



Medical Device Identity Management

Project Management and Software Development
for Medical Applications

General Info

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Project Abstract

Hospitals collaborate with multiple medical device manufacturers. From the operating room to radiology, different vendors provide tools and equipment for the medical staff to conduct their work with. MDOP aims to provide a universal solution that connects all devices into a well-organized system by using NFC tags and QR code technologies.

Background and Motivation

Hospital management is quite an extensive process that is designed to organize and optimize hospital resources (staff, doctors, patients, devices, etc.). Among the most important resources that any hospital needs nowadays are the medical devices and tools used to perform day-to-day tasks such as surgeries, scans and others. Considering the multitude of medical equipment manufacturers, hospitals are still facing a problem when it comes to administrating all the devices in an optimal way. NFC tags and QR codes can be used to identify and connect the medical equipment to a main operational platform, independent from any vendor. Using these technologies as a starting point, MDOP targets the medical device infrastructure and aims to improve it by creating a common ground for small to medium-sized manufacturers where location, tutorials, FAQs and other information can be easily accessed by stakeholders (manufacturers, hospital operators,

doctors etc.). A previous NFC application has been developed where the user could connect to a specific device and see where it was previously used (geolocation tracking) and access information such as previous usage, device description, maintenance (if necessary) and other valuable KPIs. Based on the success of NFC tags and the ease to implement them in most devices, MDOP hopes to bring the management of medical device operations to another level.

Student's Tasks Description

The student is assigned to multiple tasks such as creating analyzing different technologies that can be used to develop an application for medical device monitoring (cloud, databases, UI/UX, etc.), and eventually developing one part of the application/web interface. In the first stage, the student is supposed to analyze existing technology and come up with solutions related to the current management of medical devices and develop a possible solution (documentation, research papers) to the unoptimized aspects of medical equipment management. The student is supposed to develop a part of the operator application to contribute to the overall functionality of the platform. Throughout the project, the student is expected to learn how to transform a problem into a real-world solution but also learn about how hospitals and the medical device industry operate.

Technical Prerequisites

Programming skills are very important since the student is supposed to develop a part of an app and organize him/herself to document and test the integrity of the code he/she is developing. Research

Please send the completed proposal to ardit.ramadani@tum.de, lennart.bastian@tum.de and tianyu.song@tum.de. Please note that this proposal will be evaluated by the BMC coordinators and will be assigned to a student only in case of acceptance.



and communication skills are also needed since close cooperation with hospital staff is needed.

References

<https://link.springer.com/article/10.1007/s11517-019-02021-x>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC449896/>

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