Chapter 16

DEPTH:
A Method and a Web-Based Tool for Designing and Executing Scenario-Based Usability Inspections of E-Systems

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ABSTRACT

Scenario based inspection methods are currently widely used for evaluating the usability of web-based information systems (e-systems). However, it is neither easy nor cheap to find usability experts who possess the competencies for performing a usability inspection while at the same time have deep knowledge of the context for which each e-system has been developed. Moreover, the effectiveness of these methods depends on the quality of the inspection scenarios. These issues can be tackled by finding potential users of the e-systems under inspection who have basic knowledge about human-computer interaction and adequately support them to execute the appropriate scenarios. Towards this goal, a new usability evaluation method called DEPTH along with a web based tool that supports its application, have been created. This chapter describes DEPTH’s underlining philosophy which is the re-use of inspection scenarios per feature of genres of e-systems as well as the re-use design expertise which can be encoded in terms of design patterns.

POWERING NOVICE
USABILITY EVALUATORS TO PERFORM INSPECTIONS

Nowadays most of the web based information systems (e-systems) are complex online systems with voluminous and complicated functionality. This complexity along with their high purchase and implementation cost, impose the necessity to determine whether an e-system meets users' expectations. Furthermore, since the number of available e-systems is enormous there is a great demand for finding trusted ways for e-system evaluation in order for a stakeholder to have the ability to choose the
most reliable and usable one. On the other hand, usable systems facilitate user experiences which make the need of having those imperative.

Usability is the quality of a system that makes it easy to learn, easy to use, easy to remember, error tolerant, and subjectively pleasing (Nielsen, 2000). Usability is the extent to which a system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use, according to ISO/DIS 9241-11. According to Bevan (1995) “usability must reflect the quality of a function of an e-system within a specific context of use.” For this reason the usability evaluation of an e-system is two-fold: Being able to deal with technological aspects and the way the user interacts with the e-system, and being able to deal with the specific context of use which the e-system is connected to. Undoubtedly both usability aspects are closely affiliated and deeply associated.

Various usability evaluation methods and techniques for e-systems have been proposed (Frechtling & Sharp, 1997; Russell, 2001; Law, Hvannberg, and Cockton, 2007). They can be divided into two main categories: expert-based usability methods and user testing. The advantages and disadvantages of the two categories are summarized in Table 1. Although comparisons of evaluation methods have recently been reported by HCI researches (e.g. Andre et al., 1999), only very few, firm conclusions can yet be drawn.

The most well-adopted, in both academics and industry, are the expert-based – more specifically the heuristic evaluations (HE) – and the scenario-based inspections. HEs make the application of discount methods easier. HEs use and modulate the usability heuristics proposed by Nielsen (2000). It has been noted, however, that Nielsen’s heuristics need to be configured to the specific context of use related to the genre of the e-system (Ling & Salvendy, 2005). For example for the genre of groupware systems, Baker at al. (2001) developed a set of specific heuristics on the basis of the Nielsen’s heuristics. Furthermore, it is very difficult and expensive to find usability experts and especially “dual-usability experts” specializing in both HEs and context-of-use of the genre of the e-system under evaluation (Nielsen, 2000; Dix et al. 2003). A solution to that problem would be to replace usability experts (who are few and difficult to find) with potential end-users with some (but less) knowledge of HEs, who are more available, easier to find, and know very well the context of use of the e-system under evaluation.

Another shortcoming of HEs is that they do not provide a systematic way to generate fixes to usability problems identified, or a way to assess the probable quality of any proposal for redesign (Sears 1997). This is why Sears (1997) created a technique called “heuristic walkthrough” that combines benefits from the HE, cognitive walkthrough, and usability inspection. Evaluators are asked to identify usability problems while they

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<tr>
<th>Usability method</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>User-based</td>
<td>Provides insights into user’s options and understanding of the system. Can give clear record of important problems. Relatively inexpensive even for large sample of users. Intuitive; easy to motivate potential evaluators to use it. Rating scales can provide quantitative data.</td>
<td>Time consuming for preparation and analysis of data. Requires occurrence of prototype. Does not always suggest solutions for identified usability problems.</td>
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<tr>
<td>Expert-based</td>
<td>Fast. Can be used early in the development process. Advanced planning is not required. HCI experts can suggest appropriate and effective solutions.</td>
<td>Costly. Prone to reporting false alarms/problems that are not actual usability problems in application.</td>
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Table 1. Relative advantages and disadvantages of each category of usability evaluation methods
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