

NEEDFINDING

Help Sourcing for Victims of Criminal Actions & Terror Attacks

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Introduction - - - - -

We live in a world where we have more ways to connect than ever before. We can hold conversations with people on the other side of the planet, but sometimes we need to unplug and take a look at the world around us. When we started discussing the kind of application we wanted to create, it became apparent that our team wanted to make an effort to do some good. We discussed several ways that we could potentially use an application to make a positive impact when people are in need. In our needfinding research, we gathered feedback and other data from potential users about the following situations: *Natural Disasters*, *Personal Assistance*, *Health Emergencies at Home*, and *Victim of a Crime*. We examined these situations using a variety of needfinding techniques, which we'll discuss in the *User Research* section of this paper. Based on the information we gained in our user research, we identified several scenarios in which we can use an application to render assistance, and we discuss those scenarios in the *Problem Description* section of this paper, as well as some specific scenarios to address. We conclude this paper with a discussion of our *Design Goals*, where we identify the specific features we intend to include in our application design.

User Research - - - - -

We categorized emergency situations into Natural Disasters, Personal Assistance, Health Emergencies at Home, and Victim of a Crime. Each person of the project group studied one of these and we shared our data with each other at each step.

Natural Disasters//

Description of Methods:

In this part, we studied emergency situations as result of Natural disasters and extreme weather events. Based on the topic of the project and availability of participants, three different methods of data gathering was used in this part; online research, surveys/questionnaires and interviews. Based on the answers we got from the respondents we then interviewed one person who got caught in a flash flood.

- **Survey/Questionnaire:** Respondents defined and ranked the disasters in this order: earthquake, flood, fire, hurricane, snow storm. One third of respondents live in areas prone to some kind of natural disaster. Which we defined as occurrence of more than once in 5 years. Half of the respondent know their local support groups (volunteers and organizations) who would assist people in such situations, and they know about the helping groups mostly through TV commercials and programs. Respondents were

personally involved in natural disasters and more than 30% were affected by flood, but no one considered the level of emergency more than a 3 (in a scale of 1 to 5). Out of people who were affected by a natural disaster 25% experienced damage to utility (power outage). For all of them, it took more than 3 days for the damages to be fixed. So the questions that would really be beneficial to our design process are: During the time when the damages were being fixed most of the respondents used TV/Radio news to get updates. 15% had no access to data/internet or news source and 15% used their phones to get updates. On the other hand, a high percentage of respondents received alerts on their phones, or on their social media. Few of them received the alert on TV. About 50% of respondents had prepared themselves for the situation by moving to a safer place before the disaster happened. Those who had to relocate had found out about the safe place from other people through phone or in person. When asked if they contacted anyone about the situation (other than first responders) more than 60% did call someone, 50% called their parents. 80% of the participants were concerned about the safety of their family. 60% did care to announce that they are safe. The most important issues for the respondents that they would want to share with their loved ones. All of them want to share their safety and health situation and 50% want to announce the status of the situation; if the situation stopped or continued. A high percentage of respondents agree that contacting their loved ones to notify their own safety and ask for their safety would be beneficial and they would use a phone for that purpose. They think this would help in getting faster help response, less anxiety and stress and probably result in a faster recovery. Respondents also were asked if they were willing to help other affected people. They all would offer some help mostly in the form of food, shelter and initial necessities.

- **Interview:** We then interviewed Ellie, who was caught in Houston flood last year. She was with her husband and it was after dinner time in a restaurant close to downtown Houston when they received flash flood alert on their phones. They later found out that they received the alert way too late. They immediately left the restaurant and headed home. It was pouring with rain and the streets were flushed by rain. They were two blocks away from a friend's house when they realized the car would not move any more. Also, their vision was limited by the heavy downpour. They could hardly open the car doors and tried to contact their friends only to find out the friends were out too and stopped at a gas station just to have a shelter and let the rain stop. But if they could get to their friend's house they would be able to enter their garage. They managed to walk to their friend's house and open the garage door and stayed there for the night. Ellie's husband phone was wet and was not functional any more. Although, Ellie could still use her phone to get updates from their friends.
- **Online Research/Observation:** We observed footages of reports showing people getting rescued in similar situations which made us realize the level of emergency needs to be considered when designing our application. Also accessibility of people in danger and utility outages are to be considered.

Needfinding Reflections / What We Learned:

Based on the responses we have received in the questionnaire and interview we believe we can focus on the communication issues for people who are affected by a natural or weather related disaster. In the study, we also observed footages of people getting rescued in similar situations which made us realize the level of emergency needs to be considered when designing our application. Our project is mostly assisting people in the aftermath of the emergency situation (either few minutes after or hours after). Although we received responses from three different countries we better choose local ones in order to be able to address local issues. Then we could broaden the target audience based on shared experience of all participants.

Recommended Features:

We can conclude that in such situations people would want to share their safety with their family and ask for their health and safety. Also they would want to know about the safe place where they could spend the time when the condition is ongoing. We may want to consider that most of disasters may cause the devices to become non-functional but we have to be aware of the advancement of technology and the fact that most cell phones are becoming water resistant and wireless coverage is getting better and better every day. We may also consider possibility of merging all wireless networks in case of such emergencies. But we still have to remember that these situations would definitely affect power distribution systems and accessibility of utilities.

Personal Assistance//

Description of Methods:

These are the situations that people get lost or something happens to their car on the road. In order to do need finding for the personal assistance part, we used three main methods: researching at online resources and other tools, using questionnaires with open answers and small talks with people to get their ideas.

- **Online Research:** The sites that suggested “to do’s” for the broken down cars. Also, hiking websites have some good advices for hikers to avoid getting lost and how to stay safe when they are lost. Reading those methods were helpful for the second condition. The good point about this method is finding out the most important issues and needs people may face in the lost time, but it doesn’t show the problem that majority of people have faced in a normal losing direction experience.
- **Questionnaires/Surveys:** We created a survey consisting of both multiple choice and open ended questions.
- **Short informal talks:** One group member had many short informal talks by only giving the main subject and let the interviewees give their idea. This could help her understand the overall concerns and many new ideas.

Needfinding Reflections / What We Learned:

Losing network and charge:

The problem with most of the people didn't become serious when they had their phone network and charge or they were in a group. Most important situation are those that lost their access to the phone because of charge or network or the time was very late at night. Offline maps would be a solution for the lost people. Also, another solution can be an update mode. If the user turn this mode on, the latest information (of for example nearest available helper) would be updated and saved as long as there is a connection and warning by losing the connection (so the user can go back and use the very latest information that s/he has).

Signaling:

Hikers apart from cell phone, in emergency situation blow whistle (to both threaten animals and signal any human around). We can use this method in the application in case of losing network. Also, load clearer message like "help" with a low frequency tone is another option. On the other hand, in the highway in case of car broken down, they are better to signal by a clothes or light.

Trust:

While trust is very important issue few people (by now) announced to notice when they wanted to help, but their unconscious judgement based on the appearance and the neighborhood always either encourage or discourage them from helping. Having a trusted circle (for each person), trusted organizations and services, and people with rating can be some solution for making trust in the application. So the user can put the filter to show any category of helper/needee that s/he wants.

Helpers:

Normally people get help from Emergency organizations (911), family and friends, people near them (specially in time of losing way), professional ones (specially in car trouble). Knowing how to do some basic car repair, accessing a safe shelter, and calling some expert is some of the critical needs.

Financial aspect:

Linking the app with the service providers can have a financial encouragement for some users. This app can suggest the nearest gas station or auto services.

Health Emergencies at Home//

Description of Methods:

Our group member on this topic created a survey and had a couple of interviews with people who lived alone and were injured at home or had faced a personal injury when help was not close.

- **Questionnaires/Surveys:**

- Our group member on this topic created a survey and posted to all his contacts. People who had a background of the situation have completed the survey.

- **Short informal talks:**

- He had many short informal talks with friends and they portrayed how bad situations can go when there is no help. This could help us to understand the overall concerns and also the challenges faced when someone is injured at home alone.

- **Interviews:** Prabhakar, an elderly person from India, was interviewed. He said that a couple of his friends have been in a very serious situation due to lack of attendance. Had there been some attendance, they would have been in a better state than they are right now.

We have also interviewed Meghna (a colleague at Nokia), she described an incident that happened to her brother, in India, when she was very young. She claimed that it was very difficult to find help and by the time his brother was transferred to a hospital, he was in the state of Coma. She had 2 major concerns.

- I. The emergency persons reached them very late
- II. There was a lot of blockage on roads while transferring her brother to hospital.

Needfinding Reflections / What We Learned:

In a developed country like the USA, help reaches out people as soon as emergency number is dialed. But, in countries like India, these emergency numbers also do not work all the time. Even if they do, help comes out after a very long time. Anything could have happened by then. So, a device that constantly monitors people, their health conditions and inform all the emergency numbers is very much needed. If there's any more improvements that can be made to this application, it could be to warn all the people that are in the course of the ambulance. (PS: There is no separate driving lane for ambulance or fire truck or police in India).

Recommended Features:

Improvements can be done in the following areas:

- Care management advice for caregivers.
- Providing assisted living facilities.
- Having a skilled nursing faculty near by.

Armed Conflicts//

Description of Methods:

In support of needfinding for our proposed application, we developed a set of interview questions for discussing two situations in which a person may need help. In this part we focused on armed conflicts, with a specific focus on the areas of life in war zones and terror attacks. We used a combination of interviews and Internet research to discover needs for a help sourcing application in these situations.

- **Interviews:**
- Our group member interviewed Laura and Tim Murphy, residents of Weymouth, MA, a suburb of Boston. Both Laura and Tim were home at the time of the Boston Marathon bombing, and their daughter, Norma, was actually at ground zero of the attack

approximately 45 minutes before the bomb was detonated. Norma and her friends were only spared injury because they decided to go have lunch shortly before the attack.

- He also interviewed Staff Sergeant Cory Hinkle, a 34 year old soldier in the North Carolina Army National Guard who is a combat veteran of Operation Iraqi Freedom. Sergeant Hinkle was injured during an attack by the concussive force of an improvised explosive device (IED), and he provided valuable insight into the various problems involved in communicating in a war zone, especially with family members serving in the same theater of operations.

- **Online Research and News Observation:**

I also reviewed recorded interviews of the most recent New York and New Jersey terrorist attacks. These recordings offered a window into the pain and outrage felt by the victims of the attacks, and also offered some useful insights into some ways that technology may be used to aid the survivors of such an attack. In particular, it would seem that some sort of easy notification system to assure loved ones are safe would be appropriate, as well as ready availability of important information about aid stations, first aid advice, and information alerts from the authorities would all be welcome in situations like these.

- **Understanding Complexities of War Zones:**

Finally, I reviewed recorded interviews and informative news articles about the plight of the common people in Syria during the ongoing civil war. From these recordings, I found that there are opportunities to help, but in my opinion, the risk to the people that are in need of assistance caused by the misuse of any application would likely be worse than any good that such an application could achieve. The Russian and Syrian governments appear to be colluding to deprive the common Syrian citizens of basic human necessities, as evidenced by this article:

<https://www.theguardian.com/world/2016/sep/20/un-aid-convoy-attack-syria-us-russia>. In spite of the many opportunities to allow people to share information afforded by any application we may design, if such an application was to be penetrated by the aggressors in this conflict, any location data could be used to plan further attacks. For this reason, I recommend that we focus our efforts on assisting the victims of domestic terror attacks, as well as others in need of assistance, as judged appropriate by the other members of Project Team 15.

Needfinding Reflections / What We Learned:

As described in some detail in previous sections, we should focus our efforts on developing applications for the common good in countries with stable governments. The security risk to common citizens caused by the possible accidental or intentional sharing of location data through an application is simply too great, as the location data could be used to plan attacks on the users of the application. In addition, there are often numerous power problems within conflict zones, as several of the articles described power that was out for long periods of time. This would make it difficult to maintain a charge on a mobile device, and would thereby reduce the effectiveness of any aid application.

Victim of a Crime//

Description of Methods:

First, I researched the way in which the criminal justice department classifies crimes. Once I had a better understanding of the types of crimes that commonly occur, I was able to develop a set of questions for a Questionnaire which I handed out to a small but very diverse group of individuals. The requirement I set up for the questionnaire was that the participant had to have experienced a crime personally. I made this a requirement in order to allow myself to set up questions that could dig deeper into the experience a person faces when dealing with a crime. The questionnaire began to reveal initial insight that better defined the different personas that experience crimes. FRI also set up a list of interview questions asking for general information as well as open ended questions that ask the participant to describe their experience. The interview process was great for discovering information that I could not have predicted.

- **Online Research:**

First, our group member researched the way in which the criminal justice department classifies crimes.

- **Questionnaire:**

Once she had a better understanding of the types of crimes that commonly occur, she developed a set of questions for a Questionnaire which we handed out to a small but very diverse group of individuals. The requirement we set up for the questionnaire was that the participant had to have experienced a crime personally. We made this a requirement in order to allow ourselves to set up questions that could dig deeper into the experience a person faces when dealing with a crime. The questionnaire began to reveal initial insight that better defined the different personas that experience crimes.

- **Interviews:**

We also set up a list of interview questions asking for general information as well as open ended questions that ask the participant to describe their experience. The interview process was great for discovering information that I could not have predicted.

Needfinding Reflections / What We Learned:

I discovered that there are two main types of crimes which are classified as personal crimes and property crimes. Examples of personal crimes are assault, battery, kidnapping, and sexual assault. Property crimes can be burglary, robbery, larceny-theft, as well as vandalism. These crimes can have a wide range of factors that affect the situation and not every situation allows for the victim the ability to quickly reach out to the police. However, in each of these scenarios, the police were almost always the first contact the victim reached out to.

Recommended Features:

Based on the needfinding research, we could potentially develop an application with the following capabilities:

- Informative alerts from local and federal governments
- Personal geolocation and status notification (Where are you and are you okay?)

- GPS navigation link to nearest aid station, hospital, or clinic
- Panic button for reporting incidents - directly linked to emergency services
- General help section for miscellaneous information (counselors, aid, supplies)
- See something, say something link for reporting suspicious activity

Selection of Emergency to Move Forward With//

We began the needfinding research by examining 5 major initial categories: *Natural Disasters*, *Personal Assistance*, *Health Emergencies at Home*, and *Victim of a Crime*. After concluding questionnaires and interviews on the topics, we used the collected research to help in selecting a final emergency type to move forward with. Victim of a Crime/Terror Attacks became our new area of focus. This focus was then carried out through our personas and the remainder of the needfinding work throughout this paper. Victim of a Crime/Terror Attacks was chosen as it was more attainable to find people who had experienced the emergency and it was something that was local and in the United States, where wireless internet can be found in most locations.

Personas//

Persona #1

- **Name:** Sarah
- **Occupation:** Sarah is the co-owner of a local coffee shop and deli that she and her sister opened nearly 4 years ago in the downtown area of their small town. The coffee shop sells a lot of baked goods which they typically bake after shop hours. If everything goes smoothly, they arrive home prior to dark, but on the occasion that they have to prep for a special gathering, the two can stay as late as 9pm.
- **Background:** Sarah married an art teacher, with whom she has two children with, a 2 year old and 5 year old. They currently live in a 3 story townhouse that is in a nice part of town, but off a main road. Their car has previously been stolen from their driveway which has concerned the couple and has led to their contemplation of moving.
- **Motivations:** Sarah and her sister hope to build their local coffee shop and open a few other locations in the future.
- **Challenges:** Raising two young children while being part owner of a business can be stressful and overwhelming at times. Sarah wants to always be there for her kids, so she often stays up late accomplishing chores around the house and doing paperwork for the shop. She is often tired and thinking about a million things at once.
- **Communications:** Sarah often speaks with her sister, husband, kids, and other family members as well as her customers, employees, and neighbors. She is very often in social settings at the coffee shop, where she must speak to her regular customers and make sure her employees are treating them well. She uses social media, texting, and phone calls to reach out to family and friends while at the shop. She also promotes their shop on social media. She uses her Apple phone and tablet as her main source of communication.
- **Goals:** Sarah and her sister hope to build their local coffee shop and open a few other locations in the future.

- **Definition of Security:** Sarah believes that her town has wonderful people and she feels safety through the fact that she knows so many people in town that look out for her and her family. She has, however, increased her awareness of safety and security since she has had children of her own and worries primarily about their well-being.
- **Key Technologies Used Regularly:** Gmail, Facebook, Instagram
- **Threat Perception:** Sarah worries about burglary at her coffee shop and is constantly concerned about the safety of her children in the family's current home due to the numerous car break-ins their neighborhood has experienced.
- **Security Precautions:** Sarah and her husband recently had a security system installed in their home and have made sure to get insurance for both their home and the shop.

Persona #2

- **Name:** Mike
- **Occupation:** Mike is a senior manager in an IC design company in Bay Area.
- **Background:** Mike is 32 year old and lives with a roommate in an apartment. He is always busy with lots of work with a very organized and cautious personality. Beside his cautious personality, he occasionally does some intentional risks that make trouble for him. Four years ago some robbers tried to steal his money, but he was successful to call the police on-time and arrest them.
- **Motivations:** Mike came to the United States ten years ago and from that time he is always experiencing new things and learning from these experience. He believes in gradual life improvement, so he always keeps a safe zone in his life but risk in another small parts to learn something new.
- **Challenges:** He is traveling a lot and that means he have to have some transits in unsafe areas. Dealing with unsafe situation is always one of his challenges.
- **Communications :** Mike is often talk to his friend in person and with his family via phone call. Also, he spends a lot of time talking with his employees, manager and customers in work. His talk is a mixture of work, social issues and personal thoughts. He sometimes uses his cell phone (Microsoft) or Skype app for talking remotely or talk in person, otherwise.
- **Goals:** He is very hopeful to be successful in opening his own company and use all his experience for the success of that company.
- **Definition of Security:** Mike believes that there is no absolute secure zone, but you can diminish the possibility of hurting by predicting and providing solution beforehand.
- **Key Technologies Used Regularly:** Here! navigator, Outlook calendar and email, Skype, many professional softwares on his PC and laptop.
- **Threat Perception:** He uses his experience to predict the level of safety in a neighborhood or a new location. Also, he uses web searching before traveling or going unfamiliar places.
- **Security Precautions:** After any unsafe experience he had, he has added a security plan to his lifestyle. As a related example, he always keep a backup phone in his car trunk for a robbery situation!

Persona #2

- **Name:** *Victor Kumar*
- **Occupation:** *Software developer and consult for business analytics with Tax Analytics, Inc., a New York firm providing tax consulting services for accounting firms in New York, NY*
- **Background:** *Victor is a 28 year old, first generation citizen, who is the son of immigrants from India to the United States. Victor's parents moved to the U.S. in pursuit of financial security, and Victor was born in Queens. Victor cherishes his parent's Indian culture and values, but lives the normal life of a New York technology worker. He has numerous friends on social media, and is the typical young New Yorker in many ways.*
- **Motivations:** *Victor has a love for technology, and he's adept at every aspect of social media. He has leveraged that love of technology into a comfortable career in consulting, and he lives comfortably in New York while traveling frequently to support clients in the continental U.S. Victor lived through the terrorist attack on the World Trade Center in 2001, and he has the never-say-die attitude of many New Yorkers because of it. He pays attention to unusual events, people, and circumstances, because he fully embraces the "See something, say something." mentality of New York, and he's determined to do whatever he can to help keep his home safe.*
- **Challenges:** *Because Victor travels frequently, he's often away from home, so he worries that he may have trouble reaching his friends and family in the case of an emergency.*
- **Communications:** *Victor communicates with his friends, family, clients, and colleagues. He uses social media and instant messaging apps to coordinate evening and weekend activities with his friends and family. He communicates with clients and colleagues through email, text, and cellular phone service. He uses Social Media - Facebook, Instagram, Snapchat, and email.*
- **Goals:** *Victor wants to live in a city that is safe from terror attacks. He wants to marry and have a family, and intends to live and die a New Yorker.*
- **Definition of Security:** *Victor has non-disclosure agreements with his clients, so he's very adept and diligent in maintaining the security of his client's data. On a personal note, Victor shares his location with his friends and frequently posts updates with his location and activities to social media whenever he's home in New York.*
- **Key Technologies Used Regularly:** *Gmail, Chrome, Google Drive, Snapchat, Instagram, Facebook, Outlook, Tax accounting software.*
- **Threat Perception:** *Victor has a working knowledge of application level security, but he realizes he is somewhat vulnerable due to his proclivity to post his location and personal information to social media. He mitigates this risk somewhat through privacy settings, but he realizes there's more he could do.*
- **Security Precautions:** *Victor takes reasonable precautions to only share his location with friends when he's at home in New York, and he never posts information about his business travels. Whenever he works remotely for a client, he uses VPNs to secure his connections, protecting both his personal computer and the client's environment. Victor also carefully observes the actions and behavior of others, especially when traveling.*

Problem/Activity Description - - - - -

Description of the potential problem and purpose of the application:

In any country and city, people face too many small and large scale crimes that take away their safety and feeling of security. These crimes have various danger levels, and may, of course, threaten the lives and property of the residents. Our goal is to have an app to help handle these situations and both inform people (if necessary) and get help from police and others in the shortest possible time.

We considered three main categories of crime in this study: personal crime, property crime and terror attacks. Obviously, the main problem in these situations is how to inform police in the fastest but safest possible way. The victims in these situation might not have enough time to call or explain the situation. Having an emergency button that transfers the most critical information to the police in the shortest time would be very helpful. This important information consists of the location, type of crime, and possibly a photo of the situation.

For this project, we propose an application that will provide an efficient interface that can be used to quickly and easily transfer critical information to the authorities. We assume, for example, that by pushing one button, all the critical information can be gathered by application and sent to the police (or other people nearby) so that they can react in the shortest time, before it is too late.

What activities did you learn about in need finding?

First we found out that, from the police point of view, there are two categories of crime: personal crimes and property crimes. Examples of personal crimes are assault, battery, kidnapping, and sexual assault. Property crimes may include activities like burglary, robbery, larceny-theft, or vandalism. These crimes can have a wide range of factors that affect the situation, and not every situation allows the victim to have the ability to quickly reach out to the police; however, in each of these scenarios, the police were almost always the first contact the victim reached out to. Due to its importance and difference in intent, we categorize terror attacks as a third category of crime.

Based on our needfinding activities, we have identified the following points as the important features we need in our application:

- Panic button for reporting incidents - directly linked to emergency services
- Personal geolocation and status notification (Where are you and are you okay?)
- Ask help from the trusted/nearby people
- Informative alerts from local and federal governments
- GPS navigation link to nearest aid station, hospital, or clinic
- General help section for miscellaneous information (counselors, aid, supplies)
- See something, say something link for reporting suspicious activity

What problems or issues are users having currently?

In this section, we provide some scenarios to talk about the current issues of potential users and the way they responded in each situation. Of course there may be worse scenarios in which people were unable to get the help they needed and died or had serious injuries, but we didn't have access to the real cases, so creating those scenarios was not possible..

Scenario 1: A crime is in progress. Victim calls police for help.

It was near Christmas and Mike needed to get cash from an ATM. He was in an unsafe neighborhood and he knew it, but still he parked his car and went to withdraw cash from the ATM. When he was returning to his car, two men stopped him and asked for his phone, cash, and car keys. Without any resistance, Mike gave them everything. The men didn't want to steal the car, but only wanted to prevent him from quickly reaching the police. As Mike always kept an additional cell phone in the car trunk, after the men ran away, he immediately grabbed the additional phone and call 911. He explained the what happened and provided a description for both men. The police quickly reached the scene of the robbery and were able to find and arrest the robbers immediately (as they were still nearby). Mike's money and phone were returned, but there could have been many issues if he had not that additional phone.

There could be many problems and issues in this situation without the additional phone and it was very unlikely to find the robbers without it, since robbers and other criminals typically take the phone at the beginning of an attack. Therefore, the victim has a very short time to use the phone when s/he predicts s/he is going to be in an emergency situation, and needs to provide important information in the shortest possible time to the most appropriate people.

Scenario 2: Helper is waiting to assist.

Maya has a close friend, Kate, who recently moved to NY. Kate started staying in a temporary airbnb apartment, and at the same time she was looking for a good place for her longer stay. As she had just moved to the area, she was unfamiliar with the neighborhoods. Occasionally, when she wanted to go see an apartment, especially in unfamiliar neighborhoods, she texted her friend Maya and shared her location with her before going to the apartment. Maya waited 15 minutes for an update from Kate, and if no update arrived, she would immediately call 911 and give them Kate's address and situation. Fortunately, this situation didn't happen and Kate was finally able to find a safe apartment for her longer stay.

Scenario 3: A crime is in progress. Victim asks nearby people for help.

Armita used to live in a quiet neighborhood in Iran. Once 5 years ago when she was 20 years old, she had a bad experience that made her move to another place. It was 10 p.m, and she was coming back from her university. Suddenly, two men attacked her and tried to rape her. Fortunately, she started screaming immediately, and the men were not armed. Eventually, because people came out of their homes to see what was wrong, the attackers became scared and ran away.

This situation was really stressful, and it could even have been worse in US where the apartments have more distance from each other, which makes it less possible for people to hear you. Also, because of the permissive gun laws in the United States, it is very likely to face armed attackers.

Scenario 4: A terror attack has happened, and people are looking for information, alerts, etc.

Laura and Tim Murphy, residents of Weymouth, MA, a suburb of Boston. Both Laura and Tim were home at the time of the Boston Marathon bombing, and their daughter, Norma, was at ground zero of the attack approximately 45 minutes before the bomb was detonated. Norma and her friends were only spared injury because they decided to go have lunch shortly before the attack.

Norma let her parents know she is fine by calling them and explaining the situation. Fortunately, the heavy presence of police, having hospitals close, and the good intention of everybody to overcome this emergency situation diminished the overall loss of life. The police were already at the scene, and they reacted quickly and did their jobs well.

The reaction of the city was amazing and everybody acted as one. The cooperation between the citizens and the law enforcement agencies was seamless. There were invasions of privacy, house to house searches, and everyone simply united to help catch the attackers. The criminals were caught shortly thereafter.

However, not all of the attacks are handled as good as this one. In some similar situation it takes more time for outsiders to understand the situation and be able to call the police and the insiders have no time and possibility to do that. After attack, the location might become crowded with those who worry about their relatives which will cause some inconvenience in service providing. Sometimes police might immediately need to inform people about the future possible attacks, closed roads and update information about injured people.

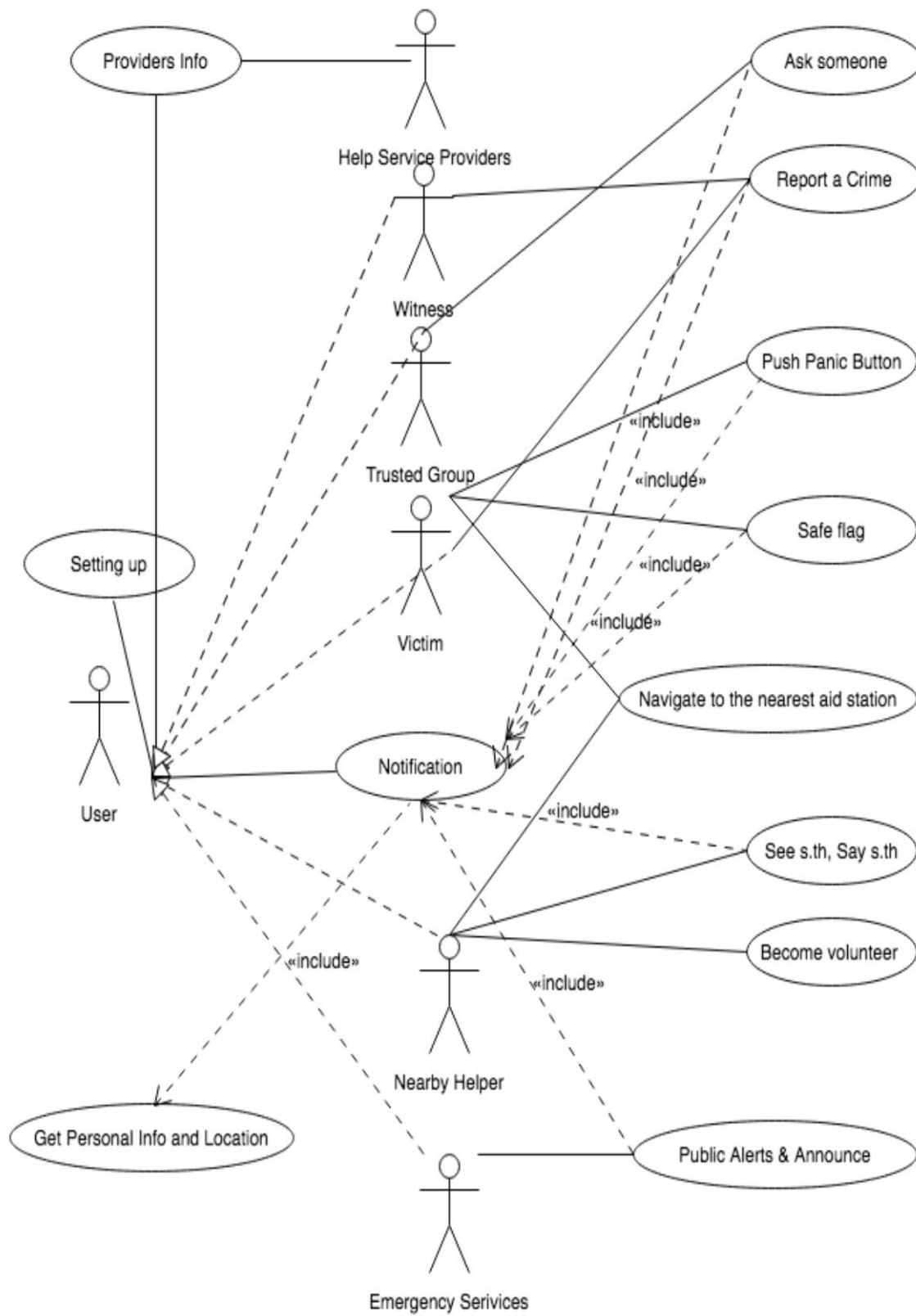
How the suggested application would help us to improve the situation:

In order to demonstrate our plan for the application to overcome some of the problems in the mentioned scenarios, we used a use case diagram (next page).

Overall:

In this section, we explained a summary of the current problems and provided a brief overview of our proposed solution via use-case diagram. Of course, as we move forward with our design process, the overall design will become more focused. We provided scenarios based on the real experiences of our expected users and attempted to identify the current issues and alternatives. Also, we outlined our overall idea of the application using a use-case diagram. We will explain our proposal and design focus in the Design Goals and Design Guidelines sections.

Use case diagrams



Design Goals - - - - -

During our research, we identified, the following problems with the current emergency response to criminal and terrorist acts:

1. Delayed response/slow response of “appropriate” authorities
2. Requesting help relies on the victim to provide details
3. Closest help is not always the help that is notified
4. Notification of well-being for friends and family are lacking
5. Single unified information source for help and emergency alerts needed
6. Network infrastructure overloaded or unreliable during mass casualty situations

Of these problems, we can do little to address the overall bandwidth or reliability of network infrastructure; hence, this problem will be out of scope for our design. Items 1 and 3 can be addressed through a modified approach to the current solutions, as notifying anyone nearby willing to help should help to alleviate these problems. Item 2 can be addressed through geo-location technology currently available in all smartphones. Items 4 and 5 are rather trivial social networking matters, and should be simple to address. During our research, we found ample evidence to suggest that people are often willing to help, no matter how dire the situation, and we intend to help victims and helpers connect with one another for the benefit of all.

Long-term goals:

Increase the overall security, safety, and sense of well-being of the entire community of users, by providing an application which allows users to help each other.

Short-term goals:

Send out a signal requesting help to anyone willing to help as well as emergency service personnel.

1. Getting help

- a. Send messages to all the emergency services and the emergency contacts(user chosen).
- b. Send the location of the victim to the emergency response team(ERT-emergency services and contacts).



- c. Find all the volunteers close by with in the selected radius.
- d. Start clicking pictures of everything that the camera captures (may be helpful for identifying the criminal)
- e. Automatic call to 911 or play a predefined help message

- f. The application serves as a communication facilitation tool, and is intended to supplement standard authorities, not to replace them. User must accept the agreement in order to open the application.
- 2. **Giving help**
 - a. Identify all the volunteers who are ready to help
 - b. A background check of the volunteers .
 - c. Get the location of the volunteers and identify the ones closer to the victim.
 - d. Helpers agree to an end-user license agreement (EULA) acknowledging that any risks they take in helping others are of their own volition.
- 3. **Additional information** (helpful links, alerts, etc.)
 - a. Click pictures of the offenders accountable
 - b. This application can also be incorporated with wearable devices.
 - c. Reduce the number of false alarms.
 - d. Notifications about the user's current location (insecure locations, etc.)
 - e. <http://www.nimb.com/>
 - f. <http://www.anthonycastro.com/lifealert/>
 - g. <http://www.slideshare.net/FanyaYoung/life-alert-product-redesign>

One thing that will help in these situations is a shared channel between people and responsible organizations for warnings, announcements, and descriptive advisories of the people responsible. Hospitals could post notifications about patients and aid stations, the police could post traffic updates, and other organizations could ask for volunteers.

The other thing that might be helpful is a simple interface to alarm the police. By getting lots of alarms at once, the police can immediately determine the severity of the event without wasting much time. Finally, we can allow others to help those in need, instead of always relying on emergency service personnel who may be farther away.

We have listed some design features for our new application that we feel are most appropriate in the bullet points above, and the diagram below reflects a possible workflow for the three areas upon which we want to focus. First, we want to enable people to get the help they need. Second, we want to enable helpers to find people who need help. Finally, we want to provide a convenient space for sharing information in these situations. We intend to expand and refine these goals as we move forward with the project.

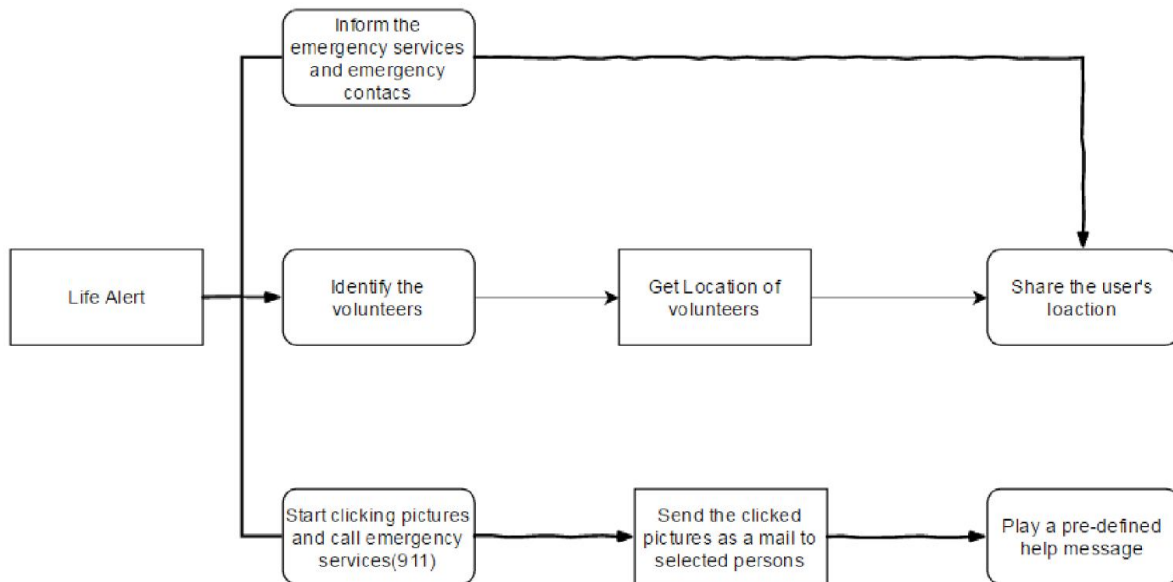
Design Guidelines - - - - -

We intend to focus on the following design guidelines throughout the design process:

- **Signifier:** It is very important to use suitable signifiers for the users, so that they can quickly use it in the emergency situation.
- **Low possibility of slips:** As the situation is stressful, the possibility of making slips is very high and may lead to consequences in the range from mildly annoying and inconvenient to serious bodily harm. Therefore, it is crucial to design our application in a way that minimizes the possibility of these slips.

- **Discoverability:** At the emergency situation, the human focus is very low on most of the activities, therefore the user should put the lowest possible effort to remember how to work with the app. That makes it important for the application to have easily discoverable features.

Possible workflow:



Conclusion -----

One inescapable truism of the human condition is that everyone needs help sometimes. In this needfinding exercise, we have taken the first steps along the path to making sure people can find the help they need, when they need it. When we began our research, we had a broad understanding of what we were trying to accomplish, and we began researching five focus areas. As a result of our user research, we decided to focus on both victims of a crime and those who are willing to help. We hope to enable both those who need assistance and the good people among us who stand ready to render aid to find one another when the need is most dire. Our research thus far indicates that we may help those around us by providing the following features: the ability to ask for help, the ability to find those in need, and the basic information when you don't know where to turn. In service of these goals, we will spend the rest of the semester designing an application that offers users the ability to have these features available whenever they need them. We can use this design to create an application which is a source for help for those in need, and by doing so, we can help to improve our world.