

Sana

Theme: **Design for Crisis** Rebuild and heal the world with design

23 july 2022 , gurgaon, India

Team



Name : **Rayna Borah** Title Design process,Innovation and marketing



Name : Debasis Borah Title Tech and marketing



Name : **Team Member 3** Title Input and writing



Name : **Team Member 4** Title Role in the Project



Name : **Team Member 5** Title Role in the Project



MENTOR's Name (Optional)

Problem Identified

PROBLEM DESCRIPTION

During disasters, response times are typically long, resulting in insufficient and delayed communication, which can result in the loss of lives. There is very little that the people can do at their level for early preparedness, protection, and mitigation

Crisis Examples: How might Paul a resident who lives in a slum which is crowded ensure that he escape in time of a natural disaster along with everyone before the fire spreads and all the people living in the area are able to escape aswell without waiting for a higher authority which might take time leading to consequences

Narrow down: Natural Disasters Position your problem at one of these levels

- 1. **PERSONAL -**This will be made and then implemented by NGO's or the government
- 2. SYSTEMS/GOVERNANCE This will be made and then implemented by NGO's or the government



After detecting it will give Mitigation Instructions in their local clanguage

Urgency/Importance

WHY IS IT AN URGENT PROBLEM

How can people especially living in rural areas which are crowded know the incoming of a natural disaster or fire in time to escape without overcrowding and mitigate properly ?

A generation that ignores history, has no past and future.

The Bhopal gas tragedy was one of the world's deadliest disasters, with devastating consequences for mankind that will never be forgotten. This tragedy occurred late at night, while everybody was asleep and everything was immediately enveloped in smoke.

Even then, the Bhopal gas disaster did not serve as a wake-up call. It was not the last time a calamity struck. A recent example is that of the Visakhapatnam gas leak which occurred during the pandemic. There is a dire need to consider how to put an end to this.

The issue was that there was no warning of a potential tragedy and the situation was chaotic. Generally, when calamities strike, there are certain signs that warn of the impending calamity in advance, and sensors perform an excellent job of detecting it. If a sensor device had detected the smoke (or any other disaster) ahead of time, people may have been alerted to the disaster a little sooner, and mitigation and protection would have been significantly more effective.



Target User Persona

PROFILE & DEMOGRAPHICS

Job Title:General public Gender:all Family and Social Setting:all Income:poor,below average and average Education: all

GOALS & VALUES

Goals:be able to evacuate people safely Values:Safety Motivations: The bhopal Gas Tragedy

FEELINGS

WORTIES: There is not they can do at their level for early preparedness, protection, and mitigation

Influences: citizens, generally, rely on a higher authority for instructions and updates during the time of disasters which often causes insufficient and delayed communication. There is very little that the people can do at their level for early preparedness, protection, and mitigation

PAIN POINTS

Fears: Sensors getting spoiled Frustrations:tech Challenges:Tech application

Explorations

SOLUTIONS & IDEA

The initial idea was to put Sana on houses where it would detect fire and just give announcements .But that was too simple and more like a fire alarm . So I came Up with the idea of Street lights since they don't burn and don't get destroyed during natural disasters and can be a source of energy .Street lights are present in almost every society and are consistently encountered everywhere which is why it is our target object





Final Solution & Innovation

- This is a group of smart connected devices strapped to a street light pole that will give mitigation instructions in that local language in case of fire disasters or earthquakes in slum areas.
- It warns the neighboring people of the possible disasters through . intercommunication among these devices
- People in the slums usually don't have enough time to respond and since it is congested they can't find a safe way out in time
- Street lights are present in almost every society and are consistently present evervwhere.
- This device will detect fire through various sensors including infrared sensors and give instant mitigation and protection instructions in the local language of that locality so that people can respond instantly. This would allow for instant and efficient communication and updates.

If the disaster is extreme, it will announce directions toward a safer area. If there is a fire in a particular area the infrared sensor will detect the temperature variations and will communicate it to the other nearby poles for advanced announcements in the surrounding area of a possible fire and then make a route towards a safe area with announcements and green blinking lights

OR

An ML model will gather images of the adjacent areas and analyze whether the conditions look safe there and will redirect the people to that place

This same system concept can be used for other disasters like Tsunamis, Earthquakes flooding, etc.

Sana

Poles will intercommunicate to create a route towards a safer area



through temp. Variations

User Experience

- There would be a case strapped to the street light with respective sensors present in each.
- The case would be made of wolverine/plastic which are disaster-resistant materials with the capability to heal themselves automatically. A coating of one of these materials around the case would ensure that the sensors present inside the case do not burst out.



After detecting it will give Mitigation Instructions in twin local clanguage







Design Process

I first thought of all the elements then the order they will follow I took inspiration of Routing System for intercommunication of the devices .The idea of green blinking lights came from traffic lights and I implemented them in a Unique and innovative Way

Fire	Sensor detects fire	Announcementrs in local language	Directions towards a Safe Area	inform about fire

Impact on the Society

IMPACT OF YOUR SOLUTION

The failure of communications systems may cause catastrophic damage to human life and economic activities as people are unable to communicate with each other in a timely manner and with a convenient quality of service. Natural disasters kill **on average 45,000 people per year**, globally. Delayed communications and no prior knowledge is a major cause of this .So Sana immediately warns people about an incoming disaster

Post a representative pic to capture the impact of your solution on your target user in the Next Wave scenario

Sustainability

HOW IS YOUR SOLUTION SUSTAINABLE?

Though the device is low power it must be fed with electricity from weather a solar panel or the Street Light

The Speaker will immediately alert people closest to the Fire

An infrared sensor is the only non contact temperature sensor So its Good measuring very high temperatures safely from afar and can even be used in hostile environments . This is mostly a device with sensors so its environmental friendly.

Since its just sensors it can last a long time with being changed

Post a representative pic to capture the impact of your solution on your target user in the Next Wave scenario

Practicality & Business Viability

I plan on contacting NGO's or the government can implement these .This could be made at an individual level but would not be feasible. This can be installed on any Street light at any time . The sensors can be bought and the design program can be implemented .

Technology stack:

Adafruit Circuit Plaground



Street Light Pole (as a tower for device placement)

360-degree infrared sensor (for fire detection)

Speaker for voice in local language **microcontroller**(to read from the sensor, playout instructions, and communicate with nearby Street Light tower)

Machine Learning: The capability of a machine to imitate intelligent human behavior.