

Heart Screening Management System: Semester 2 Plan



Team Members

Carlo Campanini
Chris Newberry
Drew Dunkelberger
John Dewey
Noah Wilson

Client

Evan Ernst, CEO
Klynton Holmes, Tech Advisor

Faculty Sponsor

Dr. Eraldo Ribeiro

Motivation

- Sudden cardiac arrest (SCA) is the 2nd most common cause of death in youth and the leading cause of death for student athletes on school campuses.
- The common approach of a simple history and physical examination is not effective at detecting potentially fatal cardiac abnormalities in young adults
- Standard physical examination misses over 96% of those at risk for SCA.

Goal

- Increase the use of ECG screenings in American high schools to minimize preventable SCA deaths in student athletes.
- This will be done by replacing Who We Play For (WWPF)'s current heart screening program with a management system that provides event scheduling tools, ECG collection, and results delivery.
- The current system is localized to Florida. We want the new system to be scalable for use across all of the United States.

Key Features

- On-site registration
 - QR code registration
- Scalable event scheduling and management
 - Directors can create and manage events
 - Participants can register for events online or in-person
- Payment management
 - Search payments by filters
 - Export payments to spreadsheet
- Email notifications and results delivery
- Volunteer sign-up
 - Register for upcoming events
 - View event details ahead of time
 - Download necessary cardea and sign-in spreadsheets

Tools

- Key Libraries
 - Node Package Manager (NPM)
 - Mocha/Chai
 - Axios
- APIs
 - Payeezy API
- SDKs
 - Google Suite SDK
 - AWS Javascript SDK
- Frameworks/Runtimes
 - VueJS and NodeJS
- Languages
 - JS, Terraform, Bash
- AWS Services

Technical Challenges

- Full-stack development experience
- Time management
- Handling sensitive information and money properly

System Architecture Diagram

Users:

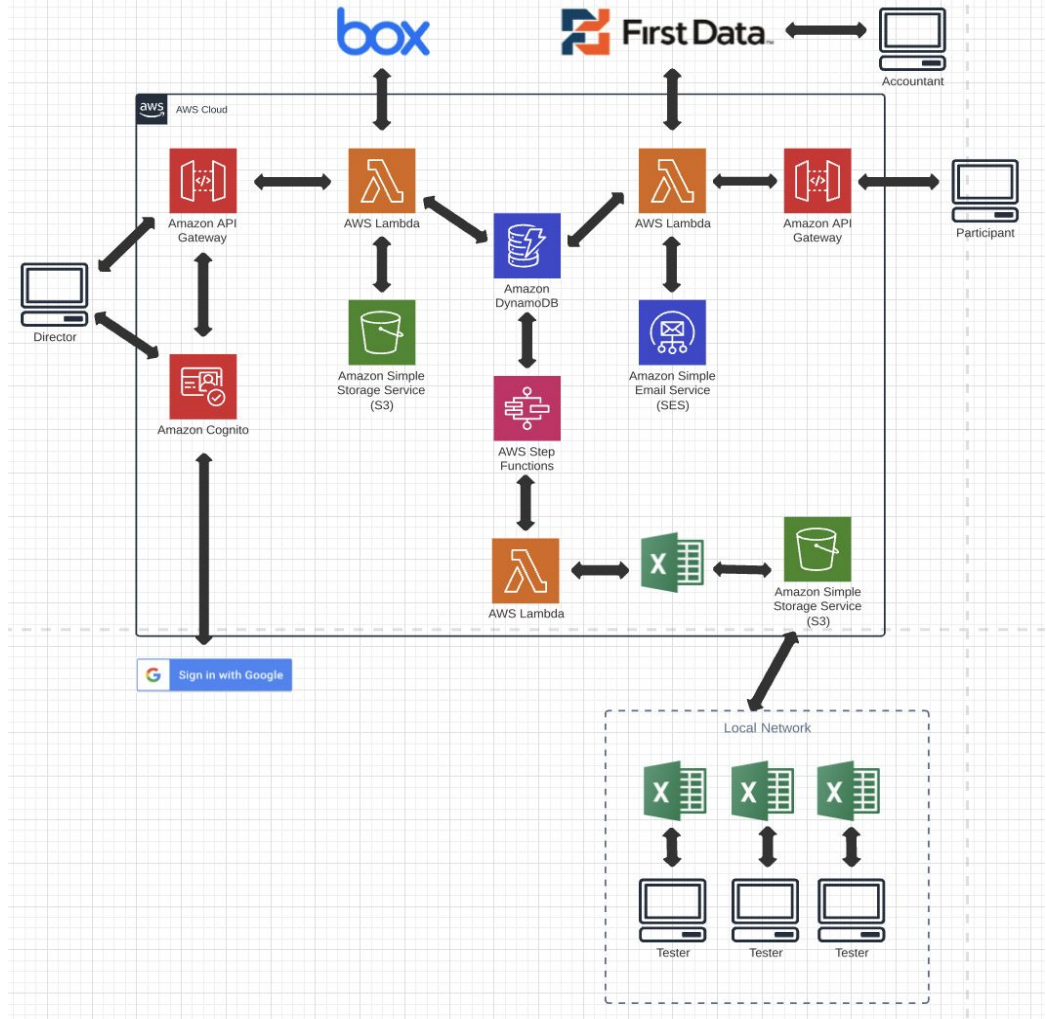
Director

Participant

Accountant

Admin

Volunteer



Evaluation

- User experience
 - Beta testing with real heart-screening event (early March)
 - Feedback button with survey of user's experience
- Speed
 - Time it takes to complete various tasks with our system vs. current process
 - Registration forms
 - On-site registration wait times
 - Director event creation
- Reliability
 - Number of errors that occur with our system vs. current process
 - Registration
 - Payments
- Accuracy
 - Unit Testing
 - Mocha and Chai
 - Potential integration of code coverage libraries such as c8 or karma-coverage
 - Integration Testing

Module/Feature	Completion %	To Do
Service: Automatic registration closure	100%	
Service: Automated event email reminders to registered participants	100%	
Participant: Automatic time slot display in UI	100%	
Participant: Vary registration form verbiage based on age	100%	
Director/Participant: Unique registration links for on-site registration and private events	100%	
Service: Automatic participant spreadsheet updates on-site	50%	Implementation and testing in combination with AWS state machine for finalized events
Director/Accountant/Admin: Update codebase to match new event state diagram and implement roles.	30%	Frontend updates to director UI to match new backend functionality. Implement Accountant and Admin roles and functionality. Volunteer role may be added in future.

Progress Summary

Milestone 4

- Finish implementation, test, and demo live, periodic spreadsheet updates from database as registration occurs on-site
- Implement, test, and demo director UI updates to reflect the changes introduced by the new state diagram.
- Create surveys for participant and director beta testers using Google Forms and link to each UI via a feedback button
- Implement, test, and demo Accountant UI
 - Create new GSuite account for Accountant role
 - Ability to mark events that have occurred or been approved for deletion as Completed after reviewing payments
- Implement, test, and demo payment management system for Accountant role
 - Allow searching of payments by:
 - Participant
 - Event
 - Date
 - Date range
 - Ability to export payments to spreadsheet

Milestone 5

- **Begin beta testing (early March)**
 - Start with private, limited-size heart screening event
- Implement, test, and demo admin UI
 - Create new GSuite account for Admin role
 - Ability to:
 - Review all event details for requested deletions
 - Deny requests for deleting events
 - Accept requests for deleting events
- Collect evaluation results
- Create poster for Senior Design Showcase

Milestone 6

- Test/demo of the entire system
 - Address any bugs that arise through beta testing
- Evaluation results
- Create user/developer manual
- Create demo video

Task	Carlo	Chris	Drew	John	Noah
Finish implementation, test, and demo automatic spreadsheet updates for on-site use	90%		10%		
Implement, test, and demo director UI updates to reflect the changes introduced by the new state diagram.			100%		
Demonstrate AWS environment setup for beta testers (directors/participants)			100%		
Create user survey for directors and participants using Google Forms and link to UIs with a feedback button	5%	80%	5%	5%	5%
Implement Accountant UI	33%			33%	33%
Implement Accountant payment search and exporting functionality				50%	50%
Begin collecting evaluation data	20%	20%	20%	20%	20%

Task Matrix

Questions?