

SW Engineering CSC648/848 Spring 2023

CrisisConnect

Team Details:

Class Section: 2

Team: 4

Contributors:

Team Lead: Mo Moses (mmoses3@mail.sfsu.edu)

Frontend Lead: Marc Castro

Backend Lead: Axel Biehler

FrontEnd Dev: Nicholas Chan

FrontEnd Dev: Virel Patel

BackEnd Dev: Raquel Lutges

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Milestone 1: February 28th, 2023

Revisions	
2/28/2023	Initial Submission
3/14/2023	Updated Non-Functional Requirements.

Executive Summary

Our Motivation

According to the Prosper Strategies - a nonprofit rapid response communications platform - write up: "Organizations that fail to communicate quickly and clearly in times of crisis are typically those that do not have: Clarity on who should weigh in and sign off on rapid response communications, Clarity on their organization-wide stance on certain issues, ...and A channel-specific strategy for determining where statements and communications should live" ([Introducing: The Nonprofit Rapid Response Communication Framework \(prosper-strategies.com\)](https://prosper-strategies.com)). This holds true also for government entities when we consider emergent situations. If these things are not in place, then we have increased casualties, damage, and cost. Our motivation is to bridge this gap and deliver for government organizations that are responsible for the health, and well-being of communities, the necessary tools to ensure clarity can be provided and communications by the correct personnel is clear and reaches the appropriate audiences, most importantly, the citizens that are affected.

Our Approach

We are building a data-driven web-based service to help the California State government identify situations that pose a threat to the populace and communicate the state of things quickly and clearly. We accomplish this by enabling the different county departments (Sheriff/Security, Weather, Health and Fire) to enter current metrics of emergent situations (i.e. COVID-19/public infections, extreme weather conditions, wildfire, and security situations) which can be displayed in an easy to consume way. This is in order to keep the public of California informed of significant life impacting events and open clear lines of communication to citizens. Citizens can get messages from their counties, via alert registrations, and also search for information about incidents that have occurred in their county. Importantly we ensure data sanity by getting our metrics from critical personnel like Directors of Health, Security, Weather and Fire Departments, ensuring the appropriate personnel are weighing in on the information being provided. It's this qualified data that we use to produce and display metrics and alerts around situations like numbers of Covid-19 cases and deaths per 100k, number of fires in the county and respective evacuation Levels, and security incidents (acts of violence/robbery). Also, everyday life impacting issues like roadblocks and detours due to extreme weather conditions or police activity can also be shown as an added benefit of our data collection. Now the public of California can keep themselves easily informed and safe. Our goal is that this app will serve as an excellent conduit for direct and rapid communications with California citizens.

Our Team

We are a crack team of software engineers who understand the necessary systems and tools to build this resource, and look good while we do it. We share a passion to protect the health and well-being of those in our lives and communities.

Personas and Main Use Cases (Marc)

Personas

Citizen:

- Looking for a resource to see all hazards within their area
- Open to receiving personalized updates from officials regarding concerns in their area
- Has access to reliable internet connection and basic internet skills
- Disinclined by complicated/overly saturated user interfaces.
- Wants a responsive and fast application for quick results regarding their county.

Goals and Scenarios (Virel):

Name: Sophia Brown

Age: 29

Occupation: IT Manager

Education: Bachelor's Degree in Business Administration

Goals:

- To feel safe in her community and know what's going on around her
- Have access to reliable and real-time data about incidents
- Being involved by connecting with other community members about local safety

County Director:

- Looking for a straightforward source to provide data to the general public in a user-friendly manner
- Has reliable internet connection and basic computer skills
- Requests an application to ease the process of alerting citizens of updated data and emergencies.
- Wants to communicate effectively with citizens in their county.
- Deviates from overly complicated user interfaces that make the updating process difficult.

Goals and Scenarios (Virel):

Name: John Ford

Age: 55

Occupation: County Director

Education: Master's in Political Science

Goals:

- Communicates effectively and clearly with citizens
- Provide easy access to important information to citizens
- Have a reliable and secure application

Admin:

- Has skills in software development and today's technologies.
- Determined to create an application that is competitive with other applications already found in the marketplace.
- Enthusiastic about providing a service that is responsive and user friendly
- Collaborative individual that is willing to work with officials to improve services among all parties.
- Finds real-time, accurate data important for our society.

Goals and Scenarios (Nicholas):

Name: Joe Schmoe

Age: 45

Occupation: Project Manager for Public Health Department

Goals:

- Collaborate with county officials to ensure that the website meets their needs
- Ensure that the website is running smoothly and is protected from cyber threats
- Continuously build upon the website's features and functions based on user feedback and different needs for current public health and safety

Use Cases: (Nicholas & Marc)

Joseph, one who is curious about the current Covid metrics in his college town:

Joseph is a college student who just moved out to live on campus at his university. Being fresh off of quarantine and very concerned about the pandemic we all just endured, Joseph wants to be careful about being exposed to Covid and knows the potential of spread happening in a college town. He wants to be informed about the current Covid-19 rates in the town he just moved into, and is looking for a resource that will provide such information in an efficient manner. He decides to check out CrisisConnect, and is happy with the results. Joseph is now able to hop on his laptop whenever he wants and look up the current Covid-19 rates in his area, as well as look up any rates in his hometown and inform his parents at his own leisure.

Lorenzo, County Director looking for a resource to connect with citizens:

Lorenzo is a 50-year-old county director that lives in an area that is extremely dry and has a tendency to have a lot of wildfires. Lorenzo is not a very tech-savvy person, and is looking for an application that will allow him to alert the citizens in his area of potential safety hazards that present themselves as quickly as possible. Lorenzo gets in contact with the team from CrisisConnect, and they set him up to be able to use the web application. Pleased by the ease of user interface and the efficiency of alerting registered users, Lorenzo is set on using CrisisConnect to not only alert citizens in his area of wildfires and other safety hazards, but also inform them of any wildfire situations that develop in the area, as well as whether or not they should be of any concern.

Nicholas, an admin working diligently to provide users with accurate data:

Nicholas is an admin and a member of the team that created CrisisConnect. As an admin, Nicholas reviews the data that is sent in by County Directors and uses the app's tools to ensure the data is organized and categorized properly to be distributed to the citizens that use CrisisConnect. Nicholas also verifies the authenticity of the data and collaborates with verified county directors to push update the data in a timely manner. As a result of the collaboration and time put into the data, CrisisConnect continues to be a valued source for citizens to view up-to-date metrics for their counties, everything from Covid-19 cases and deaths, to wildfires and weather conditions.

Mary, an elderly woman who lives in a hazardous area:

Mary is a 70-year-old woman who happens to live in the middle of Compton. Understandably so, she is very concerned for her safety and wishes she did not have to rely on local news to alert her of any potential safety hazards that may be present in her area. Mary is not up to date with how to use technology as it has advanced so quickly in the 21st century. Her grand-daughter informs her of CrisisConnect, and Mary decides to take a look into the application with the help of her grand-daughter. Happy with how straightforward the user interface is, Mary decides to sign up as a registered user so that she can receive emails on her phone regarding safety hazards. Mary and her grand-daughter are now at peace of mind that they have real-time updates and are informed at all times so that they can stay out of harm's way.

Data Items (Raquel)

Departments:

- Each department table is associated with a unique department ID, which is the primary key of the table. The department ID is also used as a foreign key to link the fire department to the county it serves, via the county ID. The director ID column is another foreign key, which links the department to the director who is responsible for overseeing its input for metrics.

Event:

- Event tables stores information about each individual event that occurs within a county. Each event is assigned a unique event ID, which is the primary key of the table. The department ID column is a foreign key that links the event to its respective department that is responsible for responding to it. The date_time column stores the date and time that the event occurred.

Alert:

- Alert table stores the types of alerts that users can subscribe to, along with their message, severity level, and location. The severity level can be used to prioritize alerts based on their urgency, and the county_id can be used to target alerts to specific geographic areas.

Director:

- A single director of each department will have the ability to enter metrics for their county that allow users to view updates on the current state.

Administrator:

- A single administrator will have the authority to trigger an emergency alert to subscribed users when a department director requests one with valid proof of severity level. An administrator will have the obligation of moderating the requests and adhere to state guidelines.

User:

- This table stores information about registered users, including their name, email, phone number, and preferred notification method (email, SMS, push notification).
- A user should be able to create an account, search for their prospective county, and view a listing of their county's status including a live feed of current and past incidents. Once registered they will be able to subscribe to emergency alerts, post on community forums,

report incidents to authorities, upload videos or photos of an incident, and send messages to other registered users.

Functional Requirements: (Front-End Team)

Users

- Users shall have the ability to see a live feed of current and past incidents.
- Users shall have access to a dashboard that has real-time data in their area (weather, air-quality, etc.).
- Users shall have access to information and resources in case of an emergency.
- Users shall be able to look at a map interface and see current events.
- Users shall have the ability to filter out certain categories to only display certain metrics.
- Users shall be able to search county status.
- Users shall have access to registration capabilities.

Registered Users

- Registered users shall have the ability to filter their notification settings for what type of alerts they want to receive.
- Registered users shall have the ability to report incidents or suspicious activity to admins.
- Registered users shall be able to upload pictures/video of an incident.
- Registered users shall be able to add friends and family to monitor/track their loved ones.
- Registered users shall be able to form community groups for added public safety (i.e., neighborhood watch groups).
- Registered users shall be able to send messages to other registered users to alert them on possible dangers.
- Registered users shall be able to provide feedback to make the app better.
- Registered users shall have access to alerts sent by admins regarding current concerns regarding the admin's area and department (weather and fire, health, security).
- Registered users shall have capabilities to input their current residence to search via their area.
- Registered users shall have capabilities to keep a list of areas they would like to keep an eye on.

Admin Users

- Admin users shall have the privilege of inputting data via an interface only accessible to them.
- Admin users shall have the privilege to trigger alerts to users.
- Admin users shall have access to data to update the data they previously inputted for areas of concern.

Non Functional Requirements: (Lokesh)

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be approved by class CTO).
2. Application shall be optimized for standard desktop/laptop browsers e.g., must render correctly on the two latest versions of two major browsers
3. Selected application functions must render well on mobile devices (this is a plus)
4. Data shall be stored in the team's chosen database technology on the team's deployment server.
5. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.
6. The language used shall be English.
7. Application shall be very easy to use and intuitive.
8. Google maps and analytics shall be added
9. No e-mail clients shall be allowed. You shall use webmail.
10. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
11. Site security: basic best practices shall be applied (as covered in the class)
12. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development.
13. The website shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Spring 2023. For Demonstration Only" at the top of the WWW page. (Important so not to confuse this with a real application).

Competitive Analysis (Virel & Nicholas)

Feature	Citizen	Nextdoor	Neighbors by Ring	Our App
Access to information and resources in case of an emergency	No	No	No	Yes
Notification settings for alert types	Yes	Yes	Yes	Yes
Ability to report incidents/suspicious activity	Yes	Yes	Yes	Yes
Ability to upload pictures/video of an incident	Yes	Yes	Yes	Yes
Ability to add friends/family to monitor/track their location	Yes	No	No	Yes
Ability to form community groups for added public safety	No	Yes	Yes	Yes
Ability to send messages to other users to alert them on possible dangers	Yes	Yes	Yes	Yes
Ability to provide feedback to improve the app	Yes	Yes	Yes	Yes

Our product offers several advantages that sets us apart from what is currently available on the market. First our app will give users the ability to view real-time data on incidents, weather, air quality, and other public safety alerts. Furthermore, our app will allow our users to filter their notifications to the types of alerts they want to receive and report incidents and suspicious activity to admins. Users will also be able to add friends and family to monitor their loved ones, and form community groups. Overall, allowing our users to be part of something bigger, can empower users to play an active role in making our neighborhoods a safer place.

High-level system architectures and technologies

Frontend

The framework used for the frontend is ReactJS.

The UI library is Material UI.

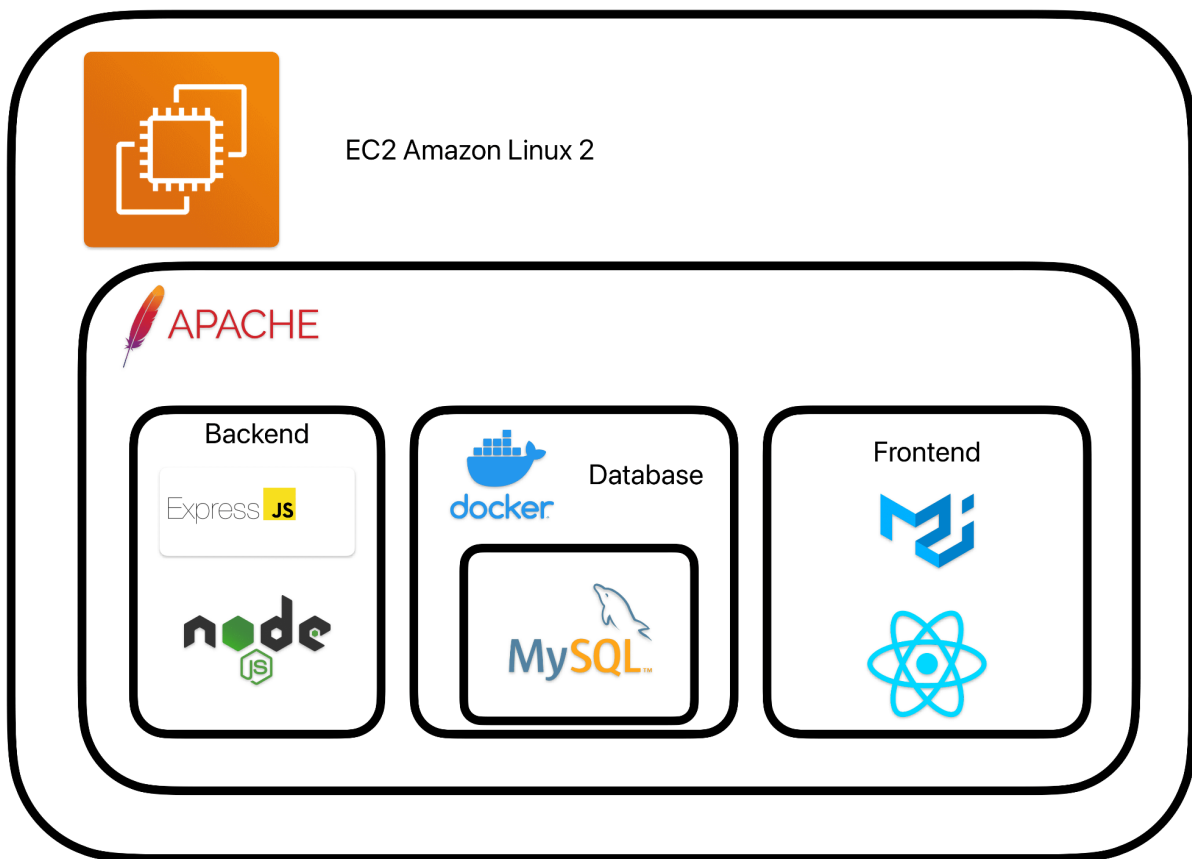
Backend

This is a nodeJS backend using expressJS library.

The database is a mysql database running on a docker container.

All the deployment is on AWS on EC2 Virtual machine, in an Amazon linux 2 distribution (based on Fedora distribution).

The http server is an Apache server.



Supported browser

All modern browsers (Google chrome, Microsoft Edge, Firefox...)

Team and Roles

Name	Role(s)
Mo Moses	Lead
Marc Castro	Frontend Lead
Axel Biehler	Backend Lead
Nicholas Chan	Frontend Developer
Virel Patel	Frontend Developer
Raquel Lutges	Backend Developer
Lokesh Telaprolu	Backend Developer

Checklist

Item	Status
Team found a time slot to meet outside of the class	Done
Github master chosen	On Track
Team decided and agreed together on using the listed SW tools and deployment server	Done
Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing	Done
Team lead ensured that all team members read the final M1 and agree/understand it before submission	Done
Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	Done