

Improved Inpatient Care Due to Mobile Patient Monitoring (Project Description)

How can hospital patients receive improved care and how can the quality of nursing care be optimized? According to a project carried out by the ZHAW School of Management and Law, the answer is to be found in mobile technology.

Motivation: One of the key problems in healthcare is the shortage of qualified nursing staff, which can seriously affect patient care. The situation is further aggravated by demographic developments, increasing cost pressures, and the fact that a considerable number of nursing professionals are planning to retire in the near future. As a result, it will be difficult to find adequate replacements. How important these issues are is also reflected by the warning statement issued by the World Health Organization (WHO) with regard to the shortage of nursing staff. The WHO is explicitly calling for an increase in efficiency and effectiveness of nursing processes. The ZHAW project aims to make a contribution towards this objective.

Goals: Mobile IT solutions can optimize work processes and conditions, which can alleviate the cognitive and psychological impact on nursing staff and, at the same time, increase nursing quality. In addition, there is a positive effect on the reduction of healthcare costs. By means of a mobile IT solution, information asymmetries affecting the nursing staff can be reduced and process quality can be optimized as a result.

Problem Definition: At night, the hospital staff providing patient care and nursing care is limited to a skeleton crew. When an alarm sounds in the middle administering a treatment, the reason for it is not always clear: Is it a diagnostic alarm, triggered by the system monitoring a patient's vital signs to indicate a deviation from acceptable parameters? Or is it an emergency signal requiring immediate countermeasures? In order to find out the reason for the alarm, the nurse must interrupt what he or she has been doing and leave the room to check on the situation. If it is a diagnostic alarm, a light will have come on. However, the nurse will still have to identify the patient who is in trouble and determine the seriousness of the problem. Next, he or she must decide whether to continue administering the treatment or deal with the cause of the alarm first.

Possible Solution: Ideally, the nurse who has to make this decision should be able to immediately access the vital signs and patient data of the patient for whom the alarm is sounding. The vital signs would have to be optically retrieved from the monitor when the alarm goes off (e.g., with a webcam) and sent by wireless transfer to the nurse's mobile end device (e.g., a smart watch or phone). Existing monitors could be adapted to accommodate the new solution, which could therefore be introduced quickly in many hospitals.



Possible end device (cf. www.pcadvisor.co.uk/news/apple/3443668/apple-iwatch-release-date-specs und www.absolutmed.com)

Project Phases: The diagram below shows the different phases of the project. Phases 1 – 3 are currently under way. Upon completion, they will be followed by Phases 4 – 6.

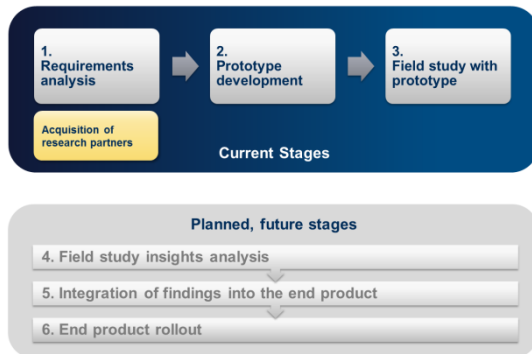


Diagram: Project phases

Project Progress:

Various meetings were held with experts in the field. The information thus gained was used to compile a catalogue of requirements for the development of a prototype, which enabled the modeling of the alarm process. Currently, the focus is on solving the technical issues involved in the process of reading vital signs and transmitting them to mobile end devices worn or carried by the nursing staff. At the same time, the team is addressing the problem of how to adapt existing monitors for use in the new process. While the research continues, efforts are being made to raise additional funds to finance the next project phases. The interdisciplinary character of the project requires an active dialogue with research partners such as the Institute of Business Information Technology.

The project is led by Dr. Roger Seiler of the Institute of Marketing Management at the ZHAW School of Management and Law. The school is very grateful for the prize this project has received from the Dalle Molle Foundation.

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