HEURISTIC EVALUATION ASSIGNMENT

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BACKGROUND INFORMATION

As Neilsen indicated (1993) "User is always right" and "Less is more" are some of the usability slogans that have an important motivation on the study of usability (pp. 10-16). There are some methods used to reveal the usability problems of products. **User task analysis**, **scenarios**, **thinking aloud** and **heuristic evaluation** (pp. 16-25) are used to turn the product usable object in the way of acceptability (p. 25).   While the usability is defined as the composition of learnability, efficiency, memorability, errors and satisfaction elements by Neilsen (1993), the claimed that categories of people and user differences have impact on the process of usability (pp. 26-44). Their domain background and computer knowledge are the prominent individual differences [1].

According to Neilsen (1993), the next-generation interfaces has would be higher dimensionality, highly portable, highly personal, tightly connected, object-oriented, letting multiple application at a time and supporting multiple data types (pp. 63-69). So, these expectations are held by today's users [1].

HEURISTIC EVALUATION

It is a simple, fast and cheap [2] **systematic inspection model of a user interface for usability problems** which can also be used as a part of iterative design process which is introduced by Nielsen (1993, p.155). This model includes 10 main principles defined by Neilsen which are thought to be the necessary features that a usable product should have [1]:

1. Simple and Natural Dialogue
2. Speak the User's Language
3. Minimize User Memory Load
4. Consistency
5. Feedback
6. Clearly Marked Exits
7. Shortcuts
8. Good Error Messages
9. Prevent Errors
10. Help and Documentation

According to the findings stated by Nielsen (1993), to conduct Heuristic evaluation, at least **3-5 user** should be used as evaluator because of the findings that the same person cannot be the best evaluator every time especially for hardest-to-find problems (pp. 155-163). The experience difference through the users also important when finding the number of usability problems and so it can be costly if the number of evaluators is increased to find more problems. But for the extensive and mission critic systems, the evaluator number should be increased [3].
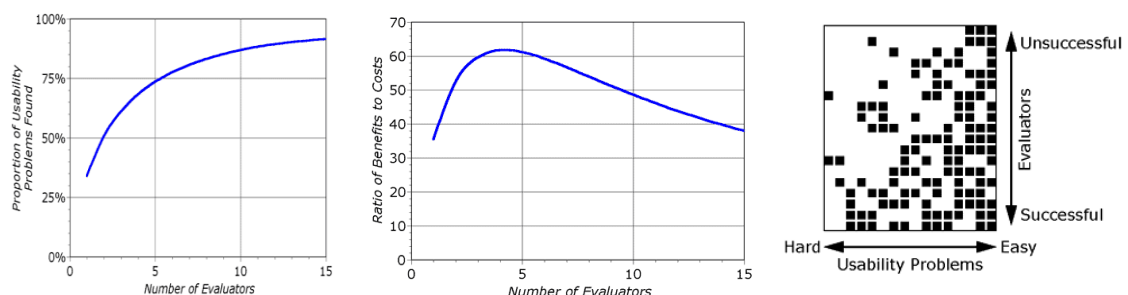
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FIGURE 1- EVALUATOR-PROBLEM FOUND RELATION [3]

Because the users evaluate the interface on their own, it is independent and unbiased evaluation. The observer (experimenter) in the evaluation does not interpret the usability issues as in user testing and he is willingness to answer the questions of the evaluator during the process. The results of evaluation can be in **written reports** which are completed by the evaluator, but they may forget about the points while writing. Another method is expecting the evaluator to **vocalize his comments** about the interface on the operation which lets the experimenter to get feedback quickly (pp. 155-163).

THE EXPERIMENT

The goal in this assignment is implementing the Heuristic Evaluation on flypgs.com.

EVALUATION PROCESS

Because it is recommended to have 3-5 evaluators, I have asked for my two friends to evaluate the website according to Nielsen's 10 set of usability guidelines. When I asked my friends about the usage of Pegasus Airlines I realized that no one actually uses it frequently. However, I tried to categorize the evaluators in terms of their expertise even if it is little. Therefore, while deciding the evaluators among my friends, I picked the one with knowledge about computers but not usability as a **novice evaluator,** myself with usability specialist but no domain knowledge (because I have just used the website only once) as **single expert** and the one with usability specialist and domain expert (bought tickets 4-5 times, which is more than mine at least☺) as **double expert** (pp. 160-162). I have navigated in the web site ~1 hour, my friends totally ~15 minutes. With the filling of the heuristic table, it has taken ~4 hour to complete the evaluation process.

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In the evaluation process, as the observer I preferred the **vocalization of comments** method, so I asked my friends to give feedbacks while navigating the pages at the same time.

Only in my evaluation process, I made the goal of buying ticket as a **typical usage scenario for realistic task**. I asked my two friends just to go around the site and try to find usability problems.
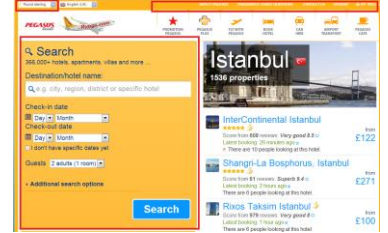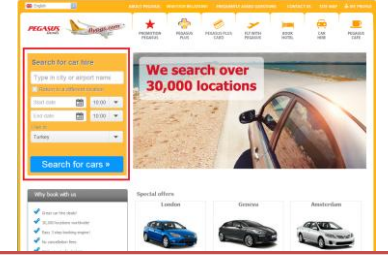
The heuristic set used in the experiment is the improved version of Nielsen's heuristics by two usability experts, Denise Pieratti and Keith Instone for the Web adaptation as indicated by Barnum (2001, pp. 380-381) [4].
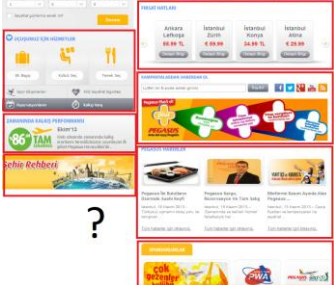
EVALUATION RESULTS

EVALUATOR 1 (MY FRIEND-NOVICE) FEEDBACKS (GENERALLY SCREEN-TO-SCREEN):

Nielsen's Heuristics	Web Adaptation	Evaluator's Comment	Screenshot
Visibility of System Status (Feedback). The system should always keep users informed about what is going on, through appropriate feedback within reasonable time	Are the URL line and the status line used to provide effective feedback? Most important to users is to know "Where am I" and "Where can I go next" That requires branding each page and indicating what section it belongs to. Links to other pages and indicating what section it belongs to. Links to other pages should be clearly marked.	• When I navigate among the upper menu, the current (selected) page is not highlighted. • Moreover linked page navigation knowledge does not exist. For example, breadcrumbs can be used.	

Match between system and the real world (Speak the User's language). The system should speak the user's language, with words, phrases, and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.	Does the Web site reflect user's language, tasks, and intentions? Because users come from different backgrounds on the Web, this issue is a challenge.		
User control and freedom (Clearly marked exits). Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.	Can users select and sequence tasks? Can they easily return to where they were if they choose an inappropriate path? Even though many emergency exits are provided by the browser, a "home" button on every page is a simple way to let users feel in control of the Web site. Be careful when forcing certain font choices, colors, screen widths, or browser versions, including the use of "advanced technologies" that users may not have.		
Consistency and standards (Consistency). Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.	Do the Web pages work with different browsers? Can people resize windows or adjust browser options without compromising information or the task? One of the most common cases of inconsistent wording is with links, page titles, and headers. Inconsistent wording	- While many of the navigated from top menu have a left (flight search field) and right (current page content), in the "Pegasus Plus" page all the page is composed of the page content. - On the "Fly with Pegasus"	

	can confuse users when the destination page has a different title from the link that took them there. Standards on the Web mean following HTML and other specifications. Deviations will create opportunities for usable features creep into your site.	options there is an opened submenu which is inconsistent with other header menus. • Moreover in the "Book hotel" and "car hire" pages the upper header content is changed which is different from other pages. Furthermore the left search design is completely different (in terms of form field design) from the flight search pages.	
Error prevention (Prevent Errors). Even better than good error messages is a careful design, which prevents a problem from occurring in the first place.	Does the Web site give enough directions and information so that users can find desired pathways and complete desired operations? If an error does occur, can users recover easily? Because of the limitations of the HTML forms, inputting information is a common source of user errors. GUI-style widgets, coming into more common use, cut down on the errors, but you still have to double-check these after submission.		
Recognition rather than recall (Minimize	For the Web, this heuristic is closely related to system		

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User Memory Load). Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.	status. If users can tell where they are by looking at the current page, they are less likely to get lost. Good labels and descriptive links are crucial for recognition.		
Flexibility and efficiency of use (Shortcuts). Accelerators – unseen by the novice user – may often speed up interaction for the expert users to such an extent that the system can cater to both experienced and inexperienced users. Allow users to tailor frequent actions.	Do links take users where they expect to go? Are images and data loaded as effectively as possible? Some of the best accelerators, like bookmarks, are provided by browser, so pages should be easy to bookmark. Do not use frames in a way that prevents bookmarking.		
Aesthetic and minimalist design (Simple and Natural Language). Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.	Are the best media and screen images used to convey a message? Extraneous information on a page is a distraction and a slow-down. Make rarely needed information accessible via a link. Use links for progressive levels of detail. If users jump into the middle of a progression, make sure there's a way to go "up" to get the bigger picture.	• There are too much information and little blue titles are not enough to distinguish the grouping. A background tray can be used for grouping.	
Help users recognize, diagnose, and recover from errors (Good error messages). Error messages should be	Every error message should offer a solution or a link to a solution. For example, I a search yields no hits, don't just tell the user to broaden the search:		

expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.	provide a link that will broaden the search.		
Help and documentation (Help and Documentation). Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.	Is the site self-documenting? For the Web, the key is to integrate the documentation into your site, either through links to specific help or into each page.		

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EVALUATOR 2 (MYSELF-SINGLE EXPERT) FEEDBACKS(GENERALLY IN SCREEN):

Neilsen's Heuristics	Web Adaptation	Evaluator's Comment	Screenshot
Visibility of System Status (Feedback). The system should always keep users informed about what is going on, through appropriate feedback within reasonable time	Are the URL line and the status line used to provide effective feedback? Most important to users is to know "Where am I" and "Where can I go next" That requires branding each page and indicating what section it belongs to. Links to other pages and indicating what section it belongs to. Links to other pages should be clearly marked.	• The URL's of the pages are not well correlated with the current functionality of the pages. For example, at the home page, after searching, the url of the page should consist of words like "searchreults" instead of "MemberRezvResults". Because I have not reserved yet.	https://book.flypgs.com/Common/MemberRezvResults.jsp?activeLanguage=TR https://book.flypgs.com/Common/IdealPNREdit.jsp

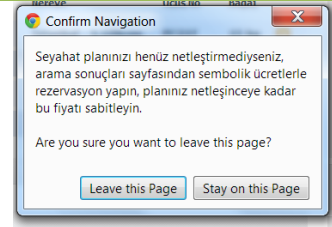|			
Match between system and the real world (Speak the User's language). The system should speak the user's language, with words, phrases, and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.	Does the Web site reflect user's language, tasks, and intentions? Because users come from different backgrounds on the Web, this issue is a challenge.	• The Multilanguage support is okay. • When search a flight, there is a "lowest price" area under which there is nothing or no link. But when I click on one of the flight option, the "lowest price" field comes to the top of the day of which flight is the lowest price.	
User control and freedom (Clearly marked exits). Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.	Can users select and sequence tasks? Can they easily return to where they were if they choose an inappropriate path? Even though many emergency exits are provided by the browser, a "home" button on every page is a simple way to let users feel in control of the Web site. Be careful when forcing certain font choices, colors, screen widths, or browser versions, including the use of "advanced technologies" that users may not have.	• Even though I did not click the addition options in the flight edit page, when I click on "Continue without becoming a member" button, a popup again showed saying the same things like an insistent seller. So I do not feel free and in control of the pages.	

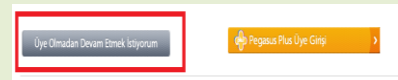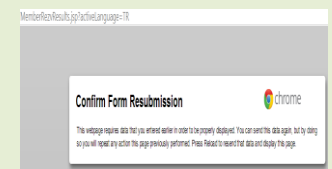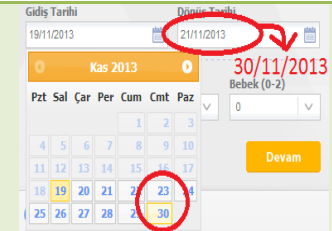|			
Consistency and standards (Consistency). Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.	Do the Web pages work with different browsers? Can people resize windows or adjust browser options without compromising information or the task? One of the most common cases of inconsistent wording is with links, page titles, and headers. Inconsistent wording can confuse users when the destination page has a different title from the link that took them there. Standards on the Web mean following HTML and other specifications. Deviations will create opportunities for usable features creep into your site.	• When I click on back button on the search flight result page, the browser's alert popup and the popup when clicking on the "back" button on the page is different. Furthermore, I just wanted to go back, but it suggest me to click on the "Rezervasyon yap", but there is no button like this besides of "Opsiyon Satın Al", and I have no idea about "Sembolik Ücretlerle Opsiyon Satın Almak".	
Error prevention (Prevent Errors). Even better than good error messages is a careful design, which prevents a problem from occurring in the first place.	Does the Web site give enough directions and information so that users can find desired pathways and complete desired operations? If an error does occur, can users recover easily? Because of the limitations of the HTML forms, inputting information is a common source of user errors. GUI-style widgets, coming into more common use, cut down on the errors, but you still have to double-	• Error prevention is done at the flight day chose. When I select a departure date which is after return date, the return date is automatically set to the departure date. However, then when I select the return date picker, not being able to select the days previous to the departure date is a little annoying. The days can be opaque but not disabled. When I click the days that the departure date would be set to the return date as being in the case	

	check these after submission.	opposite. • I generally use browser's back button instead of the back button in the page. So every time that I use browser's button it should give alert and not leave the page immediately. Because it redirects to confirm form resubmission error page. • The highlight on the "Pegasus Üye Girişi" is confusing because I want to continue without login but because it is not highlighted I started to fill the phone information assuming it is necessary for the next step but it was for the Pegasus Members.	
Recognition rather than recall (Minimize User Memory Load). Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.	For the Web, this heuristic is closely related to system status. If users can tell where they are by looking at the current page, they are less likely to get lost. Good labels and descriptive links are crucial for recognition.	• When I go back from the search result of the dates "22" as departure and "29" as return, when I come back in the browser, the flight dates are not remembered, just set as today ("19"). Just from and to locations are kept. • When I add new flights to the current ones, the additional flights should have different background color or with a divider. It is important for especially for the same date flights.	

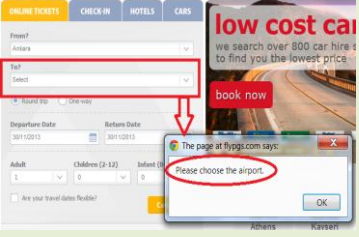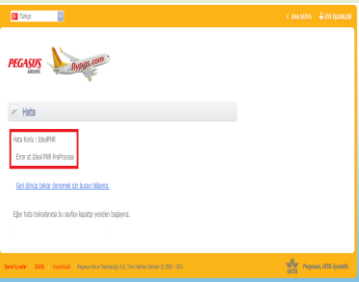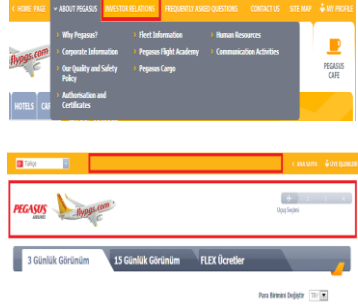|				
	Flexibility and efficiency of use (Shortcuts). Accelerators – unseen by the novice user – may often speed up interaction for the expert users to such an extent that the system can cater to both experienced and inexperienced users. Allow users to tailor frequent actions.	Do links take users where they expect to go? Are images and data loaded as effectively as possible? Some of the best accelerators, like bookmarks, are provided by browser, so pages should be easy to bookmark. Do not use frames in a way that prevents bookmarking.	• When there is found only one option in the selection box after typing for search, when I press the "ENTER" button, I think it should select the option. I shouldn't select the option with mouse again or click the down key and push enter (two steps instead of one).	
10	**Aesthetic and minimalist design (Simple and Natural Language).** Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.	Are the best media and screen images used to convey a message? Extraneous information on a page is a distraction and a slow-down. Make rarely needed information accessible via a link. Use links for progressive levels of detail. If users jump into the middle of a progression, make sure there's a way to go "up" to get the bigger picture.	• It is too much yellow-orange. • The white text over yellow background is hard to read. • The advertisement area at the right side of the flight search field is big and distractive. • The departure and return days (flights) should be differentiated with different background colors. • At the flight edit page, all the form fields are opened, there are lots of information that I will not use, for example additional baggage, seat choice, food, insurance. The next step related field is at the end of the page. After scrolling the entire page down and feeling a little worry about "should I have to check all these fields to be sure these are related to mine preferences". These fields should be unchecked and hidden for minimalist approach. If I need,	

		I would visible them.	
Help users recognize, diagnose, and recover from errors (Good error messages). Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.	Every error message should offer a solution or a link to a solution. For example, I a search yield no hits; don't just tell the user to broaden the search: provide a link that will broaden the search.	• When I not select the flight "to" location and click search, the error is saying "please choose the airport". But how can I know that the word "airport" refers to "to" selection field? I think the field that causes error should be highlighted. • When I chose a departure and return flight at the search result page, there is an error on the page saying "Hata Kodu .." and "Error At .." which is a irrelevant and extra code information for me. Furthermore, when I click the suggested solution link button it redirect me to "Login.jsp" page which is irrelevant.	
Help and documentation (Help and Documentation). Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.	Is the site self-documenting? For the Web, the key is to integrate the documentation into your site, either through links to specific help or into each page.		

TABLE 2 - EVALUATOR 2 HEURISTIC ANALYSIS TABLE

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Neilsen's Heuristics	Web Adaptation	Evaluator's Comment	Screenshot
Visibility of System Status (Feedback). The system should always keep users informed about what is going on, through appropriate feedback within reasonable time	Are the URL line and the status line used to provide effective feedback? Most important to users is to know "Where am I" and "Where can I go next" That requires branding each page and indicating what section it belongs to. Links to other pages and indicating what section it belongs to. Links to other pages should be clearly marked.	• On clicking the book hotel button, the url is obscure.	
Match between system and the real world (Speak the User's language). The system should speak the user's language, with words, phrases, and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.	Does the Web site reflect user's language, tasks, and intentions? Because users come from different backgrounds on the Web, this issue is a challenge.	• When on clicking the "İzmir Hatay Uçak Bileti" button, it is assumed that it will listed the search result from "İzmir" to "Hatay". But it just redirects a page with a nonsense textual information. • At the footer the word "Uyumluluk" is a little technical term, it would be more understandable if the phrase "browser compatibility" is used.	
User control and freedom (Clearly marked exits). Users often choose system functions by mistake and will need a clearly	Can users select and sequence tasks? Can they easily return to where they were if they choose an inappropriate path?		

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	marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.	Even though many emergency exits are provided by the browser, a "home" button on every page is a simple way to let users feel in control of the Web site. Be careful when forcing certain font choices, colors, screen widths, or browser versions, including the use of "advanced technologies" that users may not have.		
	Consistency and standards (Consistency). Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.	Do the Web pages work with different browsers? Can people resize windows or adjust browser options without compromising information or the task? One of the most common cases of inconsistent wording is with links, page titles, and headers. Inconsistent wording can confuse users when the destination page has a different title from the link that took them there. Standards on the Web mean following HTML and other specifications. Deviations will create opportunities for usable features creep into your site.	• While other top menus have submenu, some other opens a new tabbed window like "Investor Relations". • After clicking search button in the home page, the flight result page has different header and top navigation disappeared.	
	Error prevention (Prevent Errors). Even better than good error	Does the Web site give enough directions and information so		

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	messages is a careful design, which prevents a problem from occurring in the first place.	that users can find desired pathways and complete desired operations? If an error does occur, can users recover easily? Because of the limitations of the HTML forms, inputting information is a common source of user errors. GUI-style widgets, coming into more common use, cut down on the errors, but you still have to double-check these after submission.		
	Recognition rather than recall (Minimize User Memory Load). Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.	For the Web, this heuristic is closely related to system status. If users can tell where they are by looking at the current page, they are less likely to get lost. Good labels and descriptive links are crucial for recognition.		
	Flexibility and efficiency of use (Shortcuts). Accelerators – unseen by the novice user – may often speed up interaction for the expert users to such an extent that the system can cater to both experienced and inexperienced users. Allow users to tailor frequent actions.	Do links take users where they expect to go? Are images and data loaded as effectively as possible? Some of the best accelerators, like bookmarks, are provided by browser, so pages should be easy to bookmark. Do not use frames in a way that prevents bookmarking.		

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Aesthetic and minimalist design (Simple and Natural Language). Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.	Are the best media and screen images used to convey a message? Extraneous information on a page is a distraction and a slow-down. Make rarely needed information accessible via a link. Use links for progressive levels of detail. If users jump into the middle of a progression, make sure there's a way to go "up" to get the bigger picture.		
Help users recognize, diagnose, and recover from errors (Good error messages). Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.	Every error message should offer a solution or a link to a solution. For example, I a search yield no hits; don't just tell the user to broaden the search: provide a link that will broaden the search.		
Help and documentation (Help and Documentation). Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.	Is the site self-documenting? For the Web, the key is to integrate the documentation into your site, either through links to specific help or into each page.	It seems ok.	

TABLE 3 - EVALUATOR 3 HEURISTIC ANALYSIS TABLE

ANALYSIS

According to the results of the evaluations, the design of the flypgs.com can be improved mainly according to the following points:

- Pegasus should leave the attitude of insistent seller attitude by advertising their additional products or paid services by simplifying the forms. (I just want to get flight ticket, no more!)
- The user should know "where he is" and "what he is doing" by adding some current page information at the bottom of the page with breadcrumbs or etc.
- Inconsistent and unrelated error messages should be fixed.
- The visibility of the header selected menu and incoherent inner screen form fields should be fixed and consistent.

While dealing with these design issues, the designers can set a priority (or minor-major) for the problems to follow. As explained by the severity ratings; frequency, impact, persistence and the market impact should be considered [6].

REFERENCES

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[6] http://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/

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