

# Milestone 1 - Team 3

## Executive Summary:

In a state as dynamic and diverse as California, the plethora of crises ranging from devastating wildfires and unpredictable earthquakes to unprecedented health emergencies like the COVID-19 pandemic, has accentuated the need for a unified, reliable source of information. The state's varied landscape of emergencies, coupled with a surge in crime rates and security breaches, amplifies the urgency for a consolidated platform that can serve accurate, real-time information to its citizens.

Emergency Track, developed by dedicated SFSU students, emerges as a revolutionary response to this need, aspiring to empower Californians with critical knowledge across various emergencies and crises. By offering a cohesive and intuitive platform, it aims to bridge the information gaps, allowing residents to navigate through the complexities and uncertainties of each crisis, fostering informed decision-making and enhanced awareness in times of turmoil and danger.

Emergency Track sets itself apart by seamlessly integrating diverse emergency-related data, offering a user-friendly platform that saves time and reduces stress. The innovative alert system, combined with sourcing verified information from county departments, enhances trust and reliability. The platform's intuitive design ensures accessibility for users of all technical levels, reinforcing public safety and awareness during critical situations.

The "Emergency Track's team" is a dynamic group of 4 junior students in software engineering, driven by a shared mission to create a global and centralized service that delivers real-life advantages and practical use cases. Committed to leveraging our technical expertise, we aim to develop a platform that not only enhances public safety but also provides valuable insights for emergency response teams. With a vision for a more connected and responsive community, our team is poised to make a significant impact in the field of emergency management through our innovative startup venture.

## Personas and main Use Cases:

### **Personas:**

## **1. Citizen Carol**

Carol is a 32-year-old working professional residing in California. She values her family's safety and wants to stay informed about any emergencies in her area. Carol frequently commutes to work, and she wants a reliable source to provide real-time updates on incidents like traffic accidents, fires, or severe weather conditions. She prefers a user-friendly interface that allows her to quickly access relevant information without needing technical expertise. Carol also appreciates features like personalized alerts and the ability to report incidents she witnesses, contributing to a safer community.

## **2. Officer Olivia**

Olivia is a seasoned law enforcement officer working in a county department in California. With a responsibility for public safety, Olivia relies on accurate and timely information to respond effectively to emergencies. She needs a platform that not only provides real-time incident updates but also allows her to communicate with citizens in her jurisdiction. Olivia values features like detailed incident reports, analytics for trend analysis, and the ability to coordinate responses with other departments. She expects the platform to be intuitive, enabling her to focus on her crucial role in emergency response.

## **3. Administrator Alex**

Alex is an administrator within a California county's emergency management agency. With a broad view of the region's safety, Alex requires a comprehensive tool to monitor and manage incidents across different jurisdictions. This includes the ability to allocate resources efficiently, generate reports for decision-making, and coordinate responses among various departments. Alex appreciates a customizable dashboard, advanced analytics, and the capacity to manage data for both citizens and departmental teams. Alex's priority is to ensure the platform serves as a robust backbone for emergency management efforts.

## **4. Fireman Frank**

Frank is a 35-year-old seasoned firefighter with over a decade of experience working in a busy fire department in California. He's dedicated to protecting lives and property during emergencies, especially fires. Frank values having access to accurate and up-to-date information about ongoing incidents to plan his response effectively. He needs a platform that provides detailed incident

reports, including information about the type and scope of the emergency, as well as its location. Frank also appreciates features like live maps, which allow him to visualize the affected areas and plan his team's deployment accordingly.

## **Main Use Cases:**

### **1. Citizen Carol Receives Personalized Alerts**

Carol, a working professional, logs into the EmergencyTrack platform using her account. She has set up her location preferences to receive alerts for her home and workplace. Suddenly, an earthquake is reported in her area. Within seconds, Carol receives a personalized alert on her phone, providing her with safety instructions and information about nearby emergency shelters. She quickly follows the recommended actions and feels more secure knowing that she has access to timely and reliable information during critical moments.

### **2. Officer Olivia Coordinates Response Efforts:**

Officer Olivia is on duty when a wildfire breaks out in her jurisdiction. She accesses EmergencyTrack's detailed incident reports, which include the fire's location, size, and estimated progression. Olivia uses the platform to communicate with neighboring law enforcement agencies and fire departments, coordinating evacuation efforts and resource allocation. The live map feature helps Olivia visualize the affected areas, ensuring that her team is effectively deployed to protect lives and property.

### **3. Administrator Alex Monitors Regional Emergencies:**

Alex, an administrator in a county's emergency management agency, logs into the EmergencyTrack dashboard to monitor incidents across different jurisdictions. A series of traffic accidents are reported on a major highway, causing significant disruptions. Alex uses the platform's analytics to assess the impact and decides to deploy additional resources to manage the situation. With the ability to generate detailed incident reports, Alex communicates with relevant departments and provides essential updates to citizens, demonstrating the platform's crucial role in coordinating regional emergency responses.

### **4. Fireman Frank Responds to a Wildfire:**

Frank, a seasoned firefighter, receives an urgent call about a wildfire in a remote area. He logs into EmergencyTrack to access detailed incident reports, which include information on the fire's size, intensity, and proximity to populated areas. Frank uses the live map feature to plan his team's response and identifies potential evacuation routes for affected residents. Through the platform's real-time communication system, Frank coordinates with other fire departments and emergency services, ensuring a coordinated and effective response to the wildfire. The platform's timely and accurate information proves essential in Frank's mission to protect lives and contain the fire.

## List of main data items and entities:

The Data of the application consists of the following entities and their respected attributes.

<b>users</b> <u>user_id</u> first_name last_name email email_status password account_type	<b>states</b> <u>state_id</u> state_name state_population	<b>countys</b> <u>county_id</u> county_name county_population state_id	<b>county_departments</b> <u>department_id</u> county_id department_type	<b>subscriptions</b> <u>user_id</u> <u>department_id</u>
	<b>deaths</b> <u>dataset_id</u> number_of_deaths cause_of_death reported_date county_id officer_id	<b>security_concerns</b> <u>dataset_id</u> location_name location_x_coordinate location_y_coordinate cause_of_concern datetime instructions_for_public concern_is_present county_id officer_id	<b>wildfires</b> <u>dataset_id</u> location_name location_x_coordinate location_y_coordinate cause_of_fire date_of_fire instructions_for_public level_of_evacuation fire_is_active county_id officer_id	<b>blocked_roads</b> <u>dataset_id</u> road_name location_x_coordinate location_y_coordinate reason intersection1 intersection2 starting_datetime ending_datetime informations_for_public county_id officer_id
	<b>covid_cases</b> <u>dataset_id</u> number_of_cases reported_date county_id officer_id			

## Additional description for specific attributes:

### **account\_type:**

There are three types of user-accounts. A public account can view the data and subscribe to a county in order to get an email whenever an important

event happens. Officer accounts can report and change the data of their department. Admin accounts can change the metrics, when an alert is triggered. They can also delete inappropriate items or users and have to verify the officer accounts.

**location\_x\_coordinate & location\_y\_coordinate:**

These values are used in order to show the event on a map.

**concern\_is\_present / fire\_is\_active:**

Booleans that store if a security concern is still relevant for the public/ a fire is still active. The app will either show the security concern/ the fire based on this value, or not.

**Initial list of functional requirements:**

**1. User Authentication and Authorization:**

- The system shall facilitate secure login for county department officials and administrators verifying their uploaded documents.
- The system shall categorize users and allocate roles and permissions based on user types: Public, Administrator, Director of Health, Security, Weather, and Fire Departments.
- The system shall permit non-professional users to register and login as an administrator or department officer.

**2. Data Entry and Management:**

- The system shall provide an interface for department officials to input, update, and manage metrics accurately related to various emergencies.
- The system shall allow administrators to modify, or delete entries to maintain data integrity before making them live.
- The system shall maintain a log of all data entries, modifications, and deletions for auditing purposes.

**3. Public User Access:**

- The system shall offer public users access to search for county status and related metrics without mandatory account creation.
- The system shall allow public users to create accounts to avail additional features like receiving alert messages.

**4. Alerts and Notifications:**

- The system shall automate alert generation and dispatch to registered users, complying with predefined state guidelines.

- The system shall empower administrators with the ability to manually trigger alerts in cases of immediate danger or emerging situations.
- The system shall ensure that alerts and notifications are sent in real-time and are received without delays.

#### **5. Search and Filter:**

- The system shall incorporate advanced search and filter options enabling users to retrieve information efficiently by county and other metrics.
- The system shall display search results in a user-friendly manner, highlighting relevant information.

#### **6. Information Display:**

- The system shall exhibit information pertaining to infections, weather, wildfires, and security in an accessible and comprehensible format.
- The system shall utilize visual elements like charts and graphs to represent data more effectively.
- The system shall display infections, weather, wildfires, and security concerns on a map.

#### **7. User Registration and Management:**

- The system shall facilitate user registration, allowing them to manage account preferences and subscribe to alerts.
- The system shall employ email verification during registration to validate user accounts.
- The system shall permit users to update their preferences and personal information securely.

#### **8. Data Validation and Integrity:**

- The system shall implement stringent data validation checks to ensure that the inputted data is accurate, complete, and adheres to predefined formats and standards.
- The system shall maintain data integrity by preventing unauthorized access and modifications to the data.

### List of non-functional requirements:

#### **Usability:**

- The interface should be simple and intuitive to accommodate users with varying levels of technical proficiency.
- Aesthetic consistency in terms of fonts and colors should be maintained throughout the application.

**Performance:**

- The system should be able to perform smoothly for a moderate number of concurrent users without causing delays or crashes.
- Page load times should be reasonable, with optimized images and resources, to retain user attention and interest.

**Availability:**

- A reliable hosting service should be used to ensure maximum possible uptime.
- Regular backups and basic fault tolerance mechanisms should be implemented to minimize the risk of data loss.

**Security:**

- Basic security measures, such as secure passwords and data encryption, should be implemented to protect user data and privacy. The System shall use SSL certificate
- Regular security assessments should be conducted to identify and rectify potential vulnerabilities.

**Reliability:**

- The system should be tested frequently to identify and fix any issues that could impact reliability.
- Error logs should be maintained to facilitate quick identification and resolution of issues that may arise.

**Responsiveness:**

- Page elements should load in a manner that does not hinder user interaction with the interface.

**Data Integrity:**

- Data validation should be in place to ensure the accuracy and completeness of the data entered into the system.

## Competitive Analysis:

Feature	<a href="https://alerts.weather.gov">alerts.weather.gov</a>	<a href="https://www.crimemapping.com">crimemapping</a>	<a href="https://www.sfchronicle.com">SFChronicle</a>	<a href="https://covid19.ca.gov">covid19.ca.gov</a>	EmergencyTrack
Map	++	++	++	-	+
Alert	--	--	--	--	+
Show DB	--	+	+	+	+
User Friendly UI	--	+	+	-	+
Search	--	++	+	+	+

[alerts.weather.gov](https://alerts.weather.gov) : weather alert

[crimemapping](https://www.crimemapping.com) : crime search and mapping

[SFChronicle](https://www.sfchronicle.com) : wildfire mapping and alert

[covid19.ca.gov](https://covid19.ca.gov) : showing covid19 DB

## **Summary**

Our planned app possesses distinctive advantages compared to the current available products. While each competitor specializes in distinct areas like regional weather, crime data, wildfire data, and COVID-19 data, our app amalgamates all emergency information, providing a one-stop solution for users, thus eliminating the hassle of toggling between different platforms for various information. The user-friendly UI and the intuitive design make our app more approachable and user-centric. More importantly, our app stands out by offering a pivotal alert feature missing in competitors and avails data directly from verified accounts of county departments, ensuring the correctness and reliability of the information, hence increasing public trust and dependence on our platform.

## High-level system architecture and technologies used:



Architecture: MVC  
Backend Framework: Django  
Frontend Framework: React  
Database: mySQL

### Team and Roles:

Louis Leblond: Team Lead  
Roy Meyer: Database Engineer  
Sungjun Yun: Front End Developer  
Antoine Paul: Back End Developer

### Checklist:

- Team found a time slot to meet outside of the class (DONE)
- Github Master Chosen (Antoine) (DONE)
- 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 the team members read the final M1 and agree/understand it before the submission (DONE)
- Github organized as discussed in class (DONE)