ABSTRACT

This paper describes an early stage usability study conducted on a prototype system designed to capture and analyse Patient Reported Outcome Measures (PROMs) activities. The system – PROMS 2.0, was developed by Bluespier for the trauma and orthopaedic department in Trafford Hospital, Manchester, United Kingdom (UK). The Centre for Health and Social Care Informatics (CHaSCI), Liverpool John Moores University (LJMU) examined the system without real users, identified potential usability issues and suggested possible solutions for improvements before final release by Bluespier. Three different approaches were adopted for evaluating user interface (UI) design without users. The first approach is the Cognitive Walkthrough (CW), a task-oriented technique capable of identifying issues through action sequence required to perform a task. The second approach is action analysis which predicts the time a skilled user would need to perform a task. The third approach is heuristic evaluation which tends to identify problems based on recognised standards. Results support the argument from relevant cognitive psychology theories and user-centric design principles that UI evaluation without real users is a useful tool in yielding rapid output for subsequent enhancement. It is concluded that semi-parallel design concept could be the key to timely delivery of software design projects.

Keywords: Action Analysis, Cognitive Walk-Through, Heuristic Evaluation, Human-Computer Interaction, Proms 2.0, User Interface Evaluation

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1. INTRODUCTION

From April 2009, all licensed providers of National Health Service (NHS) funded treatment in the United Kingdom (UK) were expected to collect Patient Reported Outcomes Measures (PROMs) questionnaires from patients undergoing any of four index elective surgical procedures, namely: varicose vein surgery, inguinal hernia repairs, hip replacements and knee replacements (National Health Service, 2008). PROMs assess the quality of care delivered to patients from the patient perspective via short, self-completed questionnaires before a procedure (pre-operative) and after the procedure (post-operative). The questionnaires use validated disease specific outcome measure tool to provide an indication of the outcomes or quality of care delivered to patients. Until recently, most NHS providers used paper based questionnaires for PROMs data collection. Basically, patients filled in the pre-operative PROMs questionnaires by hand and the completed forms are transferred securely to the contractors responsible for collating all of the information. The forms are then scanned electronically and matched with each patient’s NHS number. Using the NHS numbers, the pre-operative PROMs questionnaires are linked securely to the relevant PROMs databases. After three or six months, depending on procedure, the contractor posts out a follow-up post-operative questionnaire to patients. Once again the forms are electronically scanned upon return and linked with the pre-operative data within the PROMs databases.

Trafford hospital believed efficiency could be improved in this ambitious project if the questionnaires were collected and collated online. Bluespier was contracted to develop the software (PROMS 2.0) (Wilson et al., 2013). There was also a need to release the software quickly so the timeframe allocated for the project was very short. Unfortunately such software development projects usually take a user centric approach where requirements are driven by end users and collected by a mix of quantitative and qualitative research methods. Also the design process always require several rounds of modifications through testing with real users (Jakob Nielsen, 1993)(Rosson & Carroll, 2002). According to Nielsen (J. Nielsen, 1993), at least two iterations, yielding three versions is required, before a product is good enough for release. The decision was made by the Trust to adopt what we call a semi-parallel design approach where independent designer(s) examine a prototype system and suggest improvements. Parallel design approach involves multiple designers independent of each other designing suggested user interfaces based on version zero concept which are then merged to a unified design (Card, Moran, & Newell, 1983)(Jakob Nielsen & Faber, 1996).

PROMS 2.0 followed an agile development process so there is little time to conduct testing in real user environment. The user research team from Trafford hospital worked closely with both Bluespier and CHaSCI to identify, capture and address requirements. This paper describes the early stage usability study conducted by CHaSCI on PROMS 2.0 prototype system. The study was conducted without real users and in parallel with the actual system design by Bluespier to produce a final version faster.

2. BACKGROUND

Computerised data collection systems for healthcare have a long history. In the early 1970s, large multi-centre trials such as the Hypertension Detection and Follow-up Program gathered huge amounts of data through hard copy questionnaires completed at physicians’ offices and then transferred to a central site where the data would be entered manually onto mainframe computers (Ramsay, 1997). Dramatic improvements were observed in the early 1980s, with studies such as the Systolic Hypertension in the Elderly Program offering better quality and faster availability of data. This was achieved by using personal computers at the local sites for data entry and then for transfer of data electronically via modems to mainframes. Other techniques began to emerge from the 1990s that support online data collec-
RETRA: Web Based Resource Allocation Tool for Emergency Management
www.igi-global.com/article/retra/94635?camid=4v1a