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Abstract

Since the advent and widespread use of the Internet, it has become apparent that there are significant differences between applications software and WWW sites which warrant a re-examination of HCI design and evaluation methods. Previous research has identified and documented the factors which differentiate between applications software and WWW sites, however a well defined model of these differences and their origins was not available. This paper defines such a model of Distinguishing Attributes for Informational Sites (DAIS). © 2003 ACM.

Keywords

vs, applications, software, dais, model, www, sites

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WWW Sites vs. Applications Software: The DAIS Model

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ABSTRACT

Since the advent and widespread use of the Internet, it has become apparent that there are significant differences between applications software and WWW sites which warrant a re-examination of HCI design and evaluation methods. Previous research has identified and documented the factors which differentiate between applications software and WWW sites, however a well defined model of these differences and their origins was not available. This paper defines such a model of Distinguishing Attributes for Informational Sites (DAIS).

Keywords

Model, informational web site, applications software

INTRODUCTION

Design and usability evaluation methods were developed as instruments of use during the time that task oriented applications software (from here on referred to as software) was the dominant concern of HCI. Since the 1990s, however, the use of the World Wide Web (WWW) has become widespread. Despite this, there hasn't been any concerted effort in the HCI community to review design and usability evaluation methods in order to accommodate the differences between WWW sites and software. The primary reason for the lack of review initiatives is the lack of a single starting point for such a re-appraisal. While various differences between applications software and WWW sites have been documented [2,4,6,7] there has been no attempt to model these differences and their origins, and use such a model as the basis for re-thinking our design and evaluation methods. This paper proposes a model of the Distinguishing Attributes for Informational Sites (DAIS). As the name of the model implies, it focuses on informational WWW sites only. These sites have been selected due to their pervasiveness and popularity.

APPLICATIONS SOFTWARE

The term "applications software" is used to refer to a computer program or set of programs developed for a specific group of end users to serve their particular needs. Benson and Standing [1] categorise software into three types: vertical, horizontal and customisable software. End users employ software to perform well-defined and goal-oriented tasks such as word processing, keeping accounting records. Wu and Offutt [9] make the following observations about software: the role of servers and clients is static and

predefined; programs are usually designed for a well understood homogenous environment; control flow of software is fully managed by the software itself; the user has no influence over it; software does not evolve rapidly.

WEBSITES

The diverse uses of the Internet have resulted in several different types and classifications of WWW sites based on their level of interactivity (static or interactive [5]) and purpose (informational, search, transactional and multipurpose). Informational WWW sites provide basic information about an entity such as an organisation, person, event, etc. These sites answer basic user questions such as "who, what, where, when, how" etc. usually by supplying static information. The core tasks on the WWW are mainly related to presenting information, searching for information and navigating through the information. Spool [8] uses this characterization of WWW sites as information sources to classify site users as either information seekers, those who use the WWW purposefully, or surfers, users exploring the WWW without a specific goal in mind. Recent research [6,7,8] indicates that more users are interested in retrieving specific information rather than browsing. Information seekers prefer WWW sites that are concise, fast, and efficient because the shorter their contact with a site, the more favourably they rate the experience [3]. This implies that, in addition to the quality of the information content, being able to manipulate and navigate easily through the content is an important aspect of user's interaction with the site. However, Spool et al [7] also found that users preferred a WWW site even if they experienced problems using it. This can be attributed to the attractiveness of the WWW site. Therefore, the three distinct attributes of a WWW site are its *information content*, *navigation* and *visual design*. These three attributes are inseparable because the navigation is related to and supports the information, while the visual design of the site affects both the way the navigation is displayed and the way the information is presented (Figure 1).

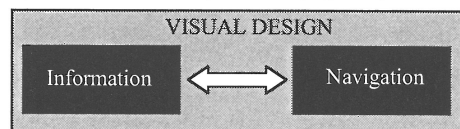


Figure 1: Three distinct attributes of WWW sites

Distinguishing Factors

A number of different factors have been identified to distinguish between applications software and WWW sites. For the purposes of the following discussion, these will be termed "distinguishing factors". Most of the distinguishing factors were itemised at the CHI97 workshop on the usability testing of WWW sites [2], while others were found in the literature [3,4,6,7]. A closer examination of these factors revealed that they were all related to and originate from the three distinct attributes of informational WWW sites defined above.

The *information content* of WWW sites relates to several factors that distinguish a site from: diversity of users, the dynamic nature of WWW sites (affecting the size of the site and information currency) and consistency.

The use of hyperlinks and search engines as a mechanism for *navigation* has resulted in the following factors distinguishing sites from software: unclear and fluid boundaries (leading to disorientation and non-formation of mental models), unknown entry points, user initiated interaction, the page as a unit of navigation.

The *visual design* of a WWW site refers to its attractiveness and use of graphical and colour coding and animated features. The visual design distinguishing factors include: the promotional nature of sites (including promoting a corporate identity and the use of online advertising), the effects of graphics and animations on the speed of loading, presentation consistency and the importance of impressions.

DAIS MODEL

The previous section has identified 3 attributes and shown how the different distinguishing factors identified in the literature are directly related to and originate from the these attributes. These differences are modeled in the Distinguishing Attributes of Informational Sites (DAIS) model (Figure 2). The DAIS model intends to demonstrate that the distinguishing factors between WWW sites and software arise as a result of the three attributes, and these attributes, in turn, are defined by the distinguishing factors. This is the first model to map the attributes and factors that distinguish WWW sites from applications software. While previous research has identified these factors, no attempt has been made to examine their origins and model them.

The implications of the DAIS model are of direct relevance to the design and evaluation of informational WWW sites. Most design and evaluation methods have been developed to build applications software for use in a static and well-defined environment. Informational WWW sites, used for the single task of searching for information, do not have a clear boundary and they are not static. The DAIS model can be used as a starting point to modify design and evaluation methods so that attributes unique to informational WWW sites can be incorporated into the design tools and techniques. This is especially true for usability evaluation

methods because evaluators can use the model to set evaluation goals and ask specific questions such as: how many entry points are there for users of the site? Can the boundaries of the site be clearly defined to reduce disorientation? etc.

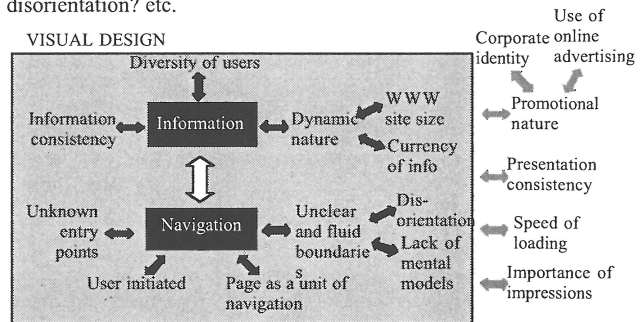


Figure 2: DAIS Model

CONCLUSIONS

This paper defined a model of the distinguishing attributes of informational WWW sites. This is the first time such a model has been defined. Further research will be undertaken to determine how the model can be operationalised in order to customize or develop methods for the design and evaluation of informational WWW sites.

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