



# Aviation-Related Expertise and Usability: Implications for the Design of an FAA E-Government Web Site

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## ABSTRACT

*The Federal Aviation Administration (FAA) Human Factors Team – Atlantic City conducted a usability assessment of the [www.fly.faa.gov](http://www.fly.faa.gov) Web site to examine user satisfaction and identify site usability issues. The FAA Air Traffic Control System Command Center uses this Web site to provide information about airport conditions, such as arrival and departure delays, to the public and the aviation industry. The most important aspect of this assessment was its use of quantitative metrics to evaluate how successfully users with different levels of aviation-related expertise could complete common tasks, such as determining the amount of delay at an airport. The researchers used the findings from this assessment to make design recommendations for future system enhancements that would benefit all users. They discuss why usability assessments are an important part of the process of evaluating e-government Web sites and why their usability evaluation process should be applied to the development of other e-government Web sites.*

**Keywords:** *aviation; e-government; expertise; government to consumer (G2C); heuristic evaluation; usability assessment; user needs; Web site usability*

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## INTRODUCTION

On November 15, 2007, President Bush announced actions to address aviation delays during the Thanksgiving holidays. As part of this announcement, he directed people to visit the Web site [fly.faa.gov](http://fly.faa.gov), which is a Federal

Aviation Administration (FAA) e-government Web site that provides real time information about airport delays.

*Fourth, the federal government is using the Internet to provide real-time updates on flight delays. People in America have got to know there's a Web site called [Fly.FAA.Gov](http://Fly.FAA.Gov); that's*

*where the FAA transmits information on airport backups directly to passengers and their families. If you're interested in making sure that your plans can -- aren't going to be disrupted, you can get on the Web site of Fly.FAA.Gov. As well, if you want to, you can sign up to receive delay notices on your mobile phones. In other words, part of making sure people are not inconvenienced is there to be -- get transmission of sound, real-time information. (Bush, 2007)*

There has also been a concerted effort by the FAA to publicize its Web site by placing advertisements in airports across the United States. Many news outlets now provide airport delay information as part of their weather forecasts, and this delay information comes, most often, directly from the fly.faa.gov Web site.

Because this Web site is the public face of a large federal agency, it is important that it presents the agency in the best light possible. An agency Web site should be a positive public relations vehicle and should not, in itself, create any public relations problems. Although use of e-government Web sites is increasing annually, low user acceptance of e-government Web sites is a recognized problem (Hung, Chang, & Yu, 2006). Many factors affect whether or not someone will use or accept an e-government Web site, including past positive experience with e-government Web sites (Carter & Bélanger, 2005; Reddick, 2005); the ease of use of the Web site (Carter & Bélanger, 2005; Horst, Kuttschreutter, & Gutteling, 2007); the perceived trustworthiness of the information presented on the Web site (Carter & Bélanger; Horst, et al., 2007); the perceived usefulness of the Web site (Hung et al., 2006); and personal factors such as education level, race, level of current internet use, and income level (Reddick, 2005). If a Web site has many functional barriers, such as having a poor layout or producing incomplete search results, customers of the site may not use it (Bertot & Jaeger, 2006).

Early work in e-government has consistently ignored studying the needs of end users, and there has been little research focusing on the demand side of e-government (Reddick,

2005). That is, *what are customers looking for when coming to an e-government Web site?* Although there have been many benchmarking surveys conducted on e-government Web sites, benchmarking surveys often do not describe the benefits provided by a Web site and only enumerate the number of services offered by that site (Foley, 2005; Yildiz, 2007). Benchmarks do not evaluate the user's perception of sites and do not measure real progress in the government's delivery of e-services. However, governments often chase these benchmarks to the exclusion of all other forms of evaluation (Bannister, 2007).

E-government academics emphasize the importance of usability testing and highlight the need to focus on Web site functionality, usability, and accessibility testing (Barnes & Vigden, 2006; Bertot & Jaeger, 2006). However, despite its importance, many organizations still are not performing usability testing on e-government Web sites. Current work often does not address the needs of different user communities, employ user-centered design, or use rigorous methods to test the services being delivered (Bertot & Jaeger; Heeks & Bailur, 2007).

Governments around the world are working to review best practices for e-government evaluation methods (Foley, 2005). Because of the social and economic benefits of providing information online, it is important that e-government Web site designs meet the needs of its targeted users. In addition, it is important to document the benefits provided by the Web site to increase public support (Foley). Carter and Bélanger (2005) point out that e-government Web sites should be easy to navigate. They note that the organization of information on the site should be congruent with citizens' needs. When consumers visit an e-government Web site, they are most frequently looking for information (Thomas & Streib, 2003), which they need to be able to find quickly and easily. If users encounter problems while using a Web site, they may become frustrated and be less likely to adopt or utilize e-government services in the future. A positive experience with an e-government Web site will be communicated to

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