



# *Rescue Management System*

## **Application Engineering Development**

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# *Problem Statement*

- During an emergency, providing immediate help is of utmost importance to the victim/patient. The average time taken by the rescue teams to reach the victim's site is approximately 10 minutes. This duration could be too long to save a person who has suffered major injuries and who needs immediate care.
- For instance: for a person who suffered from cardiac arrest, if immediate help is not provided within 3-4 minutes, the patient most likely dies.
- Thus if time is reduced and medical help is provided to the patient sooner, the chances of the patient's survival increase to a large extent.

## *Proposed Solution*

- To solve this problem, we can create an “*Ambulance drone*” which gets triggered when the patient dials 911.
- The Ambulance drone is an all-purpose medical toolkit that can be automatically flown to any emergency situation and is used to guide citizens to make non-technical lifesaving procedures.
- The drone has an emergency medical kit which contains basic lifesaving technologies like the Automated External Defibrillator (AED), Cardiopulmonary Resuscitation (CPR), oxygen masks, medications, insulin injections etc which can be helpful for controlling the emergency situation by the time the ambulance arrives. The drone also has an inbuilt camera and audio system.
- The average time taken by the drone to reach the emergency location is approximately one minute, thus increasing the patient’s chances of survival.

# Actual working

- The victim dials 911 in case of an emergency. The “Emergency Management System” representative attends the calls. The place where the emergency has occurred is fetched by the admin.
- The admin determines the nearest 911 Emergency Department, where he can route the call to for quicker assistance.
- Once the call is routed to the Emergency Department, then admin determines the nearest Drone Station with respect to the emergency location and alerts the active drone.
- Once the drone gets activated, it determines the nearest hospital which has the speciality to attend the casualty.
- The drone alerts the on call doctor of the hospital.

...continued in next slide

## *Actual working (..ctd)*

- Once the on call is alerted, the doctor gets connected to the drone via a camera and thus can view the live footage of the accidental location.
- Once the doctor is connected the camera, the doctor can monitor the emergency situation and help the people at the accidental location to take actions. For instance: the doctor can assist the people to give CPR to patients who are unable to breathe.
- When the drone alerts the hospital, it computes the shortest path for the ambulance to reach the emergency destination and sends this information to the hospital.
- The hospital admin then identifies the available ambulance and passes this information to it, which helps the ambulance reach the destination at the earliest.

## *Actual working (..ctd)*

- If the emergency is of Accidental type, once the drone reaches the destination. It can scan the license plate of the accidental car and send it to the “Police department”.
- The police department then runs through their registered car database and finds the person associated with the registered car. The police fetches the emergency contact information of the patient and sends an alert to the contact about the accident.
- Once the ambulance reaches the destination, the drone becomes available again and returns to its station.



## *Key roles*

### **Drone:**

The rescue drone is a gadget which has an all-purpose medical toolkit that can be automatically flown to any emergency situation and is used to guide people to make non-technical lifesaving procedures.

### **Emergency Systems:**

The Emergency Management System representative attends the emergency calls and helps to fetch the location where the emergency has occurred.

### **Patients/victims:**

People in dire circumstances who need medical assistance. For e.g. if a hiker gets stuck in a remote area where the rescue teams will take time to reach then the drone will be of assistance with the medical aid and food.



## *Key roles*

### **Hospital:**

Once the drone gets activated it determines the nearest hospital which has the specialty to treat patient/victim's illness and alerts them.

### **Doctors:**

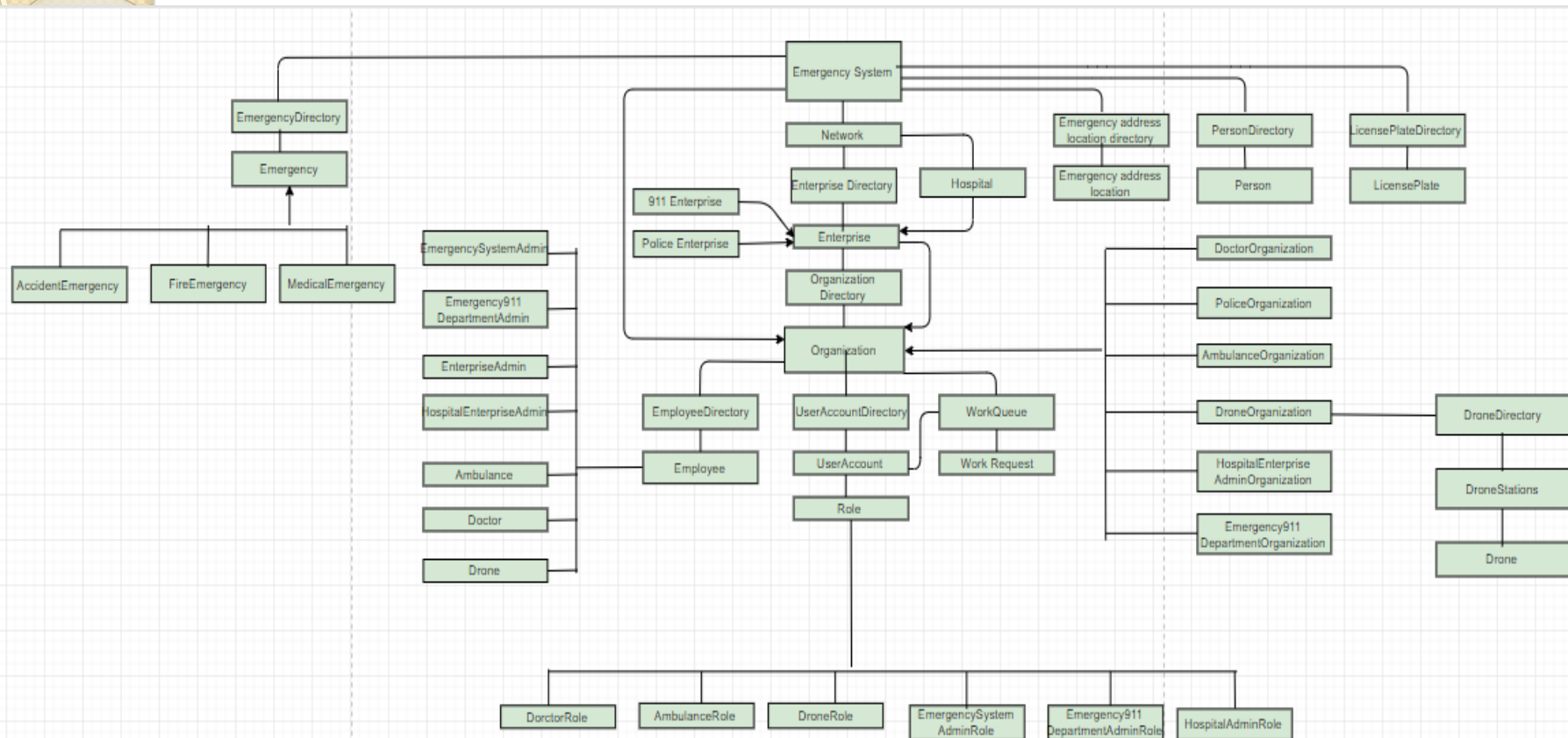
The drone alerts the on call doctor of the hospital, the doctor gets connected to the drone via camera and thus can view the live footage of the accidental location.

### **Rescue service:**

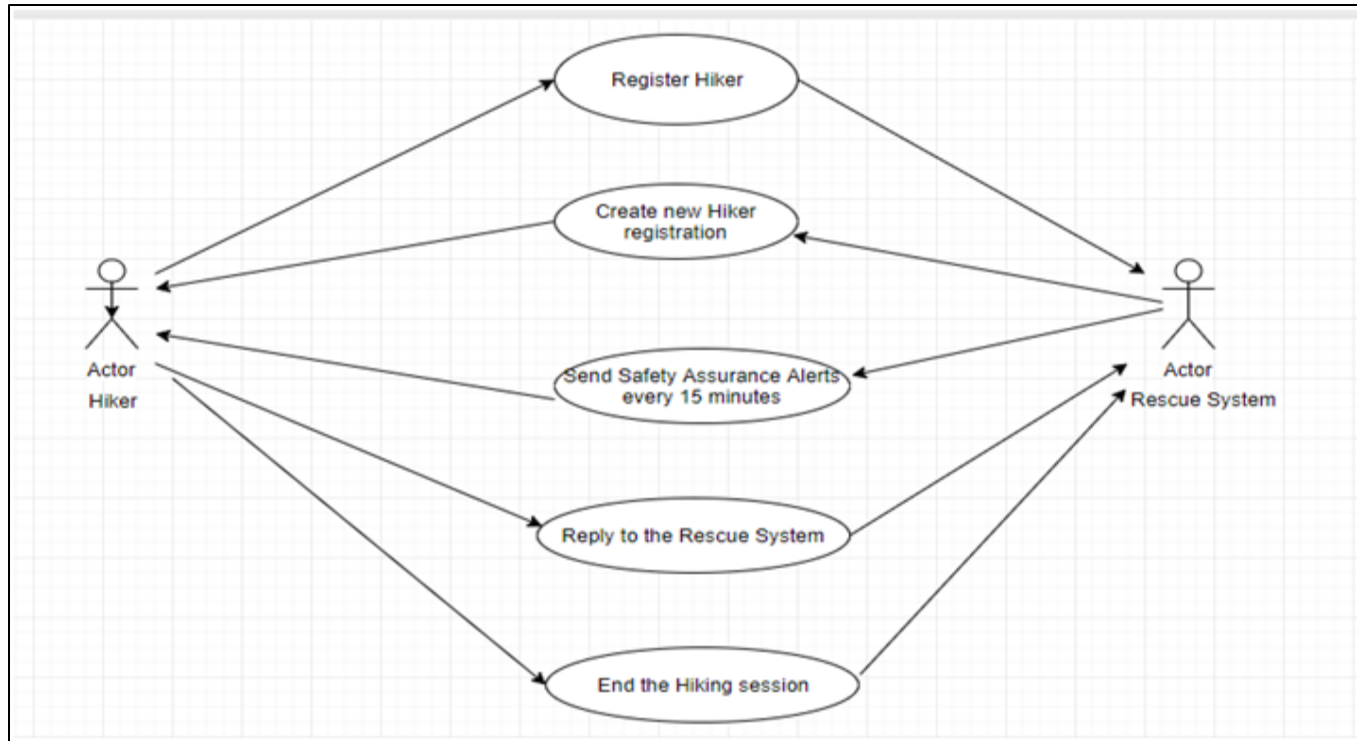
The hospital admin identifies the available rescue team and passes this information to it which helps the rescue team to reach the destination at the earliest.



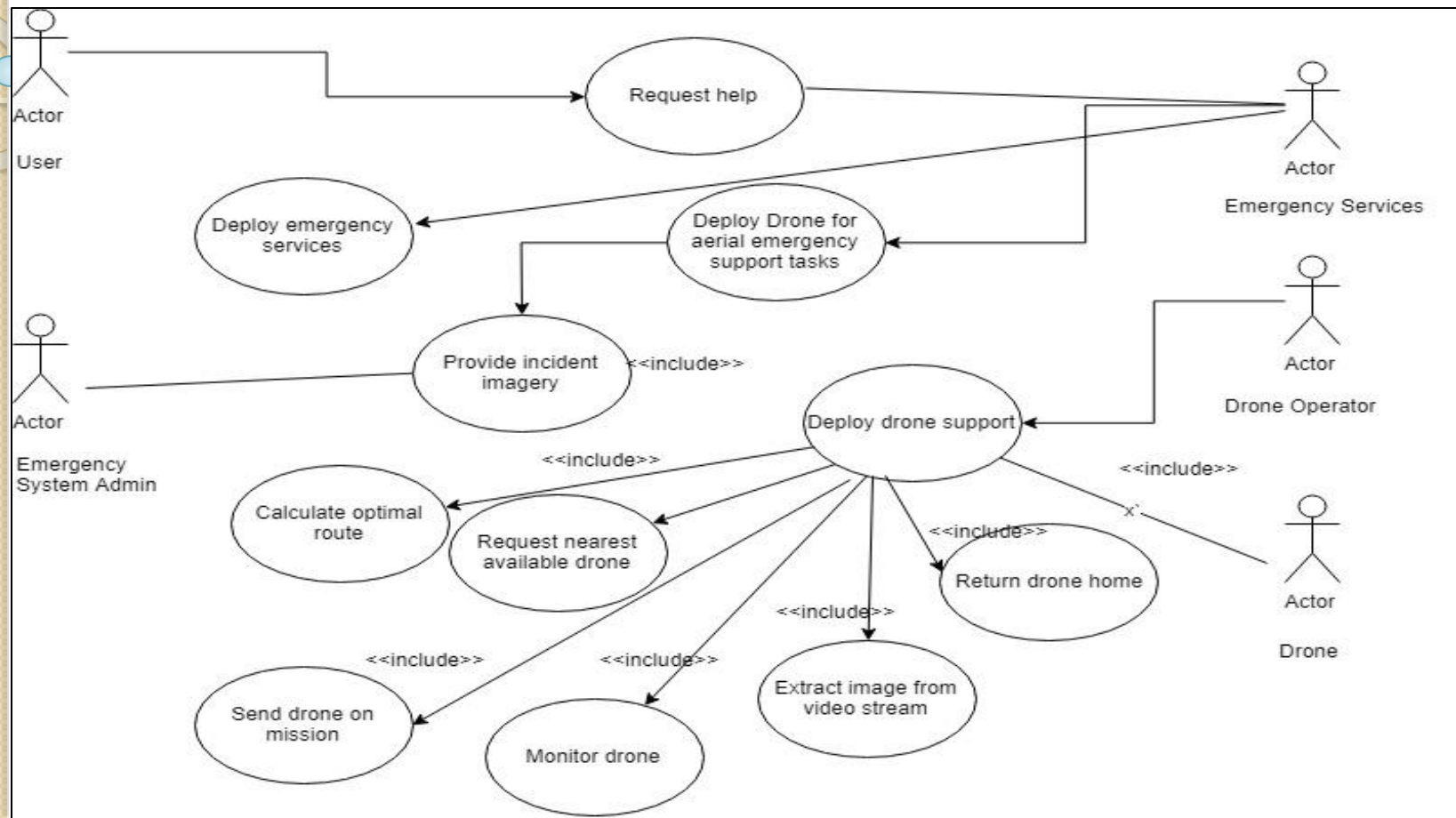
# Object Model



# Usecase



# Usecase



# Screenshots

The screenshot displays the 'Emergency Management System Admin Work Area' interface. On the left, a 'LOGIN TO YOUR ACCOUNT' panel contains fields for 'USERNAME' (filled with 'esadmin') and 'PASSWORD' (filled with '\*\*\*\*\*'), along with 'LOGIN' and 'LOGOUT' buttons. The main area features a navigation bar with tabs: 'Pick the call', 'Search for the 911 departments', 'Manage the emergency system', and 'Generate reports'. Below this, a form for managing emergencies is shown with the following fields: 'Location of the emergency' (filled with 'Franklin Park Rd, Dorchester, Boston, Massachusetts 02121'), 'Phone number of the caller' (filled with '6319441700'), 'Nature of the emergency' (dropdown menu set to 'Medical Emergency'), 'Description' (dropdown menu set to 'Heart attack'), and 'Priority' (a slider set to 0). At the bottom of the form are two buttons: 'Report an emergency' and 'Locate the emergency location'.

**Emergency Management System Admin Work Area**

Pick the call | Search for the 911 departments | Manage the emergency system | Generate reports

**LOGIN TO YOUR ACCOUNT**

**USERNAME:** esadmin

**PASSWORD:** \*\*\*\*\*

LOGIN

LOGOUT

**Location of the emergency:** Franklin Park Rd, Dorchester, Boston, Massachusetts 02121

**Phone number of the caller:** 6319441700

**Nature of the emergency:** Medical Emergency

**Description:** Heart attack

**Priority:** 0 1 2 3 4 5 6 7 8 9 10

Report an emergency

Locate the emergency location


# Screenshots


### Emergency 911 department work area

Public Safety Dispatch Center

Emergency list Alert the drone Manage drone stations

#### LOGIN TO YOUR ACCOUNT

 USERNAME:

 PASSWORD:

LOGIN

LOGOUT

Emergency location:

The closest drone station is Boston Drone Station 3 which is at 5.5 km distance from the emergency location

Drone station name	Distance from location (in kms)
Boston Drone Station 1	8.5
Boston Drone Station 2	9.3
Boston Drone Station 3	5.5

Calculate

Displacement to reach the accidental location:  in kms

Time required to reach the accidental location:  in seconds


Show drone Show active drones


Drone Id	Drone Status
Drone_Boston1100	Active
Drone_Boston1200	Active

Assign emergency to drone

# Screenshots

### LOGIN TO YOUR ACCOUNT


 **USERNAME:**

 **PASSWORD:**


### Drone work area


[Work requests](#) [Find and alert hospitals](#)


Hospital Name	Hospital Location	Speciality
Brigham and Womens Hospital	75 Francis St, Boston, MA 02115	Orthopedic
Beth Israel Deaconess Medical Ce...	330 Brookline Ave, Boston, MA 022...	Neurology
Shriners Hospitals for Children	51 Blossom St, Boston, MA 02115	Cardiothoracic
Fenway health center	1340 Boylston St, Boston, MA 02215	Allergist


 [View additional details](#)

Hospital Name	Number of beds available	Distance from location (i...	Time taken (in mins)
Brigham and Womens H...	5	7.7	15
Beth Israel Deaconess M...	10	8	16
Shriners Hospitals for C...	5	12.2	24
Fenway health center	10	9	17

 [Alert the hospital](#)

 [Alert the on call...](#)

 [Capture license...](#)

 [Alert the police](#)

**Network:**


Hospital Name	Distance from loca...	Number of beds av...	Speciality	Time taken (in mins)
CHA Cambridge H...	12.7	10	Neurology	30
Spaulding Hospital...	12.7	5	Cardiothoracic	29
Mount Auburn Hos...	12.9	10	Plastics	26


# Screenshots

**Hospital Enterprise Admin Work Area**

Work queue Alert Ambulance Manage Organisations

**LOGIN TO YOUR ACCOUNT**

 **USERNAME:**

 **PASSWORD:**

Ambulance Name	Status
SHAm1	Available

# Screenshots

**Police admin work area**



**Retrieve person data from license plate:**





<b>Name:</b>	<input type="text" value="Komal Ambekar"/>
<b>Age:</b>	<input type="text" value="27"/>
<b>Address:</b>	<input type="text" value="615 Parker Street"/>
<b>Drivers license number:</b>	<input type="text" value="665497258"/>
<b>Car owned:</b>	<input type="text" value="Mercedes Benz"/>
<b>License plate number:</b>	<input type="text" value="CI0000"/>
<b>Phone number:</b>	<input type="text" value="6319771865"/>
<b>Emergency contact number:</b>	<input type="text" value="6319441700"/>







*Thank You*