Digital Patient Support Across the Continuum of Care

Implementation of a modular mobile application
The team project will be hosted within the M²OLIE ("Mannheim Molecular Intervention Environment") Research Campus.

The aim of M²OLIE is to establish the M²OLIE Closed Loop, a patient-centered and time-optimized infrastructure for innovative tumor therapies.

By means of molecular intervention, the aim is to make treatment of cancer patients with oligometastases possible in a “one-stop shop”.
More and more healthcare providers offer mobile apps with different purposes to their patients – a growing competitive advantage.

The amount of applications that patients require increases constantly, even inside larger institutions like hospitals.

Large scale solutions such as electronic patient records focus on aggregating patient data, but not on the overall continuum of care (also known as the patient journey).

There are hardly any suitable solutions to guide patients throughout the whole patient journey that starts from the preparation of the first visit and continues during the aftercare.
Involving patients throughout the entire continuum of care is vital:
- Valuable data is generated that has hardly been collected so far.
- Particularly in the aftercare, contact with patients is often lost, making it difficult to evaluate medical outcomes.

Involving patients early in the continuum of care brings significant benefits:
- Well informed patients.
- Some steps like the patient clarification can be completed at home.
- Medical practitioners can request mandatory documents prior to the stay at the institution.
- No-shows can be reduced by using reminders.
A Digital Companion For Patients

First contact (scheduling)

Stay (prior treatment)

Intervention (e.g. M\(^2\)OLIE Closed Loop)

Stay (after treatment)

Aftercare

University Hospital Mannheim (UMM)
Technical Implementation

Mobile and web application
- Android and iOS as well as a dashboard (browser) for medical staff
- Architecture can be based for example on Ionic, React Native, Flutter, …

In the context of the team project, the underlying architecture of the application will be implemented. This includes:
- Frontend (web application/dashboard and mobile application)
  - Usability is key: Users come from all age groups and are often limited due to their medical condition
- Backend and database
- The amount of features will be based on the team size
- The architecture must allow features to be added in a modular way. More features will be added in the course of master theses and other team projects.
Potential Features

For patients
- Registration and login
- Appointment booking
- Upload/download documents
- Fill out medical history/information form
- Expert inquiries ("chat function")
- Treatment overview
  - "The following treatment is scheduled at 09:30 in Room 201, House 8"
  - Directions (in-house navigation)
- Digital "patient folder" (aftercare information, treatment summary, etc.)

For medical staff
- Administration interface (dashboard)
- Task and instruction area (for patients)
  - "Stay sober from 08:00 the day before"
  - "Please upload the following information"
- Patient inquiries ("chat function")
- Providing general information (contact persons, buildings/rooms, treatments, etc.)

Any additional ideas of the team will be added, regardless of whether the feature is implemented as part of the team project.
Overview of the Expected Tasks

**Analysis**
- Analysis of existing tools
- Analysis and specification of requirements
- Draft of the overall architecture
- Setup of the development environment
- Agree on agile development plan (Sprint length, roles etc.)

**Vision**
- Definition of the final architecture
- Specify final requirements and prioritize them for agile development
- Distribute tasks and responsibilities for different areas (e.g., frontend, backend, database, interfaces, testing, documentation, etc.)

**Implementation**
- Agile development in sprints
- Conduct meetings (Daily, Review, Retro etc.)

**Presentation**
- Present the results
- Handover of developed artifacts
- Finalization and handover of the documentation