Failsafe Executive Summary - DRAFT Edwin Ward, Jeff Hou, Alex Song, David Chou

Overview

The application will seamlessly replace the current emergency pager on-call system with a web-phone interface. We will do several things: 1) develop an overarching scheduling system for on-call shifts 2) provide a closed loop mechanism to inform operators not only that the staff are on their way but also their estimated time of arrival and 3) cheapen the cost of the emergency on-call system by replacing pagers with a web-directed SMS-based application.

Purpose

Dealing with a heart attack is a time-critical operation. No more than ninety minutes should pass between the time an incident is reported and the time that the catheter operation is completed. Pagers are unreliable; several minutes can pass between the time an operator sends a page and a doctor receives it. Sometimes, pages are missed entirely, and multiple members of the six-person team can entirely miss the operation. This is unacceptable. Our application seeks to reduce the time that it takes for on-call medical teams to be notified of an emergency, allowing operations to be started sooner and increasing the probability of a patient's survival.

Functionality

The web application will allow hospital administrators to create emergency on-call groups as well as schedule these groups for shifts through a calendar interface. Additionally, the web application will allow a hospital emergency operator to alert these groups via SMS with critical information (location, type of emergency) when an emergency occurs and ask for an estimated time of arrival. The full application will eventually be downloadable onto smartphones and supplement the texting service with a more user-friendly interface.

Technical Considerations

The clients will need to pay for a server and domain to host the web application, which will be built with Flask, a Python framework. They will also need to cover the cost of the SMS messaging service Twilio ($1 per phone per month + .75 cents per message). This will likely be covered by a fund code given by Duke Hospital. The hospital should ultimately save money if they ever switch to our service, however, as they currently pay $132 per pager, which often require replacement, as well as a monthly fee for the entire pager system. If we make a Smartphone app, we will likely want to use a service like Xamarin for multi-platform (Android, iOS, Windows Phone) development, which will cost $25/month.

Rough Sketch