

An outline of the software usability workshop

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Abstract. This is an outline of the contents of the Workshop on Software Usability hosted in the frame of the 8th Panhellenic Conference in Informatics. The Software Usability workshop, is organised by the network of Excellence on Software Usability, which has been active for the last two years in Greece. Nine (9) presentations covering theoretical and practical aspects of software usability will be given in the frame of the workshop, which are briefly introduced in this introduction.

1 Introduction

The *Usability* of interactive systems is the software quality factor that has taken particular prominence during the last years. It is the field of *Human-Computer Interaction (HCI)* that provides theoretical background and proposes techniques for producing usable software systems. In the frame of this field, a wide variety of development and evaluation techniques have been proposed and shown to lead to more usable software applications. These techniques, as supported by international standards and accepted practices, define the area of *Usability Engineering*.

Software usability has been the subject of many international standards, directives and theoretical and empirical research during the last years, like the ISO Standard 9126 that relates to software quality, ISO 9241 that concerns ergonomic requirements of use of computer equipment and the European Council directive 90/270/EEC on minimum safety and health requirements for work with computer equipment, see [2] for discussion of these standards. At the same time many practical techniques for measuring usability have been proposed to be introduced in the interactive software development lifecycle [8], [9], [11]. According to the ISO 9241-11 draft standard Usability is defined as the "extent to which a product can be used with *effectiveness*, *efficiency* and *satisfaction* in a specified context of use". The attributes which a product requires for usability depend on the nature of the user, task and environment. A product has therefore no intrinsic usability, only a capability to be used in a particular context. So usability cannot be assessed by studying a product in isolation.

The workshop on software usability, of the 8th Panhellenic Conference on Informatics is an occasion to increase our community's awareness in this area. The workshop objective is to draw the attention of the research community and industry in the area of usability engineering, and it is organised as an activity in the frame of the Network of Excellence on Software Usability (www.ee.upatras.gr/hci/usabilitynet)¹, funded by the Greek Secretariat for Research and Technology (GSRT) and co-ordinated by the University of Patras HCI Group. The main purpose of this network has been to enhance co-operation and sharing of experience and practice of its members in the area of software usability. The Network has been active since the beginning of 2000, while it is involved in organising the forthcoming Panhellenic Conference on Human-Computer Interaction [1], which is expected to become a regular event in the future.

2. Outline of the workshop- Part A

The first part of the workshop introduces the field of software usability and investigates its relationship with software engineering, quality standards and human-computer interaction.

The paper by Avouris [3] attempts an introduction in the field through two complementary perspectives, the normative and the empirical one. The first perspective concerns definition of the term through various international standards and norms (ISO 9126, 9241 etc.), while the second concerns the established practice of the field in relation to software usability evaluation techniques. Finally an example of application of heuristic evaluation experiment is briefly introduced.

The paper by Xenos [14] presents usability perspective through the most frequently used *models of software quality*, i.e. FCM, CSQ and ISO 9126. Furthermore, it discusses the requirements, in terms of usability, in ISO 9001 quality assurance international standard (using the ISO 9000-3 guidelines for software as well), in Malcolm Baldrige National Quality Awards and in Capability Maturity Model. The aim of the paper is to position usability in the overall framework of software quality and to underline the importance of usability into software quality models and standards.

The paper by Stamelos [13] describes a structured approach for evaluation of software usability. This evaluation approach that is based on decision support methods, has been proposed in other software engineering areas but not extensively used for usability engineering. Some typical usability evaluation problem situations are described and their most important aspects are outlined in the paper: the *evaluation context* (target, scope, actors), the *type of the evaluation*, the definition and measurement of the *usability attributes*, the definition of the preferences of the evaluator and the preference aggregation procedure.

The first part of the workshop is concluded with the paper of Dimitracopoulou [6], which concentrates on evaluation of learning environments and the appropriateness of the established usability techniques in the particularly difficult case of educational software.

¹ The partners of the Software Usability Network of Excellence are the University of Patras (coordinator), National Technical University of Athens, Aristotle University of Thessaloniki, University of Ioannina, University of Athens, University of the Aegean, Computer Technology Institute (CTI), Institute of Computer Science (ICS) of the Foundation for Research and Technology, Sunsoft Ltd, Opentec Ltd, DIS-Computer logic S.A., Knowledge S.A.

3. Outline of the workshop- Part B

The second part of the workshop includes examples of interface design of complex applications, in which the techniques and the tools introduced in the previous section are applied.

The first paper by Karoulis and Pombortsis [7] suggests a heuristic approach for the evaluation of web-sites. The paper presents an experiment through which heuristic evaluation was adapted for web-based applications. Special emphasis is provided in the training of the evaluators, attempting to answer the question if their training has an effect on the evaluation itself. The results from the presented study confirm that adapted heuristic evaluation is applicable to web applications and that the prior evaluators' expertise is of great importance, while it was proven that it is possible to augment, under conditions, this expertise in a short way, in order to increase effectiveness of the evaluation process.

The next paper by Zaphiris and Zacharia [15], is also concerned with usability evaluation of a web application, i.e. a web-based Modern Greek online course. A set of user-centered evaluation methods have been used in this case. In the paper, an analysis of the design methodology employed in this specific case study is provided and then examples of how valuable usability information can be extracted from different user-centred evaluation methods is presented. Conclusions, related to the analysis of the information obtained through the different evaluation methods and about the usability of the course, are also provided in the paper.

In the paper of Retalis and Psaromiligkos [10], a stepwise evaluation study is presented applied in evaluation of educational software. This approach includes a specific summative evaluation method, involving specially developed pre-test and post-test questionnaires, which provide data for both quantitative and qualitative analysis. The focus of this evaluation is on the learning effectiveness of the course and its instructional model as well as the identification of extensions and revisions needed to be made.

Finally the last two papers of the workshop concern design of specific applications, in which usability evaluation should be adequately adapted. The paper by Sgarbas et al. [12] concerns the design of a speech and natural language understanding system, i.e. a generic platform for the development of natural and multi-modal interactive interfaces to a wide area of databases employed by information service providers. The presented platform utilizes generic dialogue components easily adaptable to new services and languages. Generation of multilingual and multimodal interfaces is then achieved by incorporating the lexical and semantic relations of the database contents, thus reducing the development time and facilitating the system's maintenance and transportability to different applications and languages. The last paper by Constantinou and Avouris [5], describes the design of a distributed web-based multi-agent application that supports sharing of personal document collections of the members of a scientific group. The paper focuses on the system architecture and technology applied, functionality and especially typical patterns of use. Issues of control, task allocation, transparency and privacy protection are discussed with reference to interaction design of the system. The usability factors defining these last two innovative environments need to be redefined and are a matter of discussion in the frame of the workshop.

4. Conclusions

The increased importance of the user in the competitive world in which modern software operates, the increased awareness of our societies in quality-related matters and the widespread use of software products by large sectors of modern societies are rapidly introducing software usability techniques in the frontline of our discipline. This fast change necessitates the active involvement of the usability-related researchers and practitioners. It is believed that the papers included in this workshop outlined here, contribute towards this direction and demonstrate vividly the wealth of the field and the maturity and richness of the activities of the Greek research community in this area.

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