**STaRT**

Simple Triage and Rapid Treatment Application

**TECHNICAL SPECIFICATIONS DOCUMENT**

Farah Muttardy

Richard Ogniewski

Elie Tannouri

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Dr. Dominic Thomas

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# INTRODUCTION

The Simple Triage and Rapid Treatment (STaRT) application will be used by community-based organizations who are prepared to serve as a crucial resource capable of performing many of the emergency functions needed in the immediate post-disaster period or in emergency cases.

Natural disasters - such as earthquakes, hurricanes, tornados, avalanches, floods, wildfires, and severe winter storms – can cause large-scale damage and threaten human health safety, property, and infrastructure. It’s difficult to predict exactly when a natural disaster will occur and the impact it will have. Damage from these events can be catastrophic and they can lead to the loss of property, being stranded, suffering from injuries, and even death.

More details about the functionality of this application are provided in another document called “Leveraging Technology in Disasters.” This document sheds light on the technical aspect of this application and inter-dependencies between the different components involved as well as an architectural design of the database that will hold related data.

# DESCRIPTION

## USER OVERVIEW

The intended users of the application are crisis personnel such as emergency responders, certified professionals, and volunteers.

## OPERATING ENVIRONMENT

The application will be deployed on mobile operating systems with compatibility for Android and iOS systems specifically. In addition to the functionality of the technical features, there is an importance on user ease of experience in relation to the user interface.

In developing this application, all functional and non-functional requirements must be taken into consideration to address any constraints or limitations.

## DEVELOPMENT TECHNOLOGY

This application will be developed using Python due to the large number of libraries that will be useful resources. Python will allow the application to be compatible in all operating environments. Due to Python's open-source nature, there is much community support that will assist in the development process. In addition to this, Python can deal with big data which will serve this application well in the long term. Using Python will ensure that this application will be scalable throughout its development process.

## CONSTRAINTS

The main constraint of this product development is the shortage of time and resources. For this reason, the initial scope will only include the minimum viable product (MVP). In the initial scope, scalability will continue to be prioritized so that in future development, this constraint can be mitigated.

## FEATURES

Natural disasters happen all over the world and this application will handle the processing of human care activities post-disaster. To effectively serve as a tool to help mitigate the post-disaster damage, the application will include the following features:

1. Damage Assessment
2. Personnel Resources Sign-In
3. Incident/Assignment Tracking Log
4. Briefing Assignment
5. Victim Treatment Area Record
6. Communications Log

## DATA REQUIRED

These features will be dependent on specific information provided by the user. To be noted here is that the data provided from this application will become a source of statistical information to government agencies for determining the damages (physical and human) from any disaster and to serve the communications and reporting. There are many data points that should be recorded and stored in this type of application such as:

### Disaster Identification

* 1. Date of occurrence
  2. Type of disaster (fire, hurricane, tornado)
  3. Reason for disaster
  4. General area impacted
  5. Country, State, County

### Searched Locations

It is a Standard Operating Procedure (SOP) for personnel to comb any disaster recovery areas to assess the human factor element impacted by the tragedy. All locations are checked and tagged for inspection. The data captured includes:

* 1. Type of location (residential, commercial, general area)
  2. Address of searched location
  3. Tagged (Y/N)
  4. Number of individuals located in this location
  5. Related Disaster: Foreign key (Disaster Identification)

### Disaster Recovery Personnel

The individuals who are providing the support must be identified and assessed by their level of expertise in this type of situation to ensure their familiarity with the process and assigned responsibilities. The data captured includes:

* 1. First name
  2. Last name
  3. Age
  4. Professional Expertise
  5. Assigned Location
  6. Certification for this type of support (if any)

### Individuals Processed

All individuals found in the search area must be identified and “processed” according to Appendix A flow. At the end of each individual process a determination ismade as to the condition of the individual. This table will identify each individual, the location where found, date of processing, step-by-step of the process (who, where, date/time stamp). The data captured includes:

* 1. First name
  2. Last name
  3. Age
  4. Related Disaster: Foreign key (Disaster Identification)
  5. Location found: foreign key (Searched Locations)
  6. Step by step of the process and the name of personnel who performed the processing as well as date/time of service
  7. Disposition (Minor, Immediate, Delayed, Dead)
  8. Assigned location: foreign key (Searched Locations)

# SYSTEM FEATURES

As previously mentioned, the features in this app include Damage Assessment, Personnel Resources Sign-In, Incident/Assignment Tracking Log, Briefing Assignment, Victim Treatment Area Record, and Communications Log.

## CATASTROPHE IDENTIFICATION

This is the starting point for tracking any activities, mainly because the catastrophe is the trigger point for determining locations, responses, and volunteers, as well as victims.

## DAMAGE ASSESSMENT

Damage assessment relates to any structures (commercial, residential, parks) that were impacted by the disaster. This is completed by certified personnel as they travel through the area to the staging location. It also provides a summary of overall hazards in selected areas, including: fires, utility hazards (gas, electric), and structural damage

## PERSONNEL RESOURCES

The roster of personnel resources refers to the information about the CERT members, such as: name, age, type of training, their expertise. This information is needed to ensure that qualified personnel are handling affected individuals.

## INCIDENT/ASSIGNMENT TRACKING LOG

The delivery of this functionality is tentative. The incident tracking log provides daily details on the assignment, location, team, team-leader, start and end time. It identifies the multiple activities done by a team, and the results.

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## VICTIM TREATMENT AREA RECORD

Completed by medical treatment area personnel to record victims entering or carried to the treatment, their condition, and their status. It records each victim’s personal data (name, age, area of residence, contact info, where found, …). For each victim, there should be a determination based on a set of if/then conditions if the need is immediate, delayed, or minor.

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# REQUIREMENTS OF USER INTERFACE

The ease of use experience of this product is crucial due to the nature of this application. All user interface design must prioritize conciseness and clarity. To ensure that this application is not inefficient due to user experience, a streamlined flow of process has been designed. Appendix A provides a schema of the processing of impacted individuals. This appendix deals directly with the human element of treatment. Prior to the starting of this process a different set of processes include the foundational aspect of post-disaster recovery:

1. Identification of the disaster
2. Determination on locations in the disaster area
3. Identification of personnel engaged in the process

# ADDITIONAL NONFUNCTIONAL REQUIREMENTS

## PORTABILITY

Since the goal is to develop a mobile application, there is a requirement that the application should perform the same (i.e., performance, speed) on any mobile device (iOS/Android, phone/tablet).

## SECURITY

This application is heavily dependent on personal individual data to achieve its functional requirements. For this reason, there is a substantial focus on data security and privacy. All data access must be authenticated, and all secure user data must be encrypted. Some data elements, such as disaster identification, engaged personnel will be accessible for add/edit by admin users only.

## ACCESSIBILITY

In the first release of this application, multi-language availability will not be provided. The choice of multiple languages will be essential in ensuring that this product will be able to serve its purpose of assisting in triage and rapid treatment regardless of region or population.

**CAPACITY**

The capacity of a system refers to the amount of storage it offers. The STaRT application will be originally developed using MySQL localized database. As more users have access to this application, we will research the possibility of having an IaaS (infrastructure as a service) cloud computing service model in which computing resources are hosted in a public, private, or hybrid cloud.

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# APPENDICES

## APPENDIX A: PROCESS OF FLOW OF EVENTS

Diagram

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