



Development of a survey platform and evaluation for medical usability studies

Project Management and Software Development
for Medical Applications

General Info

Project Title: [Development of a survey platform and evaluation for medical usability studies](#)

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Project Abstract

Usability for medical devices is crucial, as usage error can lead to severe problems, up to the death of patients. But since the medical domain is highly complex, classical usability studies are usually not applicable to this problem. A platform for quick and easy to fill surveys should help getting feedback directly from surgeons about the importance of specific features or other aspects of devices.

Background and Motivation

The complex medical domain can be split up into several, more specialized views, to help analyze the whole process by its parts [1]. While some views allow for direct measurement of performance values (such as time or costs), especially the view on intra-operatively used devices and device features does not allow a meaningful direct measurement of performance or importance. Asking the surgeons who use the device is the most promising alternative, but since surgeons have multiple other duties, regular interviews are not feasible as they would take up too much of the surgeons' time.

Student's Tasks Description

A specialized web-based survey format should be created that allows for various, previously well-defined question types. Surveys should be easy and quick to answer, and support mobile devices to their full potential as well as bigger screen sizes of desktop machines. Additionally the answers should be collected and analyzed in a first step, similar to the methods described in [2].

The student will learn about basic usability concepts, constraints to medical device design and the domain model used to analyze the complex environment of an OR.

References

- [1] Bigdelou, A., Sterner, T., Wiesner, S., Wendler, T., Matthes, F., Navab, N.: OR specific domain model for usability evaluations of intra-operative systems. In: Taylor, R.H. and Yang, G.-Z. (eds.) Information Processing in Computer-Assisted Interventions. pp. 25–35. Springer Berlin Heidelberg, Berlin, Heidelberg (2011).
- [2] Herrera, F., Herrera-Viedma, E., Chiclana, F.: Multiperson decision-making based on multiplicative preference relations. European Journal of Operational Research. 129, 372–385 (2001).