

CSC 648/848[06]

Software Engineering – Fall 2023

Team3 - Milestone 1

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what is history table

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.

users	states	countys	county_departments	subscriptions
<u>user_id</u>	<u>state_id</u>	<u>county_id</u>	<u>department_id</u>	<u>user_id</u>
first_name	state_name	county_name	county_id	<u>department_id</u>
last_name	state_population	county_population	department_type	
email		state_id		
email_status				
password				
account_type				

deaths	security_concerns	wildfires	blocked_roads
<u>dataset_id</u>	<u>dataset_id</u>	<u>dataset_id</u>	<u>dataset_id</u>
number_of_deaths	location_name	location_name	road_name
cause_of_death	location_x_coordinate	location_x_coordinate	location_x_coordinate
reported_date	location_y_coordinate	location_y_coordinate	location_y_coordinate
county_id	cause_of_concern	cause_of_fire	reason
officer_id	datetime	date_of_fire	intersection1
	instructions_for_public	instructions_for_public	intersection2
	concern_is_present	level_of_evacuation	starting_datetime
	county_id	fire_is_active	ending_datetime
	officer_id	county_id	informations_for_public
		officer_id	county_id
			officer_id

covid_cases
<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 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:

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, Fall 2023. For Demonstration Only" at the top of the WWW page. (Important so not to confuse this with a real application).

Competitive Analysis:

Feature	alerts.weather.gov	crimemapping	SFChronicle	covid19.ca.gov	EmergencyTrack
Map	++	++	++	-	+
Alert	--	--	--	--	+
Show DB	--	+	+	+	+
User Friendly UI	--	+	+	-	+
Search	--	++	+	+	+

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 : 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)

Team 3 (Emergency Track)

M1 Feedback

CEO/CTO Feedback

Team Emergency Track, overall your milestone showed in general a good effort. The documentation format should be improved and aligned with the instructions. Additionally, please revise the non-functional requirements that were provided, those are the ones to be included.

Instructor Feedback

Overall Objective of Milestone 1 [Need improvement, On-track, Above Expectations]: **On track** some improvement needed.

ID	Item	Criteria	Feedback
01	Expected size of this document	About 7-10 pages	Good (9).
02	Title Page	Format and Structure <ul style="list-style-type: none"> • SW Engineering CSC648/848 Fall 2022” • Section Number • Team number • Names of students and roles • M1 • History table (revision) 	Missing the ENTIRE TITLE PAGE
03	Executive Summary	~1 page. Why we should fund this project?	OK. The motivation, functions and services, design and team are well described. The only thing missing was the addressable \$\$\$ market and business importance of the app.

04	Personas and main Use Cases	About 1/3 of a page per persona 4-5 <u>main use cases</u> . Descriptive title and number to each use case	Good. Well defined and described (4) Personas and (4) Use Cases.
05	List of main data items and entities	Name, meaning, usage, etc.	Great initial identification, organization, and presentation of your data items, just need to add data type for each item (string, integer, etc.) in future milestone
06	Initial list of functional requirements	High level functions you plan to develop	Good. 8 cat with 21 reqs. This section is the most important for this Milestone.
07	List of non-functional requirements	Performance, expected load, security requirements, storage, availability, fault tolerance	Here the 13 provided non-functional requirements were expected to be included.
08	Competitive analysis	3-4 competitive products	Good. The table include sources. The competitive analysis is to separate your product/app/technology from the others.
09	High-level system architecture and technologies used	Itemized list of all main SW components	Good. Although no Architecture pattern was identified.
10	Team and roles	List student names	Good
11	Checklist	Answers to the items	Good

Next Steps: Understand the feedback, talk to your team and decide what needs to be added to M1 and then freeze the document and continue working on M2.