



**TED UNIVERSITY**

**CMPE 491 SENIOR PROJECT I**

**SEARCH AND RESCUE OPERATION PORTAL (SAROP)**

**Project Specifications Report**

**Project Name:** SAROP (Search and Rescue Operation Portal)

**Project Url:** sarop.tech

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# **1. Introduction**

## **1.1. Description**

In recent years, our country has witnessed a series of devastating disasters, and it has become evident that search and rescue teams face challenges in effectively managing their operations during these crises. In response, we are introducing the "Search and Rescue Operation Portal" (SAROP) project, which aims to provide a platform for search and rescue teams to enhance their operational efficiency.

The SAROP project, in its current state, will offer basic features that include an authentication system to limit access to registered search and rescue team members. Once inside the portal, users can enter new operations and list existing ones. Although it provides a foundation, there is significant room for further development.

The current planned features of SAROP include Operation Management, Operation Tracking, Route and Path Mapping, Team Management and Offline Capability.

The goal of SAROP is to minimize the damage caused by disasters and enhance the efficiency of search and rescue teams. Our project aims to be a crucial tool in effectively coping with the disasters in our country.

## **1.2. Constraints**

### **1.2.1 Economic Constraints**

Since the project is an open-source project, it needs to be developed without using sponsorship or paid technologies. That's why the technologies we need to use should also be free and open source.

### **1.2.2 Environmental Constraints**

We must consider the environmental constraints that our project may encounter during fieldwork. Such restrictions are important for the successful completion of the project. We must consider the following environmental restrictions:

- Map Data and Internet Access

We should consider that our project may have less map information in some locations and internet access may be limited. This means that fieldwork may be more challenging in some areas.

- Communication Restrictions

The project team may encounter communication restrictions such as not having phone connection or internet access in the areas where fieldwork is carried out. This can create additional challenges for data transmission, emergency communications and team coordination.

These environmental restrictions are factors that require extra attention and planning during field work.

### **1.2.3 Social Constraints**

The goal of our project is to help search and rescue teams in disaster situations. However, the results of our project may affect different segments of society. Therefore, it is necessary to pay attention to the social benefits and ethical responsibilities of the project. It is important that our project contributes and benefits various segments of society in a positive way.

### **1.2.4 Political Constraints**

Our project may be subject to policies and Decrees related to emergency situations and search and rescue operations. These policies and regulations may affect the operations and use of the project. Therefore, the project should be designed and implemented in accordance with these policies and regulations.

Since our project has the purpose of providing public services, it is necessary to cooperate with relevant government bodies and organizations. Political constraints may include how the project will cooperate with these public organizations, how it may affect data sharing and crisis management processes.

### **1.2.5 Ethical Constraints**

Our project processes users' personal data and sensitive information. Therefore, the project is required to comply with high ethical standards in terms of data privacy and security. Users' data must be protected from unauthorized access and abuse. In addition, it is important that data is stored and used in an ethical manner.

### **1.2.6 Health and Safety Constraints**

Our project should include special measures in terms of occupational health and safety of field forces. Field forces should be safe when working in disaster areas. Therefore, the health and safety restrictions of the project should include:

- To make sure that the teams are safe and where they are during crisis situations thanks to the instant location tracking feature of the field teams.
- Field teams have their current location recorded even when they are working offline.

### **1.2.7 Manufacturability and Sustainability Constraints**

For our project to be successful in terms of manufacturability and sustainability, the software and hardware components must be compatible with each other. This makes it easier for the project to adapt to future updates. In the project, it should be noted that:

- Low dependence and high levels of independence of software and hardware components.
- Adopting a modular approach, so that it becomes easier to add new features or replace existing ones.

### **1.3. Professional and Ethical Issues**

Special attention should be paid to professional and ethical issues for our project to be completed successfully and to fulfill social responsibility.

- **Data Privacy and Security**

If our project collects and processes users' data, data privacy and security should be a priority issue. Measures should be taken to protect users' personal information and prevent unauthorized access.

- **Ethical Codes and Standards**

Everyone working on the project must comply with the relevant ethical codes and professional standards. This increases the reputation and reliability of the project.

- **Social Responsibility and Sustainability**

Our project should act in accordance with the principles of social responsibility and sustainability. All stakeholders involved in the project should pay special attention to the fact that the project contributes to the general interests of society.

- **Conflict of Interest**

Everyone involved in the project is required to avoid conflicts of interest and protect the best interests of the project. In case of any potential conflict of interest, this should be clearly stated.

The consideration of these professional and ethical issues helps to complete the project successfully and beneficially to society.

## **2. Requirements**

We divided the project into two steps:

1. Geographical Information System (GIS)
2. Operation System

There will be both mobile and web applications for the project. You can see the requirements for these two steps at the below:

### **General Requirements**

- The project should be open source.
- The project will be shared on GitHub.

### **Common Requirements for Mobile Application and Website**

- An open-source map hosting server will be used.
- People can mark their location and write notes on this location.
- The program should show the path of people which they took.
- There will be an authentication system for the search and rescue teams members.
- The user can choose the different kind of coordinate systems.

### **Requirements for Only Website**

- There will be a database of users.
- There will be different roles and admins can add/delete users.
- Users can take the export of area in the map as a pdf file.
- Users can open an operation, edit the progress of it and close it.
- The informations of closed operations can be exported as a word file, as well as the location information in this operation can be exported as a “gpx” file.
- The information of the closed operation can be archived as a read-only file.

### **Requirements for Only Mobile Application**

- Users can download the maps and use these maps when they are offline.
- The application will save the location information of users' time to time and user can share it when it is needed.
- User can have an address description for the coordinates, he/she enters.
- Users can see their location and share them in third party applications such as WhatsApp.
- The application can work in the background.

## Backlog

ID	TASK NAME	STATUS	PRIORITY	SPRINT NUMBER
1	Determining all the requirements	In Progress	High	1
2	Determining the library for displaying the maps	In Progress	High	1
3	Determining the open source map hosting server	In Progress	High	1
4	Determining the languages will be used in Frontend and Backend and database technology	Done	High	1
5	Implementing the authentication system	Not Started	High	2
6	Displaying the maps	Not Started	High	2
7	Hosting the maps in open source map server	Not Started	High	2
8	Implementing a role-based approach	Not Started	High	2
9	Admins can open an operation, edit and close it.	Not Started	High	3
10	User can share his/her location in real time	Not Started	Medium	3
11	User can share the operation information like the path he/she has taken	Not Started	Medium	3
12	The application can show an address description	Not Started	Medium	3

13	The application can work at the background	Not Started	Low	4
14	The application should save user location when user is offline	Not Started	Low	4
15	User can export the operation information as gpx and word file	Not Started	Low	4