



# Patientflow: a WebApp-based patient guidance and analysis system

Project Management and Software Development  
for Medical Applications

## General Info

Contact Person: [PD Dr. Joshua Gawlitza](#)

Contact Email: [Joshua.gawlitza@informme.info](mailto:Joshua.gawlitza@informme.info)

## Project Abstract

In hospitals, a lot of time is wasted on coordination of patient movement (from one station to another, being called from the waiting room etc.). With guidance systems, patients can be called into the correct examination room or be shown, where the way to their station is.

## Background and Motivation

InformMe is a Munich-based digital health startup with the goal to improve patient satisfaction, workflows and medical procedures by high-level digitization of currently analogue processes. [1]

The current workflow in practices and hospitals requires M.D.s and other medical/non-medical staff to call patients for example from the waiting room into the examination room. As the most expensive and important asset of a hospital is its staff, these tasks are not only expensive for the facility, but do not add to the professionals' daily life. According to several studies, between 5 to 7% of a nurse's daily life is transportation and transition of patients to specific locations. [2] Besides transportation of patients from one point to another, especially calling patient into a specific room inside one department takes a lot of time in high throughput facilities such as radiological departments or ERs (sometimes specific people are hired, just for coordination). As previously shown, guidance systems can help patients to find their way and lighten the hospital staff's load. [3] A major

downside of current guidance systems is the sole focus on route planning and hospital mapping, while the connection to staff and workflow in the facility is missing - e.g. calling patients inside a specific examination room as soon as the staff is ready. Further, current systems rely on hospital/practice owned mobile devices. Besides hygienic problems with shared devices, this is a usability problem. Although most elderly are familiar with their own smartphone, new devices pose challenges and are often unusable for elder patients.

Therefore, we want to use our already existing, completely end-to-end encrypted patient communication WebApp as a platform for a patient guidance system. Patients can use their own, familiar smartphone and be guided in contact with the hospital staff, allowing for smoother workflows in and between departments, reduced coordination efforts and more time for better care. The mining of movement data can be used to identify choking points and further improve clinical workflows.

## Student's Tasks Description

- Building a mobile device compliant user interface for navigation within our WebApp frame - for patients and the hospital staff
- Front- to backend connection for bilateral, end-to-end-encrypted communication between the patient device and the staff interface
- Open connection for python integration for future patient-flow analysis

Learning points during this project:

Please send the completed proposal to [ardit.ramadani@tum.de](mailto:ardit.ramadani@tum.de), [lennart.bastian@tum.de](mailto:lennart.bastian@tum.de) and [tianyu.song@tum.de](mailto: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.



- Web-based development with state-of-the-art technologies
- Brief deep-dive into clinical IT systems/infrastructure
- Knowledge about end-to-end-encrypted communication
- Insight into clinical workflow optimization/consultation
- Starting points for machine learning based flow analysis

### Technical Prerequisites

- Experience with JavaScript/TypeScript or similar languages
- affinity with intuitive user interface design
- light python experience
- Seek to learn about clinical workflows, mobile optimization with state-of-the-art web technology
- Excitement for the startup world and a young, uprising team

### References

- (1) InformMe Web Application, URL: <https://informme.info/webapp/> (2022)
- (2) Hendrich, Ann, et al. "A 36-hospital time and motion study: how do medical-surgical nurses spend their time?." The Permanente Journal 12.3 (2008): 25.
- (3) Yoo, Sooyoung, et al. "A personalized mobile patient guide system for a patient-centered smart hospital: Lessons learned from a usability test and satisfaction survey in a tertiary university hospital." International journal of medical informatics 91 (2016): 20-30.