Erin Alltop
CS361 – Fall 2017
ONID username: alltope@oregonstate.edu
Expanded Vision Statement
Title: Community Outreach in the Aftermath of a Disaster

What world problem are you concerned about?

The world problem that I am focusing on in this vision statement is concerning the aftermath of affected communities when a natural or manmade disaster strikes. Being from Florida, I have been through several major hurricanes in my lifetime. I have always been lucky and escaped with minor damage, but others are not so lucky. Downed power lines, dangerous flooding, food and water shortages, and damaged property are only a few examples of potentially life-threatening situations people can find them in in the wake of a hurricane. This is but one example of a disaster that can have a community in ruins, unsure of where to begin rebuilding. Tsunamis, major flooding, tornados, and earthquakes can also have similar outcomes.

While we in the U.S. are fortunate to have FEMA, the Red Cross, and other organizations that can jump into action with resources and disaster plans in place, many times this aid arrives days after the event. Other countries who are not so fortunate may have limited access to organizations who can assist and are only able to rely on the good will of friends and neighbors. I believe there is a need to fill this gap in aid and to assist in times of crisis when the seconds count.

Aftermath of Hurricane Andrew 1992

What is one statistic or quote showing that this is a major problem?

"On average, over 22 million people have been displaced each year since 2008 because of climate or weather-related disasters. And rising sea levels, sudden temperature swings and other problems hint that things will only get worse; around the globe, the chance of being displaced by a natural disaster is 60 percent higher today than it was in the 1970s.

While a tragedy that leaves hundreds of thousands adrift might receive lots of attention in the moment, interest and aid are often fleeting. That's especially the case for the many families unable to rebuild or return to their homes, considering that the researchers turned up evidence of victims who had been displaced after a disaster for as long as 26 years.

Major damage and displacement due to natural disasters disproportionately affect those living in the developing world, where such occurrences are far more common (because of less developed infrastructure and emergency-response plans). But helping and rehousing natural-disaster victims can be just as difficult in the U.S. In rich countries, the most vulnerable groups are still the ones who suffer the most in the aftermath of a natural disaster."[1]

What is one anecdote about how this problem might possibly play out in real life for somebody?

Gas line in Puerto Rico 9/28/17

At this very moment, thousands of people in Puerto Rico are waiting in line to retrieve a limited amount of gas for their vehicles, generators, and other equipment. They have been waiting for 5 or 6 hours for their small share. Their homes are either destroyed or remain without power weeks after Hurricane Maria shook the small island of 3.4 million people to its core. One family might have half of their house missing, have not been able to wash their clothes in weeks, are out of or running low on food, water, diapers, and other essential items. Perhaps they live in a rural area where roads to them are blocked and they are desperate for help. The crisis is ongoing and aid workers are working tirelessly to pin down where supplies are needed most desperately and how to get it to those areas.

Within this world problem, what is one subproblem that bothers you?

A subproblem to this problem that I find bothersome is how many people I have run into or seen on social media anxious to help affected areas but unsure how to do so or what organizations to donate their money to that will do the most good. I believe there is need for a readily available resource for users to be able to find reputable organizations or locations that they feel comfortable donating to so that more relief aid can reach affected communities as soon as possible.

What is one quote illustrating that this subproblem is important?

"…It's reasonable to be wary. You might be feeling nervous to donate money to even well-known groups after reading reports, like those published by *ProPublica* and NPR, for example, showing organizations like the American Red Cross have been criticized for mismanagement of funds during previous natural disasters.

Indeed, knowing how your dollars or donations will be used during and beyond an event is important before you give, Borochoff said. "Sometimes a charity will raise more money than is needed for the cause, which could open the door for the charity to take advantage of having the overflow money," he said. "Find out how the money will be used and earmark your donation for a specific disaster so it's clear how you want your money allocated."[2]

What is one anecdote about how this subproblem might possibly play out in real life?

As indicated in the above quote, there are many organizations that either do not use your money for its intended purpose, or they take a profit and use it for uses you would not wish to fund. I think it is important to be able to quickly and accurately find organizations that you can donate to that would most readily and impactfully assist in the event of a natural disaster.

What is one possible software system that could help to solve this problem?

I believe many problems could be alleviated with a central piece of software that opens the gateway of communication in both affected communities and in those who wish to help. The software could have many features to let disaster victims know where they can find aid in their community, where they can report downed powerlines, price gouging, or theft, and where those who wish to help and find out where to donate money or items and how they can assist in other ways. The software system could potentially also provide maps of where gas can be found, what roads are open, and what restaurants are open.

What are the three most important features that this helpful software system should have?

The three most important features of this software system are:

1. A feature to provide victims of a disaster information on where to find food, water, shelter, and important phone numbers for emergency services and reporting medical emergencies and downed powerlines. This can also be used for aid workers to find where the largest needs are.
2. A feature to provide users in communities not affected by the disaster to find the most reputable organizations that they can donate money or resources to. This can include major relief organizations or a list of locations local to them that are collecting donations (e.g. churches or schools).
3. A feature to provide a map of road closure, restaurants and gas stations that are open, and dangerous areas to avoid (e.g. dangerous flooding or downed powerlines).

For the 1st of these three features, why is this feature important?

The most important feature of the software system is the ability for users to find food, water, and shelter in their area. These are the most vital needs that all humans require for survival. A system that is able to provide these resources in real-time would be vital for many users in the aftermath of a disaster. The feature would also allow users to report medical emergencies or downed powerlines so aid workers and pinpoint what is needed most desperately.

What is some sort of hypothetical example about how a person would use the 1st feature?

Shelter after Hurricane Andrew 1992

A person in the aftermath of a major hurricane might find themselves suddenly without a habitable home. Perhaps a tree fell onto their house and their home is now not suitable for living until this is repaired. They could use the feature of this system, potentially an app on their phone, to locate the nearest shelter and how to get there. The might also take advantage of the phone number directly of disaster relief organizations to reach out for help.

For the 2nd of these three features, why is this feature important?

The second feature of this piece of software is to provide a place for users in communities outside of the affected area to quickly find who, what, and where they can donate money or other items to aid in the relief. This is very important because many times people want to help out but find themselves overwhelmed by the options of relief and might end up not donating at all if they do not feel any of the organizations they found were reputable. It is important for people to feel secure in their donations so that they give and continue to give.

What is some sort of hypothetical example about how a person would use the 2nd feature?

There are many people who I have found on social media wishing to donate to help offer relief in the wake of the major hurricanes that have devastated the southern U.S. and the Caribbean. In particular, many of the smaller Caribbean islands have not received as much aid as the U.S. has due to poor infrastructure and support. Many people are hesitant to offer aid even directly to the governments of these areas due to the fear of corruption and that their money will not help those they wish to help. This feature of highly vetted reputable relief organizations would help relieve that fear and give the person peace of mind to donate.

For the 3rd of these three features, why is this feature important?

Colorado Douglas County West Creek Flood 2006

The third feature would provide aid workers and disaster victims a map of road closures, restaurants that are open, dangerous areas to avoid, and other useful information. This feature is extremely important and useful because it can help victims avoid injury or death, and also fulfill immediate but not life-threatening needs.

What is some sort of hypothetical example about how a person would use the 3rd feature?

If a victim of a hurricane is without power, the might decide they want to try to find a restaurant that is open. Without this software system, they might begin driving around to see what they find. This can be dangerous because street lights might be out, trees might be blocking roads, or dangerous flooding might be blocking a route. If they used the feature, then they could easily see what restaurants are open and a safe way to navigate to that restaurant, potentially saving time or even their life.

Which of these three features is most important?

I think the most important feature is the first one which provides users the ability to find food, water, shelter, and other basic needs as well as important phone numbers for emergencies. This is the most life-saving feature of the application and extremely important in a disaster.

Which is least important/optional? Why?

The least important/optional feature would be the feature to let other communities know where they can best donate their money or items. This feature does not have any immediate and direct impact on safety and livelihood so it can be eliminated if necessary, though it is still important.

How would you ensure that your system is economically viable?

I think this system can be very economically viable. A simple application can be run for free to users and potentially even funded by relief organizations of they came on board. For example, Google might donate the map feature if a good enough case was made to them.

How would the world be a better place if the system was actually implemented?

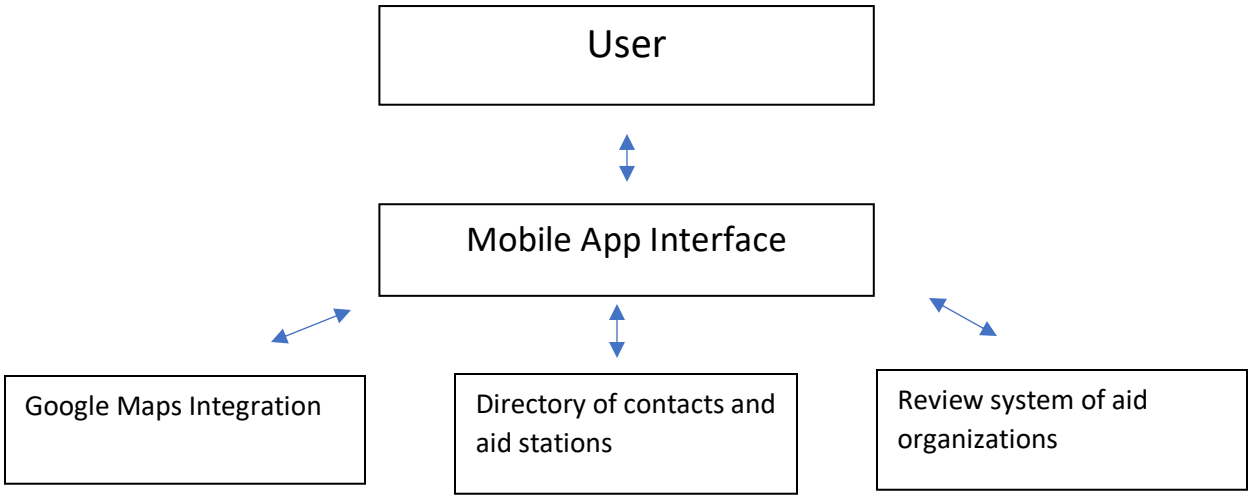
The world would be a better place if this system was implemented because it would save lives and provide a "one stop shop" for users to use in the event of a disaster. Victims will not only be able to have quick access to resources, but aid workers will be able to use the information to best assist victims in the wake of a disaster. And finally, communities across the world will feel comfortable donating money to aid organizations to help. Thousands of relief organizations do wonderful work without very little recognition,

and this application will only help them in their cause, saving lives, rebuilding more quickly, and helping the communities most affected by disasters.

Possible System Architecture

An example of a system architecture that would be most useful for this proposed system would be a mobile one, as relying solely on a website would not be as efficient during the aftermath of a disaster. A mobile application or well-designed browser based mobile site would allow for more ease of use by the users.

The technology would rely on some other factors in the times of crisis. For example, Google Maps in most countries will provide an excellent tool to integrate into the system to provide information on roadways or for users to "drop in" information on road closures or areas to avoid. Google Maps is a very reliable source that will not "go down" during a crisis as it is remotely based in almost all instances. Here is an architectural diagram for how this system might be used:



All three features will be able to be able to be edited by users, depending on their level (victims, aid workers, etc.). This system would be extremely helpful for all involved in the aftermath of the disaster. It would not need any extremely specialized effort, and the developers would only need common knowledge of integration a mobile application and using an API (Google Maps). I would expect that to have a completely well-functioning application with completely fleshed out features, this system would take only a matter of a few months to complete, though testing might take a bit longer.

Overall I believe this type of system would be useful for the aftermath of a disaster, whether it be a mild one or a more serious disaster. It is something that can be integrated and completed prior to any events actually happened and can be readily maintained on servers away from the disaster site to prevent it going "down." This is also economically viable because during and after the integration there will not be a significant cost to creating or maintaining the application.

What are your references?

[1] White, G. B. (2015, August 03). A Long Road Home. Retrieved September 30, 2017, from https://www.theatlantic.com/business/archive/2015/08/hurricane-katrina-sandy-disaster-recovery-/400244/

[2] M. (2017, August 28). Want to help Hurricane Harvey victims? How to donate to legitimate relief groups. Retrieved September 30, 2017, from https://mic.com/articles/184093/want-to-help-hurricane-harvey-victims-heres-how-to-vet-and-donate-to-legitimate-relief-groups#.TnpYws72J

[3] Smith, J., Page, P., & Campo-Flores, A. (2017, September 28). Puerto Rico Aid Trickles In. Retrieved October 01, 2017, from https://www.wsj.com/articles/food-fuel-and-medical-supplies-slowly-distributed-across-puerto-rico-1506622283

[4] Douglas County adopts disaster recovery plan - Colorado. (2015, March 11). Retrieved October 01, 2017, from http://www.douglas.co.us/county-adopts-disaster-recovery-plan/

[5] Matt Morgan Palm Beach Post Staff Writer 6:07 a.m. Friday, Aug. 18, 2017 Western Palm Beach County. (n.d.). Fairgrounds filled need as distribution center for Hurricane Andrew. Retrieved October 01, 2017, from http://www.palmbeachpost.com/weather/hurricanes/fairgrounds-filled-need-distribution-center-for-hurricane-andrew/onj6OePJLZSw6GIXi8uLBP/

[6] Photos: Hurricane Andrew: A look back 25 years ago. (n.d.). Retrieved October 01, 2017, from http://www.palmbeachpost.com/weather/hurricanes/photos-hurricane-andrew-look-back-years-ago/YCnmfZULYDwTXTqDxp99KM/