

# User Interface Guidelines for Enhancing Usability of Airline Travel Agency E-Commerce Web Sites

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## ABSTRACT

Specific user interface guidelines are described to increase the usability of airline travel e-commerce Web sites. Although previous guidelines address the usability issues from the perspective of the sale of tangible products that can be described and depicted, less attention has been given to the usability issues for the sale of services. Service industries have different requirements for communicating with customers, specifically regarding their product offerings. This is prominent in the air travel industry, where Web site usability is known to be poor. We examine how the current guidelines are inadequate for Web sites providing air travel information. We propose specific guidelines for those sites that will enhance their usability.

## Keywords

Human-computer interaction, user interface, e-commerce, usability, guidelines, airline, travel agency.

## INTRODUCTION

The use of the Internet for electronic commerce is expanding across all sectors of the world economy to include not only products but services of all types. To encourage the use of this new channel, guidelines have been provided to assist developers in producing Web sites that offer increased usability for their customers [4, 5]. This was due to the recognized problems that users face when shopping online. However, these guidelines basically apply to tangible products being sold over the Internet. These guidelines describe how to display a picture of a product, how to describe the product, and how to display the price to the shopper. These guidelines fail to address how to design a Web site when the product is either a service or uses a variable pricing scheme involving many constraints and options, such as a Web site that provides airline flight and fare information. As a result, travel Web sites have significant usability problems [3].

## SPECIFIC USABILITY PROBLEMS

There are many usability problems with travel Web sites

that are not covered by current guidelines. One significant problem is that users cannot obtain the same information from a Web site that they could if they used an agent. There are specific service characteristics that users are interested in when making a purchase, and these will influence the user's final purchase decision [1]. The agents are specially trained to use a reservation system to obtain information and interpret it for the customer. Such information includes the base fare, taxes, travel and refund restrictions, aircraft type (prop or jet), and meals and entertainment provided. Sometimes this information is buried in the display from a travel site in numerous Web pages and extraneous text. Other times the information is not provided at all.

Another problem is designation of the origin and destination locations. Global distribution systems (GDS), which provide the flight information, use a system of three letter location codes to specify cities and airports. Users instead think in terms of city names. Many Web sites have trouble translating the city name provided by the user into a viable location code for a search. Some sites require that the user look up the location code on a separate page and then input the code in the query page. Sometimes, after a search has been performed, the user is confronted with a display page that uses the location codes in the display along with or instead of a spelling of the city or airport served which causes user confusion.

Many travel sites provide several query screens through which the user can perform a search. Usually a very simple search screen appears first with a link to a more advanced search screen. Unfortunately, the link to the advanced search screen often is not seen by the user, nor are statements that there is an advanced search screen available for a more detailed search.

When the search results are displayed to the user, the user can be overwhelmed with the amount of information describing a flight or flight grouping and the number of possibilities. Users are unable to determine the base fare, taxes, and the total fare without moving through several pages, if the information is provided at all. The fare rules are usually obscured in legal terminology, thus hindering the user from determining advance purchase and overnight stay requirements as well as refund charges.

Airline Web sites also use industry-specific terms that are not well known outside the travel industry. Examples are fare basis code, code share, round-robin, leg and segment. These terms are frequently used in displays of important information, and the user does not usually understand what the terms mean.

### NEW GUIDELINES

The current guidelines as generally published for e-commerce sites are unsuited to address these problems. We therefore developed new design guidelines for travel sites to increase their usability. Some of the more significant are:

**Provide the same information available through an agent.** Make sure that the information that an agent can provide is available to the user via the Web site. This should include information on fares, aircraft, meals, entertainment, and other items pertinent to a flight. This permits the user to have the same information for decision making as they would have if they used an agent.

**Provide definitions of travel industry terms.** Use industry-specific terms only if a definition is provided in some obvious manner. Otherwise, choose another wording that is more understandable to the everyday user. The goal is to provide information that the user can understand.

**Avoid using location codes in queries and displays.** Do not require a user to input or read a location code. Always allow the user the option to enter a location code, a city or an airport name in the origin and destination fields of the query page. Never display a location code in the results, but rather translate the location code into a city or airport name that the user can understand.

**Provide one search screen or an obvious link to an advanced search screen.** A preference should be for one search screen that allows one-way and round trip searches plus the pertinent query parameters. If an advanced screen is required, make the link to it more visible through large fonts and other means of signifying the option of the advanced search page so that the user can locate it.

**Provide direct access to more specific information from the display page.** Allow the user to drill down into the more advanced information from the initial display of the results. For example, provide access to all fare information through a link located at the position of the fare information on the initial results display. This allows the user quick and easy access to desired information.

**Provide information in a concise format for the user.** Do not provide extraneous information that the user is not trained to understand. Provide the information that a user wants to know in a format and wording that the everyday user, not trained in the air travel industry, can understand.

### VERIFICATION OF GUIDELINES

We developed a prototype travel agency e-commerce site that simulates the interaction between a user and a GDS.

Seventeen volunteers were asked to complete five different tasks using the Web sites of Expedia, Travelocity, and the prototype. After completing each task on each Web site, the volunteer was asked questions regarding specific information items and their overall experience. Details of the research are provided in our technical report [2].

Task 1 involved a one way trip search in first or business class between two U.S. cities, and Task 2 was a round trip search for an economy seat. Basic flight information, including times and airports, and fare questions concerning base fare, taxes, total fare and restrictions were of primary concern as these are very important to the purchase decision. None of the users was able to fully answer questions regarding fares using Travelocity. For Expedia, 20% of users answered basic flight and fare questions for Task 1 and 55% for Task 2. In contrast 82% of the prototype users answered the same questions for Task 1 and 80% for Task 2. Success rates for the other tasks were similar. Completion rates for the user finishing a search were comparable and for some tasks better with the prototype. When asked to rank their preference of Web sites for usability, all respondents ranked the prototype site as their first preference. When asked which Web site they would prefer to use overall, all but two subjects ranked the prototype site as their first preference. Two ranked Expedia first because of the aesthetics of the display, and the prototype as their second choice.

### CONCLUSIONS

These findings show that simple research into the usability problems of the e-commerce sites of select service industries will make a difference if appropriate guidelines are developed and followed. One set of guidelines will not work for all industries. Future research should be directed at guidelines for how to display flight groupings, display of fare information, fonts, and designation of code share flights. This type of research could also be expanded to the car rental, hotel, insurance and other service industries.

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