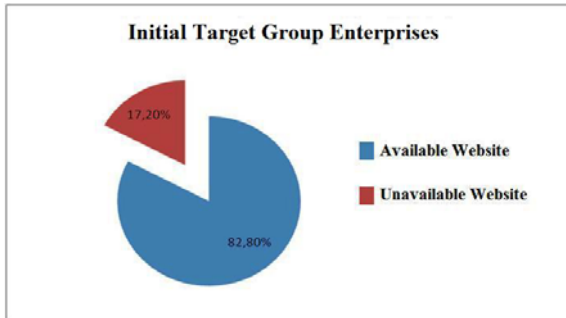


Figure 1: Relationship between the enterprises with an available website and the ones with an unavailable website.

After this initial process, the available websites were tested against the W3C/WAI accessibility guidelines with the help of the TAW3 tool. The first element that was retrieved from this evaluation was the fact that, 6% of the initial 82.8% couldn't be evaluated do to their incompatibilities with the tool that was chosen.

Other information that was possible to retrieve from this first analysis was, the discrepancy of the results obtained with the accessibility evaluation. The figure 2 shows this discrepancy.

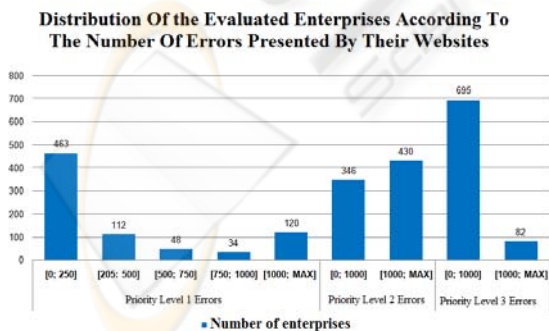


Figure 2: Discrepancy of the accessibility evaluation results.

Even though the objective of this evaluation was, achieving indicators of the web accessibility levels within, the Portuguese enterprises websites, it was imperative that the results that supported those indicators were correct and thrust wordy. Due to this, a statistic treatment had to be done to the evaluation results. The initial treatment consisted in applying the outlier definition to the referred results (Mendenhall and Sincich 1995; Renze 2005). The figure 3 presents a schema of what method was applied to the results in this statistical treatment stage.

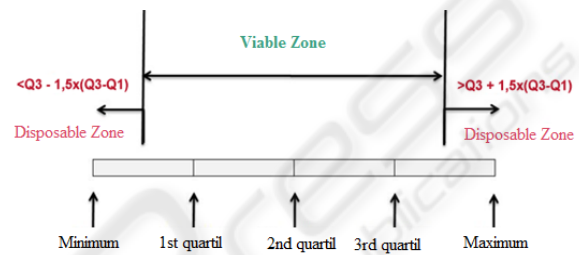


Figure 3: Outliers treatment schema.

After the referred statistical treatment to the evaluation results another analysis to its values was made. This step allowed to perceive that, although they were already indicators of a tendency on the accessibility levels presented by the Portuguese enterprises websites, these values were still quite widespread as can be viewed in table 1.

Table 1: Target group accessibility evaluation results.

	Priority 1	Priority 2	Priority 3
Average	180	1375	212
Standard deviation	215	1352	200
Median	149	1321	225
Minimum	0	0	0
Maximum	12612	35645	4831

These results indicate that almost all websites have accessibility issues. Giving the fact that priority 1 errors are those that, according to the W3C-WAI initiative, are those that cannot exist in a website, an average of 180 priority 1 errors for website, is a simple indicator of a possible lack of accessibility in these websites. The high number of the priority 2 error average indicates that, the evaluated websites also have priority 2 accessibility issues. This same situation is also true for the priority 3 errors.

Even though these results can provide a simplistic evidence for the existence of accessibility issues in the Portuguese enterprises websites, it was decided to an even more specialized analysis over

these same results. This analysis started with the division of the target group according to the enterprises activity sector. For supporting this division was used the 3rd revision of the Portuguese Economical Activity Classification (Socrates 2007a).

After this division was completed, the results were grouped by the W3C Accessibility Guidelines priority levels. This grouping can be observed in the tables 2, 3 and 4, where the average, minimum and maximum values are presented, along side with the number of websites evaluated in each activity sector.

Table 2: Priority 1 accessibility evaluation results grouped by the activity sector.

Activity Sector	Avg.	Min.	Max.	#
Agriculture	10	0	895	5
Housing	59	0	382	6
Construction	90	0	4444	74
Transformation Industries	118	0	12612	217
Real Estate	136	32	3568	7
Transportation	137	0	4951	50
Electricity, Water and Gas	144	13	1205	12
Auto Commerce	180	0	4780	261
Bank and Insurance	197	4	2941	35
Administration Activities	340	1	8817	34
Audiovisual	406	14	1900	30
Consulting	546	0	1535	16
Health	1385	46	5909	21

Table 3: Priority 2 accessibility evaluation results grouped by the activity sector.

Activity Sector	Avg.	Min.	Max.	#
Agriculture	223	5	2364	5
Housing	672	0	3490	6
Construction	812	0	16028	74
Real Estate	1031	592	9139	7
Transformation Industries	1185	1	35645	217
Transportation	1360	5	10787	50
Auto Commerce	1370	2	18765	261
Bank and Insurance	1815	33	18584	35
Electricity, Water and Gas	1843	105	9541	12
Consulting	1965	11	9520	34
Audiovisual	2414	11	16058	30
Administration Activities	3124	4	9523	16
Health	5634	92	20806	21

Table 4: Priority 3 accessibility evaluation results grouped by the activity sector.

Activity Sector	Avg.	Min.	Max.	#
Agriculture	115	0	308	5
Housing	126	0	532	6
Construction	141	0	1700	74
Real Estate	157	53	2063	7
Transformation Industries	191	0	3542	217
Transportation	195	1	1997	50
Auto Commerce	205	0	4310	261
Bank and Insurance	226	8	2164	35
Electricity, Water and Gas	274	16	1306	12
Consulting	388	0	2369	30
Audiovisual	402	2	4831	34
Administration Activities	469	5	1327	16
Health	951	39	3678	21

4 CONCLUSIONS

With this work we managed to achieve our initial goal that was, delivering indicators on the actual accessibility levels presented by the Portuguese enterprises websites.

As the results that were presented show, the accessibility evaluation that was done, led to the detection of a considerable number of errors on each of the websites that belong to the target group. This fact indicates that the accessibility levels of the Portuguese enterprises are very low.

Another aspect that resulted from this work was the unveiling of the number of websites that could be evaluated. From the initial 1000 Portuguese enterprises with the biggest business volume, only 777 of them could be evaluated. This difference had its origin in the fact that almost 200 of the initial 1000 enterprises didn't have a website and in the fact that the remaining ones didn't have a TAW3 compatible website.

The World Wide Web is constantly evolving and, alongside with this evolution, the citizen's requirements towards the services provided by the Web (websites, web applications, etc.) are also changing and evolving. In this way, it's imperative that all services available in the web are accessible. This same situation can be applied to the Portuguese websites, so that the Portuguese disabled citizens can use them and be less limited in our society.

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