2009

A Preliminary Framework for Usability Analysis in Healthcare

Surendra Sarnikar
Dakota State University, ssarnikar@outlook.com

Maureen Murphy
Dakota State University, Maureen.Murphy@dsu.edu

Follow this and additional works at: http://aisel.aisnet.org/sighci2009

Recommended Citation
http://aisel.aisnet.org/sighci2009/20

This material is brought to you by the Special Interest Group on Human-Computer Interaction at AIS Electronic Library (AISeL). It has been accepted for inclusion in SIGHCI 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
A Preliminary Framework for Usability Analysis in Healthcare

Surendra Sarnikar  
Dakota State University, Madison, SD  
Surendra.Sarnikar@dsu.edu

Maureen Murphy  
Dakota State University, Madison, SD  
Maureen.Murphy@dsu.edu

ABSTRACT
We propose a usability analysis framework for healthcare information technology to help identify potential errors and evaluate their impact on medical processes.

Keywords
Usability, Healthcare Information Systems, Medical Errors

INTRODUCTION
Healthcare organizations are investing in healthcare information technology (HIT) to improve quality and outcomes. However, HIT has also been known to introduce unintended consequences and adverse effects. In order to ensure the safety of HIT, we explore various error classification and analysis schemes proposed in usability and healthcare literature and integrate them into a framework that can help in the analysis of usability data to study potential technology-induced errors.

HIT USABILITY ANALYSIS FRAMEWORK
We integrate results from the past studies in usability problems and medical errors to develop a framework for identifying, classifying and prioritizing technology-induced errors in the healthcare setting. The framework helps analyze usability data by integrating usability and medical error classification schemes along the dimensions of cause, effect, task impact and business impact (Gorlenko and Englefied, 2006) as described below.

Cause
The proposed framework extends the usability problem taxonomy (Keenan et al., 1999), and usability mismatches classification scheme (Zapf, 1992) to classify usability problems. The cause of a technology-induced error can be classified along two dimensions, the artifact characteristics that trigger the error, and the human cognitive actions that contribute to the error.

Effect
In the proposed framework, the effects of the interface defects and cognitive errors are coded using a medical error framework that details the effects of the HCI errors in clinical terms. The JCAHO framework (Chang et al., 2005), which has been evaluated for validity and reliability is used to document the effect of usability problems on the clinical tasks.

Impact and Outcomes
The third and fourth dimension of the proposed framework analyze the impact of the error and indicates the severity of the adverse effects caused by the error. This severity can be captured using the NCC-MERP classification of outcomes which ranges from no harm, harm, and death (National Coordinating Council for Medication Error Reporting and Prevention, 1998).

FUTURE WORK
In future work we intend to further develop the framework based on a comprehensive analysis of HIT and usability literature, and conduct of usability studies and comparative evaluations to test the utility of the framework.

REFERENCES