

USABILITY: A KEY ELEMENT FOR VIRTUAL COMPANIES

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Abstract.

Once information is important for organizations, their sites must be designed with the purpose of establishing a productive interaction between the system and users in order to increase people's productivity while performing their tasks; systems must have easy to use interfaces. To obtain such interfaces, designers must considerate non-functional requirement (NFR) usability at the system definition in order to obtain quality information.

This paper presents an analytical study of the NFR usability with the objective of showing how the lack of consideration of them may interfere on the quality of products. It differs from other articles once it presents an analysis of two sites: the Brazilian "ingresso.com.br", first ticketing company established in Brazil and the multinational "ticketmaster.com.br", one of world's leading ticketing company. These sites were chosen because the success of these companies relies, in part, on its ability to establish and maintain optimal communication with their clients. To perform this analysis, it was used a taxonomy that describes, enumerates and classify the requirements.

The results suggest that companies belonging to developing countries may retire advantage from the fact that, usability is a crucial issue, which can lead them to develop better products in a way to face larger companies.

Keywords: usability, information systems, virtual companies.

1. Introduction

In the connected and increasingly globalized world, organizations, to be successful, need to negotiate more and more outside their national sphere, be it buying or selling products. Therefore, they must have information available for this global market (Ferreira, 2004).

The importance of information and the globalization process are the factors chiefly responsible for the growth of the information technology market; information technology can be decisive to the success or failure of a company, allowing an organization to be agile, flexible and strong (Albertin, 2000). As both a cause and consequence of this fact, the Internet is changing the way in which companies function and people work. Many companies are becoming globalized enterprises, as a way to expand their markets (Albertin, 2001).

The Internet revolution has made companies aware that information is not only important for internal but also for external consumption. With the development of Internet innovations, a new kind of company arose: virtual companies.

Virtual companies perceived a great opportunity to offer convenience for purchasing on-line and of course, for such companies, information is essential to their success and efficacy. As such, it is important that the information flows, properly, through all parts of the organization and between the organization and its clients.

Because of this crucial role of information, such organizations spend part of their budget with web sites, and they need quality information. Their sites must be designed with the purpose of establishing a productive interaction between the system and their users in order to increase people's productivity while performing their tasks (Ferreira, 2004).

Since the dialogue between man and machine is established by means of the user interface, the visible part of the system, the interface becomes an important part of information systems (Cogburn, 2003). Assuring that systems are developed in such a way that the interface with its users are taken

care is only possible if there is a way of guaranteeing that the NFR (non functional requirements) usability is taken in consideration at the system definition (Bias, 1994).

Naturally when globalized organizations negotiate outside their national spheres, they become a threat to local companies. It is difficult for a small organization to compete and survive among larger companies. On the other hand, the Internet allows small companies, via their sites, to operate and form strategic global alliances taking advantage of the market opportunities. (O'Brien, 2001). As a result of this, organizations have begun to develop *Web* based information systems. These systems, as well as playing an important role in the treatment, processing and distribution of information, are becoming increasingly important to organizations, not only because they permit a new modality of business, but also because they constitute an important marketing channel (Ferreira, 2001) & (Ferreira, 2004).

Failure to take NFRs in consideration has been reported in the literature (Breitman et al, 1999) (Davis, 1993), (Cysneiros and Leite, 1999) and (Leite, 2004). This article differs from the ones already reported once it presents an analysis carried among two sites of the same type of virtual organizations: "*ingresso.com.br*" and "*ticketmaster.com.br*" with the purpose of showing how the lack of consideration of the NFR usability interferes on the overall quality of a given product or service.

The first company is a Brazilian firm and was the first organization established in this country with the purpose of selling tickets to movies, shows, theaters on line; although it sells different kind of tickets, it is the leader in Brazil of selling movies tickets. The second one is the world's leading ticketing company that began to operate in Brazil in the year of 2000, but until today does not sell tickets to movie theaters ([http_3](http://3)).

2. The Companies

These two sites were chosen because one belongs to a Brazilian small company that leads the selling of *movies' tickets* in the internet, and the other site belongs to a huge multinational organization, that probably in the future will start to also sell movies tickets. It is essential to the small company to offer a usability-oriented site in order to maintain its clients and not to be so threatened.

Ingresso.com, a Brazilian organization founded in 1995, was the first ticketing company established in Brazil. In the beginning, its focus was only toward the development of software; in the year of 1999, the organization changed its goal in order to become the leader in computerization of ticket offices in the Brazil (internet and WAP), especially to movie theaters. Nowadays the organization has more than 600 selling points installed on movies, theaters, museums, parks among others, distributed in 16 states of the country and only during the year of 2003, the company sold 55 million tickets to its 300 thousand registered clients. In 2003, its' site was awarded with the *iBest*, the most important award of the Brazilian Internet ([http_2](http://2)).

Ticketmaster, the world's leading ticketing company, sold 100 million tickets valued at \$4.9 billion in 2003 and is one of the largest e-commerce sites on the Internet. *Ticketmaster* serves more than 8,000 clients worldwide and acts as the exclusive ticketing service for hundreds of leading arenas, stadiums, performing arts venues, and theaters and was the official ticketing provider and supporter of the Athens 2004 Olympic Games. *Ticketmaster* is headquartered in West Hollywood, California and is an operating business of IAC/InterActiveCorp (NASDAQ: IACI). It began to operate in Brazil in the year of 2000 but until today, it does not offer tickets to movies located in Brazil. It only offers theaters', shows', parks and some other events' tickets.

Given this context and in order to be effective, it is essential, for both the organizations, that their web sites be easy to use (Cogburn, 2003). As consumers become more and more aware of both sites, easiness to use one or another maybe determinant for the users' loyalty and consequent purchase, thus contributing for the success or failure of both competitors.

3. Methodology

The research was of an exploratory and qualitative nature. Its aim was to describe and analyze the sites of the two companies selected, focusing its non-functional requirement (NFR) and the usability provided to users. To perform this analysis, the study used a taxonomy (described in the item 5 of the present paper), constructed upon literature revision that describes, enumerates and classify such requirements. Both sites were accessed and examined in each of the requirements described in the taxonomy. Use of requirements is described through textual description and reproduction of sites images

4. Usability

Only recently the matter of usability has been perceived as important to information systems professionals. Driven by the market, organizations are putting forward their web pages in order to position themselves on a new way of performing business. Since the technology infrastructure used to construct web sites can deal with images, sounds and nice text composition, it became more evident that the output of information should be treated with care (Ferreira, 2003).

Due to the great value of information, the user interface becomes an important part of the information systems. It is the visible part of the system and where the dialogue between man and machine is established. Assuring that systems are developed in such a way that the interface with its users is being treated with the due care is only possible if there is a way of guaranteeing that the NFR usability is taken in consideration at the system definition (Bias, 1994). Usability is defined by a product being easy and fast to learn, efficient to use, easy to remember, causes no operating errors and offers a high degree of satisfaction to the user, and is able to solve the task it is designed for (Jokela, 2004), (Ferreira, 2003), (Seffah, 2004).

Failure to take NFRs in consideration has been reported in the literature (Breitman, 1999) (Davis, 1993), (Cysneiros, 1999). In this article it is shown how important it is to consider them, especially when designing web sites for small companies that depend mainly on the ability of their clients to perceive, process and use the information in order to find or discover a product, estimate its value and decide to purchase it.

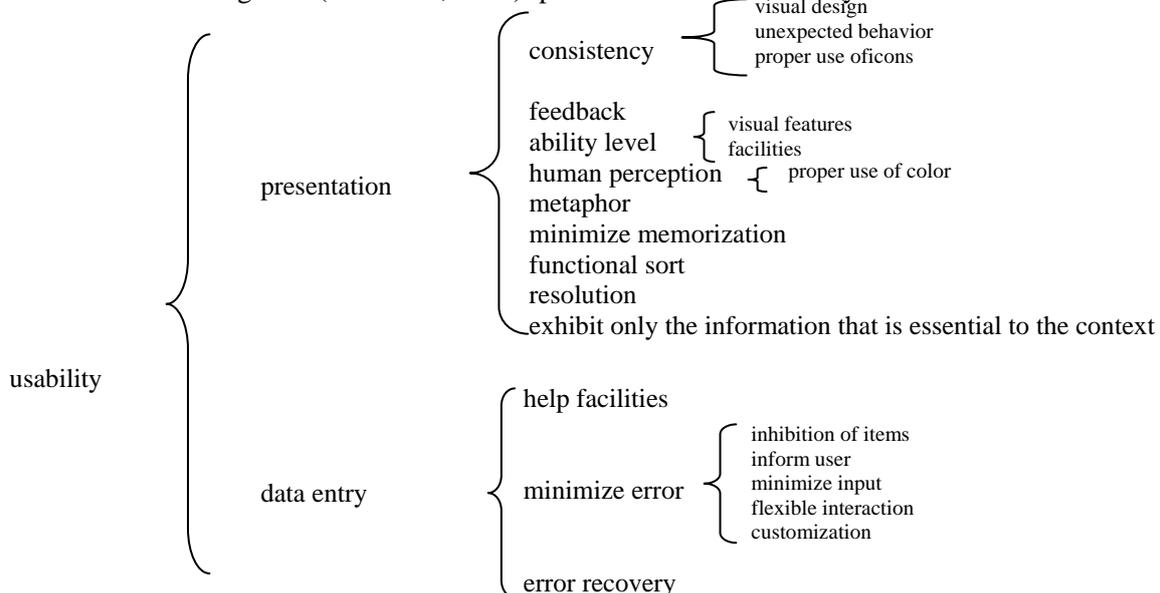
Information system must be designed with the purpose of establishing a productive interaction between the system and their users in order to increase people's productivity while performing their tasks. They must satisfy the expectations and needs of their users. To achieve this end, the NFR (non functional requirement) usability must be present in any method for systems construction.

The communication between users and an Information System (IS) is established by means of the IS interface. A good IS design must guarantee a transparent communication, that is, it must assure that when a user access the IS to perform any task, he only needs to focus his energy on the work he wants to do (Norman, 1986), (Norman, 1999) & (Jokela, 2004), (Seffah, 2004).

To have users focusing their attention mainly on their tasks, the process of software development must be "user centered", that is, its interface must be designed with the objective of satisfying the expectations and needs of users. The design of an interface that considers users' characteristics and the NFR usability is a difficult process for many reasons, but most of this difficulty can be traced to the lack of attention on NFRs during the system definition process. Building systems that take in consideration NFRs, require the availability of a corpus of knowledge to help the engineer in the task of defining the system to comply with those requirements.

5. Taxonomy

Below is presented the taxonomy that putted together using as source the general literature on design and usability and our practical experience with the topic. The usability taxonomy is organized around two main categories (Pressman, 2004): presentation and data entry.



5 1. Presentation Category

5.1.1. Consistency

Consistency is one of the main features for the usability of an interface. It helps to avoid the frustration induced when a system does not behave in an understandable and logical way. Moreover, it allows a person to generalize the knowledge about one aspect of the system to other aspects (Foley, 1997). To be consistent, menus, commands, information exhibitions, and all the functions of an interface must have the same visual presentation.

In order to exemplify main aspects involved in the consistency requirement, two equal pages of each site were chosen: the main page and the page of the city “Rio de Janeiro”. Figure 1.A shows *Ingresso*’s home page, figure 1. B *Ingresso*’s Rio Page, figure 1.C *Ticketmaster*’s home page and figure 1.D *Ticketmaster*’s Rio de Janeiro Page. *Ingresso*’s interfaces are in general more consistent than *ticketmaster*’s pages. In fact both sites present several inconsistencies and other usability problems in several of its aspects. Some examples are described below.

Visual Design

Naturally all users expect to see the same layout it does not matter in which part of the site he is. *Ingresso*’s pages have the same layout. Both present to the user the same features.

Ticketmaster’s screens have different layouts. Figure 1.C shows a lateral menu (red ellipses) , with the options of events that a person can buy, not exhibited in figure 1.D. If the user is in Rio’s page and want to find out what kind of event he can buy, he must choose one extra item before by clicking on the “*Casa de Espetáculo*” item (red square) option. In fact, once the user enters in one specific city’s page, like figure 1.D, the only option presented on the correspond to shows and is called “*Eventos*”; this make the user believe that he can not buy tickets to theater, sport games ... If he wants to buy other kind of ticket, like a sport game he must “guess” that he should click on the option “*Casa de Espetáculo*” item (red square) option.

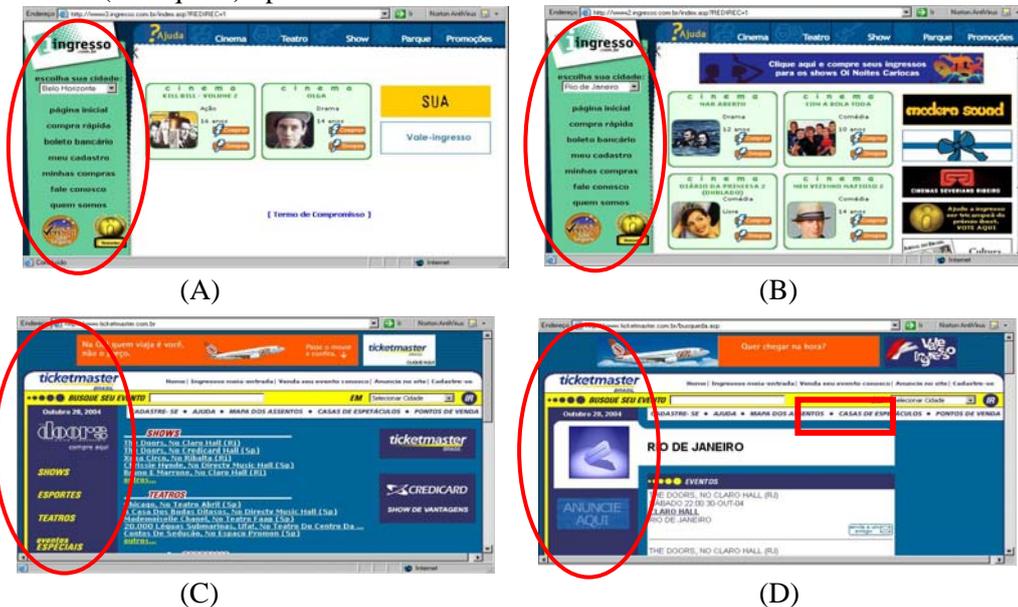
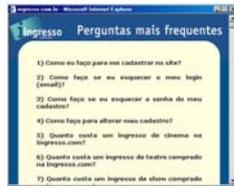


Figure 1: Same pages of *ingresso.com.br* and *ticketmaster.com.br*.

Unexpected Behaviors

Another serious problem on the analyzed site is unexpected behaviors caused by bad design. When the user chooses the option “Ajuda” (help) in the upper horizontal menu of *ingresso.com*’s site, the new page opened is not called “Ajuda”, but “*Perguntas mais frequentes*” (frequent questions) (figure 2.A). This may confuse the user because he is probably, and logically, expecting to see a page called “Ajuda”. This problem does not happen in *ticketmaster*’s. There, a page called “Ajuda” is opened (figure 2.B).



(A)



(B)

Figure 2: Help pages of both sites.

Proper use of icons: “different icons for the same action” or use of “one same icon for different functions”

Another serious problem is the use of different icons for the same action or the use of the same icon for different functions. *Ingresso*’s site sometimes uses different icons for the same function and sometimes shows the same icon for different functions. Figures 3.A and B show the use of two different icons for the “buying action”. Figures 3.B and 3.C show two very similar icons (they only differ from each other by means of the text above them) for different action: “buying “ and “continue”. Both icons are so similar that would be more effective to use a second different icon for one of the actions. This would avoid user’s doubts and facilitate navigation through the site.



(A)



(B)



(C)

Figure 3: The use of different icons for one same action in *Ingresso.com*.

Since *Ticketmaster*’s is not an iconic site, it does not have this problem. But it must be quoted that not using icons is not a good usability technique (Ferreira, 2003).

5.1.2. Feedback

In any kind of communication, feedback is very important. When two people talk, they are constantly giving each other feedback through gestures, expressions and multiple other signs. In order to obtain a good interaction between person and computer, good feedback must be supplied, however, this must be planned and programmed (Foley, 1997). Related to the feedback requirement, *Ingresso.com* presents more these facilities.

The studied sites have some lack of feedbacks related to links, especially *ticketmaster.com*. None of them change the appearance (like changing color) of visited links, but *Ingresso.com* highlights the link that the user is about to choose (figure 4); *ticketmaster.com* doesn’t.



Figure 4: *Ingresso.com* highlights links that are about to be visited

Other example of good feedback, present only in *Ingresso.com*’s site, is the message exhibited when the user try to buy a ticket for an event not available in the city he selected. Immediately is show to him a message indicating that (figure 5)

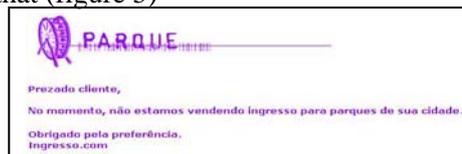


Figure 5: *Ingresso.com*’s message showing that some tickets are not available in certain city.

Figure 6 shows messages exhibited in *Ingresso*’s site when the user makes a mistake while logging the site. Although these messages consist of helpful feedbacks, they also offer a problem related to security. The message shown in Figure 6.A clearly indicates that the user made a mistake while writing his login name (the message indicates that that user does not exist) while figure 6. B’s message shows that the password is wrong. To improve security, it should be written only “access denied”.



Figure 6: *Ingresso.com*'s Feedbacks messages presented when the user makes a mistake

5.1.3. Different Ability's Level and Human Behavior
Since an interface must be designed in such a way that it can be used by experienced users and by beginners, it must attend to some requirements.

Use of Visual Features

Visual features, such as pictures and icons, are excellent tools for beginners; they help them to visualize its actions better. Another visual feature that should be used is the icon; an icon is a pictorial representation of a function, an object, an action, a property or any other concept.

Ticketmaster.com.br, a not typical iconic interface, uses very few visual features, just some icons (figure 7). *Ingresso.com.br* pages use visual features in a proper manner. It shows pictures of movies, shows among others events (figure 8.A) and this site also uses many useful icons (figure 8.B).



Figure 7: Few icons used in *Ticketmaster*



Figure 8: Picture related to each section

Well designed icons can be recognized faster than words; if well chosen, they become independent of language, making possible the use of the interface in several countries without being necessary any translation. *Ticketmaster*'s site does not use icons in a proper way and many of them are not well designed.

Well-designed icons should have the following properties:

1. *Easy Recognition*: how long it takes to a user to find out their meaning.
2. *Easy to remember*: how long it takes to a user to recall it's meaning .
3. *Easy to discriminate*: how easy is to an user to discriminate the icon among other icons.

The only easy recognition icon used in *Ticketmaster* shown in the current paper is the one related to "compra por telefone" (first icon in Figure 7); the other three ("Casa de Espetáculos Ticketmaster", "Ticketmaster no Mundo" and "Trabalhe Conosco" are not easy to be recognized.

Since *Ticketmaster* uses few icons, they are easy to be remembered and well discriminated.

Ingresso.com icons are better designed (Figure 8.B). Some shown in this paper, like "cinema" and "teatro" are very easy to be recognized, remembered and discriminated. The other icons shown in this paper are so similar (with the exception of "cadastre-se aqui" icon), that they become not easy to be remembered and discriminated.

Use of Other Facilities

Some features like menus, forms and prompts are great aid to the beginners and are present along the entire site. Since many times advanced users consider these facilities slow, well projected interfaces must also allow the use of *accelerators* such as *function keys and textual commands*, in order to make the interaction faster (Foley,1997). Both sites allow the user to navigate using keyboard.

5.1.4. Human Perception

The perception of each person depends on her abilities to perceive and to treat information. Variations of physical abilities, behavior and personality influence the success of a system. Each user possesses a cognitive style that determines how he perceives the information. To create an interface that in fact can be used by different people, it must be possible to display its content in different forms in order to accommodate the different perceptions (Pressman, 2004). Despite the trend of using graphical elements in the web sites design, much information continue to be given in the literal form. Reading constitutes an essential activity in many systems. The text size, the font source, upper/lower

case, the location and color are factors that directly affect the easiness with which the information is perceived, that is, its usability.

Ticketmaster presents a feature that really turns the perception not so good. Figure 9.A shows a banner (red ellipse) present in all the site's pages. The problem is that when the user's mouse passes above this banners it becomes a window that appears above the whole page and turns the perception of the information very difficult. The user must click on any part of the page in order to make this window disappear, but many beginners do not know this.



Figure 9: Problems that turn difficult the perception in *ticketmaster*.

Proper Use of Color

The color, basic element in any communication's process, may interfere with emotions and cognition process of a person (Marcus, 1987) & (Marcus, 1998); it can deliberately be used to reach specific objectives. The combination of colors must be carefully chosen (Jackson, 1994), (Marcus, 1987), (Marcus, 1998) and (Ferreira, 2003). The appropriate use of colors may help to produce a quick and correct assimilation of the information. Its inappropriate use may turn the information incomplete, ambiguous or unintelligible for the user. Its impact in the effectiveness of the interface depends on the relevance of its use for the performance on a task and on the situation and environment where the task takes place (Smith, 1987). People associate colors to diverse situations of their lives. These associations depend on diverse aspects: geographic, cultural, age. Based on this property, colors can be used to help users to navigate among a site.



Figure 10: Use of different color for different sections in *Ingresso.com*

The interface designer of the *Ticketmaster's* site was not careful choosing the colors. It is visible that color was not used with the purpose of improving communication. Basically all pages have a blue background with white fonts. Different colors could be used to help users to identify different items (each page related to the sections *shows*, *esportes*, *teatros* etc. could have been designed with different colors). It seems that *Ticketmaster's* site have been designed without considering any possible color association.

In *Ingresso's* site, the use of color was better planned and may help people to do associations with some situations of their lives. Different colors were used to indicate each section (Figure 10.A:

“Cinema”: green; Figure 10.B: “Teatro”: orange; Figure 10.C: “Show”: red and Figure 10.D: “Parque”: purple)

5.1.5 Metaphors

The designer must take advantage of people’s knowledge of the world around them by using metaphors to convey concepts and features of the site; the use of metaphors that involve familiar concepts turns the interaction less hostile and easier (Apple, 1992).

Ticketmaster is poor in using metaphors and, when it uses, it does it in a confusing way. Figure 11 shows some of them. Figure 11.A represents the possibility of buying by telephone, but it may confuse the user and let him think that this is an option to contact the site. Figure 11.B represents the possibility of buying around the world. It would have been better if a globe icon had been used. And finally, figure 11.C indicates the possibility of working in the company, but is its meaning quite difficult to understand.

These examples, like the telephone, show that is not a good idea to modify the meaning of items already standardized. Preferentially, consistent labels, standardized abbreviations and predictable colors should be used. New representations must only be created if they have still not been standardized; in this in case, they must be carefully chosen in order to communicate as precisely as possible their meaning.

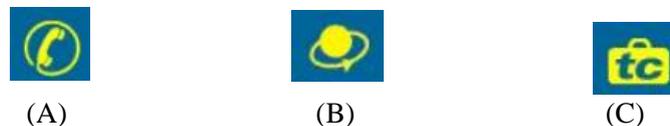


Figure 11: Some metaphors used in *Ticketmaster*

Ingresso is also poor in using metaphors but it uses them more properly. Figure 12 shows metaphors used for movies (Figure 12.A), for theater (Figure 12.) and for gifts (figure 12.C). These are simple and very meaningful metaphors. People immediately recognize their meaning.



Figure 12: Some metaphors used in *Ingresso*

5.1.6 Minimize Memorization

A good interface invokes the user’s recognition rather than recall memory whenever possible. *Ticketmaster.com* sometimes forces unnecessary memorization. Few mnemonic names and not well-designed icons are often used. Since the signs (icons, command’s names etc.) are the essential elements of a screen, they must be well produced. During development process, the designer must pay attention to the choice and design of the signs so that they do not induce doubts (Pressman, 2004). Some examples of use of symbols that do not express its objectives had been seen (figure 11).

5.1.7 Functional Command’s Sort

The menu’s bars offer many options for the users; they consist in a good way to access functions not constantly requested. It reduces the memory load for the users and its content depends on the site, but, generally, the several pages of a site have similar bars, with its items arranged horizontal or vertically.

When people need to deal with amount of items, it is known that they feel more comfortable if the number of items is not greater than seven more or less two (Millers’ law) (Ferreira, 2003), thus, a menu must respect these limits. Both sites’ menus obey to Millers’ law.

But, in the menu presented on the middle of *Ticketmaster’s* main page (Figure 1. C), although the options are presented according to Millers’ law, the items listed are not properly classified; options of different types of entertainment and different cities can be found in the same part of the menu. For example, beneath the item “Teatro” (theater), options of many different cities can be seen. This could be properly done if the designer of the site remembered that the word *menu* is a metaphor with the restaurants’ menu. Normally, in a restaurant’s menu, the options are grouped together according to the kind of food (sea food, meat, pasta ... etc.). In the same way, in an interface’s menu, the options must be grouped following some functional similarity criteria established by the designer. In this case, geographical criteria should obviously be considered, but they should not be used besides other criteria, like the type of entertainment.

It would be better if only the name of the cities were exhibited and then, once the user choose a city, sub-menus were shown (pull-down menu or hierarchical menus). One of the advantages of a pull-down menu is that it is called only when it is necessary, thus saving screen space, without polluting the screen and without offering a series of options that can confuse the user.

5.1.8 Direct Manipulation

Direct manipulation makes people believe that they control the objects represented by the computer; an object on the screen must remain visible while the user is performing any action on the object; in this way, the impact of the operation on the object may be immediately perceived by the user. In the same way, when the mouse passes over any object that may be manipulated, this must be highlighted. *Ticketmasters’* site does not highlights items properly while *Ingresso’s* site does (Figure 4). Items of *Ingresso’s* site changes its visual appearance when the mouse passes over them (like changing color).

5.1.9 Exhibit only the information that is essential to the context

In order to be better assimilated, only the information relevant to the current context or mode must be shown; the user must not have to be looking for many different data to find out what he needs to execute his/her task. To improve the information quality, when possible, distinct windows must be used to show information of different types and at least one part of each window must be visible (Pressman, 2004).



Figure 13: Both sites sometimes present different information in new windows.

5.1.10 Resolution-Independent Design

Another issue that must be considered when designing usability-oriented sites is the resolution-independent design. In traditional interfaces, the designer knows for which environment he is designing; he has total control on each pixel of the screen that appears for the user, and he can be sure how each element will be seen in the screens, independent of the resolution of its monitor.

In Web, the designer has no control on the layout of the interfaces. Once the user can access the Internet in many ways, design for web must adequately be planned. One of the basic principles of constructing resolution-independent sites is to, instead of using fixed sizes to design elements of the interface, specify layouts as percentages of the available space (Nielsen, 2000) & (Nielsen, 2002). This really must be considered once many people and organizations still have low-resolution’s monitors. Both sites, when displayed in a low-resolution monitor, present problems. Their design is not resolution-independent. Important elements disappear.

5.2 Data Entry

Users spend a lot of time choosing commands, typing data and others inputs. A good interface must minimize the time that the user spends with these tasks. The following guidelines improves the interface’s usability when dealing data entry (Pressman, 2004):

5.2.1 Help Facilities

Help must be supplied for every input action. Even though there is a *Customer service page* (Figure 2), where the users can find detailed information about the site’s, both sites do not offer tips when a user passes the mouse over the screen’s element (tips are showed only over the upper icons). These facilities should have been implemented; they allow the user to find out the utility of many items without going to the *customer service*.

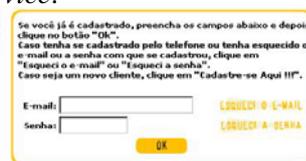


Figure 14: A help facility present in *Ingresso’s* site.

Ingresso's site is friendlier when regarding help facilities. Among almost all interactions, users can count with many features, as the one shown in Figure 14 designed with the purpose of assisting the user to remind his login and password.

5.2.2 Minimize Error Possibilities

One of the objectives of a good interface is to prevent that its users commit errors. Well designed interfaces must provide prevention error mechanisms that guide the users to work within any context and make it difficult for the user to do things that are not permissible in that context. Therefore, the user will not choose an invalid option and afterwards receive an error message (Foley, 1997). Both sites present some of these mechanisms:

Inhibition of Items not Valid

Items not valid in the current context should be inhibited or disabled. Both sites do not disable invalid items and do not alert the user by changing the icon's appearance (for instance, changing its color).

As it was already seen, both site allow the user to choose unavailable options. When this happens, *Ingresso's* site presents a message indicating that the option is not available, like when the user tries to buy a ticket for an event not offered in the city (Figure 5). *Ticketmaster* is worst; it lets the user choose an option and then present a similar event but in another city. If the user does not pay attention, he may buy a ticket for another city without knowing. The solution for both sites would be to inhibit options for unavailable events.

Inform How the User Must Input Data Correctly

The user must be informed of how he must fill any field. Both sites guide the user in this task: whenever the minimum or maximum length of characters is limited, at least one number is required. This information is given to the user before he fills the field (figure 15) and both sites indicate mandatory fields. But *Ingressos's* is better (figure 15.A); this feature is indicated in a different color (red), while in *Ticketmaster* it is indicated in the same color (black) of the rest of the site (figure 15.B).



Figure 15: Instructions to fill the fields in both sites

Minimize the amount of input

A good interface minimizes the number of actions necessary for any input, reducing the task of typing. Both sites provide such facility, for instance, when the user is becoming a registered customer, he needs to fill his address. Once he fills his zip code (cep), the site automatically shows the correct name of his street. The user does not need to fill this field. Figure 16 shows many facilities present in both site that turns the task of inputting data easier.



Figure16: Contact us options of both sites

Even though, *Ingresso*'s site presents some problem. Once the user choose the option “*Fale conosco*” (Contact us), the site does not immediately exhibit the option to “*contact*” It presents first, a list of problems and only then, written in a small font, there is the option to send an e-mail (Figure 16.A). But to get in this option, the user must scroll the page all the way down, increasing the amount of inputs. In *ticketmaster* the option to send an e-mail or make a phone call appears right in the beginning (Figure 16.B).

Flexible Interaction

A well designed interface must allow the users to control the interactions; he must be able to skip unnecessary actions, to modify the order of the actions and recover errors without leaving the site. *Ingresso.com* has a problem: when the user tries to buy a ticket and change his mind, if he tries to go back to the former page, the site does not allow. This was not seen in *ticketmaster.com*.

Customization

A good interface must allow the user to customize its commands and messages. Both sites do not allow customizations, not even in the text size.

5.2.3 Provide Error Recovery

Experimental evidences show that people are more productive if their mistakes can be readily corrected (Foley, 1997). So a well-designed site must provide a good error recovery (*undo, cancel, correct ...*). By providing this error recovery, the user feels more comfortable to explore unlearned facilities without fear of failure. This encourages exploratory learning. Basically there are two types of errors: functional and syntactic.

1. *Syntactic errors*: occur when commands are typed with wrong parameters or names; in this case, the site must provide a clear message.

Ticketmaster was better designed for recovering error. Figure 17.A shows a message presented to the user immediately after he type his CPF in a wrong way while he is filling a form. The same feature exists in *Ingresso*' site, but in this one the site allows the user to finish all the form and then only after sending it is informed to the user his mistake (Figure 17.B). The user, in this site, has then to go back to the former page and correct the CPF.

2. *Functional errors*: are the most serious; it occurs the user does a command he didn't mean and unexpected results occur. The studied sites present some error recovery features. As example is the option *cancel* that appears to allow the user to cancel an action. Both sites have this option among all their pages.



Figure 17: Message presented when a syntactic error occurred in both sites

6. Conclusions

This paper chose the web sites *Ingresso.com.br* and *ticketmaster.com.br* to perform a usability analysis, once the success of these companies relies, in important part, on its ability to establish and maintain optimal communication with its clients. The analysis performed shows that *Ingresso.com* has constructed a site that is, in many aspects, easier to use than *Ticketmaster.com.br*. *Ingresso*'s interfaces are in general more consistent than *ticketmaster*'s pages; use of visual features, like icons, is better, as well as use of color. The site demands less unnecessary memorization and is also friendlier when regarding help facilities in data entry. Especially interesting is the fact that, although being a local company, *Ingresso.com* seems to be using more properly Non Functional Requirements than the global *Ticketmaster*, in such way that facilitates not only the navigation of clients but also the use of the site by people from different education levels and cultural backgrounds.

Use of visual features, icons, metaphors, when properly planned, facilitates quick recognition and memorization. It can also facilitate the process of localization of an interface. Surprisingly, *Ticketmaster* do less use of such elements than *Ingresso.com*. It relies more on language and, in general, demands more effort from users. In the Brazilian Market, where education is still a critical factor, this can contribute to inhibit its success and help *Ingresso.com* to maintain its leadership. This

result also suggests that local companies belonging to developing countries may retire advantage from the fact that, due to the educational level of users, usability is for them a crucial issue, which can lead them to develop better products in a way to face this challenge.

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