

PROJECT OVERVIEW

The Electronic Pre-Operative Anesthetic Plan (EPAP) is a native mobile application prototype for the Android and iOS platforms. This application is designed to increase efficiencies between anesthesia healthcare professionals, technicians and pharmacists in an operating room (OR) setting.

The EPAP application enables anesthesia professionals to create and communicate an anesthetic plan consisting of limited relevant patient data, operation procedural details, medication, and equipment. This plan enables credentialed anesthesiologists to review the plan, designated pharmacists to fill requested medications earlier, and designated technicians to prepare the operating room with the necessary materials and equipment. Once the plan is complete, they may be viewed by all approved parties in advance of the medical procedure. Further, if there are any comments or concerns, there is direct messaging functionality as well.

The system creates benefits including reductions of procedure delays due to unavailable medications or materials, reduction of medication and material waste, and increased efficiency in the provisioning of high-demand equipment. There is a safety benefit in that medications and their quantities are clearly defined and easily read in the application, which is a tremendous improvement from the traditional hand-written anesthetic plans.

Over the course of the project, the team largely communicated through Basecamp, a project management tool containing relevant documents, schedules and meeting appointments, checklists, and chat and collaboration functionality. The tool made it easier to discuss and organized all project-related information neatly in one place. The core team met online weekly for an update meeting to discuss progress from the past week and path forward for the upcoming week.

Establishment of the project charter included several components. Scope for the project was defined, as well as project requirements and needs from the sponsors were captured. In parallel, various project management plans, such as communication plan, change management plan, and quality control plan, and member roles were established.

Several use cases for the main users of the application, including administrator, physician, pharmacist, and technician, were generated for the application. The use case diagrams helped define the user functionality and main actions they may take while using the application. Additionally, a detailed data model indicating the data to be processed by the application and their relationships were also created. This data includes the user information, messages, and available equipment, drugs, and rooms which may be chosen when creating a plan. Plan data is also present, including patient information, drug plans, and equipment plans, which contain the drugs and equipment specific to a given plan.

A functional prototype was created using a service called Mockingbot and included the basic screens which were expected to be in the final application. Kumulos, a mobile backend as a service (MBaaS) utilized by the project, had two-fold purpose of serving as a database and handling API calls.

The application itself was developed using React Native for both iOS and Android platforms. The final application as developed by the team includes functionality to create new and manage existing users, login, add/edit/delete equipment, drugs, and plans themselves, and message other users with comments and concerns. Related data is stored and modified in the Kumulos databases on the back end of the application. The end result is a functional application which demonstrates the functionality envisioned by the team.