

Piñones Preparation Response Recovery



PROGRAM OUTLINE AND TECHNICAL USER MANUAL

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Created By:

This manual was created by Jack Gomes, Thomas (Cole) Varney, Sarah Hildreth, and Nicole Logrecco in collaboration with sponsor organization La Corporación Piñones Se Integra, and co-researchers Paola Rolom and Shawn Halliburton. This manual was created as the teams Interactive Qualifying Project coordinated through WPI's Global Project Center. We invite co-researches and future students to continue research and add changes to this manual.

Who is this Manual For?

This manual is intended to be left as a guide for all who look to further the program. This may be individuals in administrative positions or who are looking to build upon the PPRR program, as well as any future WPI initiatives regarding the ideas of this program.

Introduction

Though the Piñones community is already a close-knit, family-driven small community known to look out for each other, there is always room for improvement as far as community organization and efficient allocation of resources in times of need. This is especially true in a community where infrastructural issues can drastically change the response time of the government and authorities in comparison to other townships in the area. An example of this is when after Hurricane Maria from the shore of Piñones, community members watched for months as the lights from Isla Verde buildings gleamed across the way, all the while they had to wait months longer before power would be restored to the community. The same goes for running water to the community. Much of the community does not have running water from the town, though there is a water treatment facility right behind the Island that doesn't connect to Piñones households and businesses. These experiences by those who live in Piñones have been shared with another group of WVPI students, a link to their webpage is here:

<https://wp.wpi.edu/puertorico/projects/2021-fall/pinones-emergency-management/>

Reasons like these are why community togetherness is doubly important in communities like Piñones since unfortunately, taking care of each other in times of disaster and need are often the only option. Taking the Piñones community's closeness, togetherness, and desire to help each other and creating a system to bolster these factors of the community as well as organize the community in a more formal and accountable way will ideally decrease recovery time after any disasters of the future that may come as well as increase efficiency and reduce waste of the resources coming from within the community.

Program Outline

1.0 Program Outline

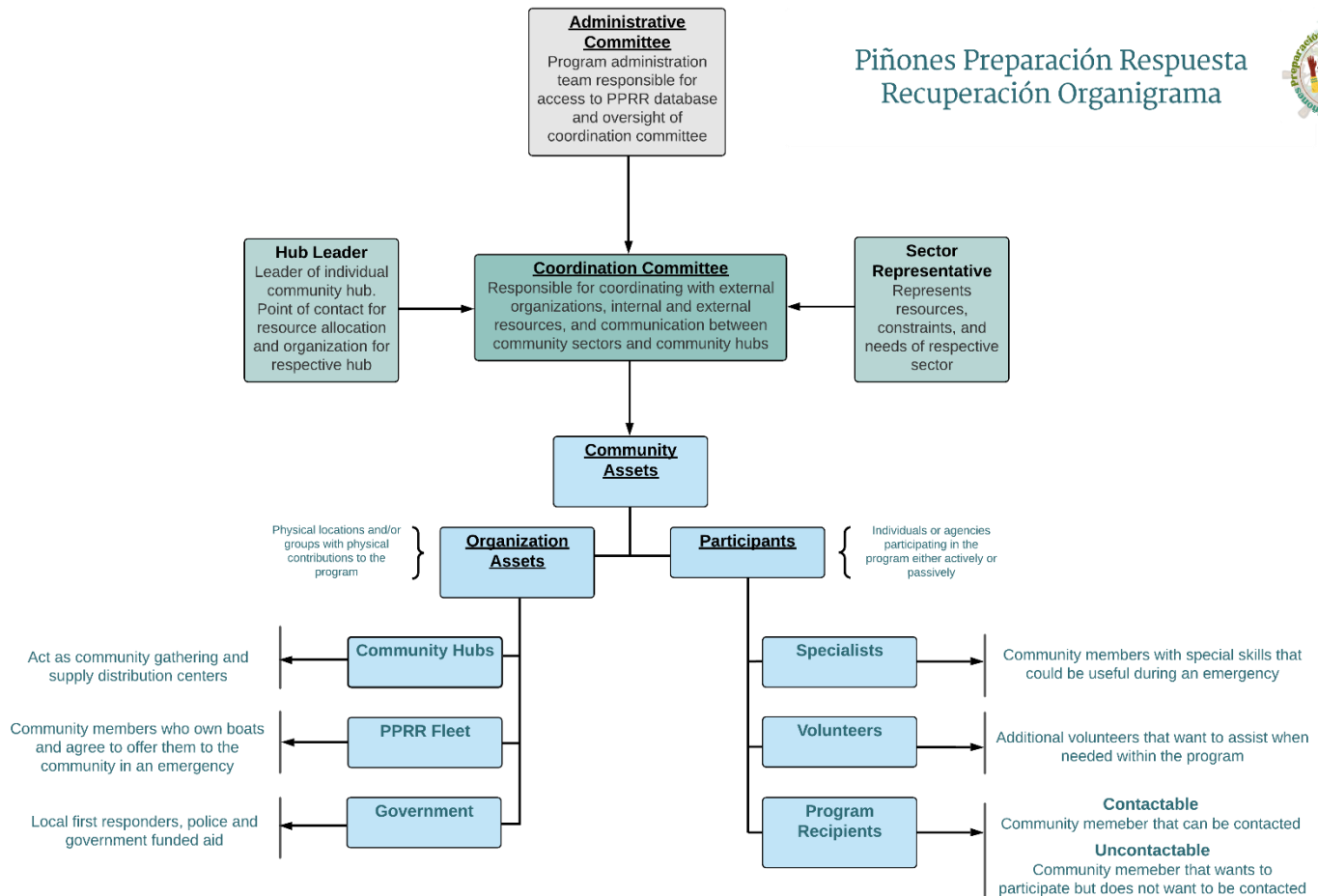


FIGURE I ORGANIZATIONAL STRUCTURE

1.1 Program Name Background

The program name, Piñones Preparación Respuesta Recuperación, was decided upon in collaboration with sponsors. This name translates directly in English to Piñones Preparation Response and Recovery. This name was settled on because it best conveys how the program is not solely centered on recovery efforts after a disaster, but also has a large focus on ensuring the community is prepared for these emergencies.

1.2 Program Mission

The purpose of the PPRR program is to raise awareness and preparedness for times of emergency through community togetherness. The program creates a network of assets in each sector of Piñones and will allow administrative personnel to pinpoint where resources are

needed during emergencies. A main objective would be to provide extra structure beyond regular community organization to assure that every member of the community is accounted for and has access to assistance as much as current distributions of resources allow. Ideally, the program will also serve as the organizing force behind delegating locations as community hubs and designating who belongs to which hub as well as keeping track of the community structure of the community members to community hubs.

Another facet of the program's mission is to help organize and centralize community outreach. In the future, community outreach initiatives like town halls, open houses, and workshops will be fostered and enriched through the infrastructure provided. Some ideas for workshops that could be implemented through PPRR in the future are both classes and discussions on a variety of topics hosted by community members or outside organizations. Initiatives for community enrichment like food drives and youth clubs will also be welcomed by the program. Ideally, the overall mission of PPRR is to foster growth, togetherness, education, and recovery in times of need through organization and structure within the community.

Lastly, the program seeks to include the larger overarching sectors within Piñones and with time, aspires to present every community member with the option to participate. Due to the nature of the program in its early formative stages, this will take continuing efforts after the WPI team IQP ends to allow the program to reach every corner of the community and blossom to its full potential.

1.3 Program Flow

In this section the interaction of every participant within the program is explained. Starting with the administrative committee, they are designated toward organizing and furthering the programs foundation. From here admins will pick individuals from the community who they believe are a good fit to be on the coordinating committee, although community members can also volunteer to be a part of this committee. Those who are on the coordinating committee, will also be the hub leaders and sector representatives. The sector representatives will account for community members and be the voice of concern for their sector while the Hub leaders have the responsibility of accommodating community members, emergency resources, and necessities in times of need. There will be much overlap between the two positions such as holding the responsibilities of keeping emergency plans up to date and reporting information back to coordinating committee and admins. These individuals hold more of an authoritative role withing the program.

As seen in figure 1, after the coordinating committee, which is made up of the sector representatives and hub leaders, comes the largest pool of the program which is the community assets. The Community Assets are made up of two major categories, Material Assets and Participants. The major category within the Participants are the Specialists. This includes community members with specialized skills that can be called upon by program officials in time of need. Examples of these specialists would be; carpenters, mechanics, emergency personnel,

etc. The reason this is a primary group is due to the value they bring to the community through their personal talents, which advances community self-sufficiency. After specialists we have volunteers. This category is made up of individuals who have committed to contributing to the program when available and called upon. The volunteers come after the specialist due to the fact that if a specialist needs a hand with a job the volunteer can supply the help. Following volunteers, is the government. This includes first responders and any aid funded by the government. This program is intended to be as self-sufficient as possible but the government can always be used as an extra hand when trying to recover. The last category listed within the participants category are the program recipients. The reason this field is listed as last is because they are not specifically supplying the community with anything but they are still in need. So, the goal is that the previous mention specialist and volunteers will be the ones helping the program recipients. It should be noted that hub leaders and sector representatives should know information about those in their area, because not all participants will be able to be reached out to during the emergency so it would be important to know the needs of those within their community.

2.0 Organization Structure

Chapter 2.0 will outline the organizational structure of the program from a community perspective. Although the program relies largely on community involvement, there is necessary structure between individuals with leadership roles and their responsibilities that is custom to change as the program develops.

2.1 Administrative Committee

The Administrative Committee is made up of the individuals who are in charge of ensuring the system stays active in community engagement. This committee will provide the program with their visions, leadership, and community insights. This role also entails making sure individuals in designated roles are completing their tasks. They will also be the highest-ranking position within the management system that will be in charge of sensitive and communal information that is collected through the program. In Piñones the administrative roles will belong to COPI and co-researchers.

2.2 Coordination Committee

The Coordination Committee will be made up Hub leaders and Sector Representatives, as well as any others within the community who wish to have a say in the operation of the program. The primary responsibility for the Coordination Committee will be to assess the largest needs and concerns within the community and find ways to remediate them given the resources available to the program and within the community. The coordination committee also will have a planning role in terms of initiatives and activities through the program. Some of these activities could be community get togethers like open houses, town halls, hosting workshops with classes and discussions, community enrichment like food drives or youth clubs, or anything beneficial to the community that may come to mind in the future.

2.3 Sector Representative

The role of Sector Representatives is to advocate and communicate between themselves and ensure that each sector is accounted for within the program. Sector representatives will also carry out the roll of recruiting community/hub leaders within each sector.

2.3.1 Sectors

Within Piñones there are a total of nine sectors. The program foundation and database have three of the most known and populated sectors mapped out, as shown in figure 2 below. The section mapped in red is known as La Torre, green is Piñones, and orange is Terraplen. The other six sectors are not as well-known as the three the program has mapped so co-researchers and future WPI projects will need to continue research on the exact locations of the remaining sectors.

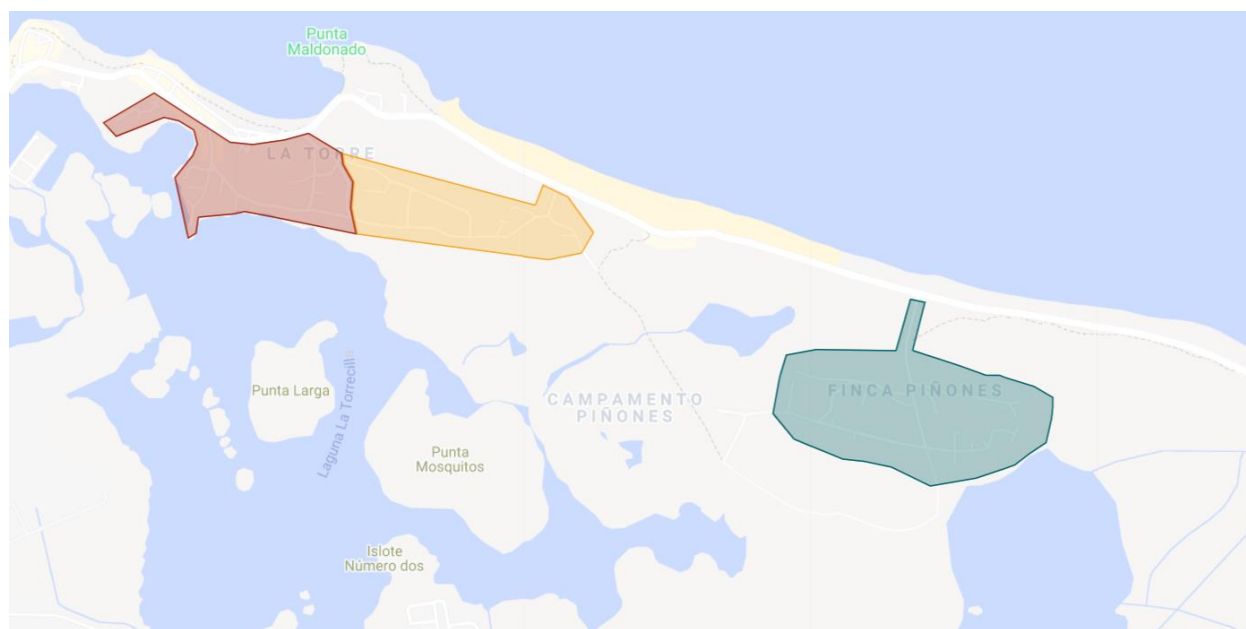


FIGURE 22 MAP OF LA TORRE (RED), TERRAPLEN (ORANGE), AND PIÑONES (GREEN)

2.4 Hub Leader

Hub leaders have a similar role to sector representatives in that they are also responsible for advocating for their community hub and its corresponding participants. They're also responsible for organizing activities and program initiatives through PPRR and its following coordinating committee. In times of emergency or need, the hub leader's role is considerably important. During these times, it is the hub leaders' job to do the best they can to check in on the community and to organize the provision of aid in whatever form that may be. Though vague, the hub leader ultimately is the administrator of their community hub, overseeing all activities that are partaken.

2.5 Community Assets

The Community Assets make up the largest portion of the program. This group involves the various specialist and establishments within the community that provide various points of value to the community. These people could be people with a medical background or certification, owners of generators, or even able-bodied person(s) who have prior experience rebuilding houses or are willing to help with recovery efforts after a storm. Every individual has unique skills, talents, and abilities and ideally, the program will encourage these individuals to be 'part of the club' and provide their knowledge, expertise, and occasionally their willingness to work to the program. In the upcoming subsections the different types of community assets are touched upon and laid out to give a sense of what the program would see as a 'Community Asset'.

2.6 Organizational Assets

2.6.1 Community Hub

Community hubs are best described as small-scale community outreach center of operations within the program. Though they are not always actively working with the program, during times of activity they will be centers for holding occasional workshops and initiatives (see 2.4) and in times of emergency or disaster will act as plan of action centers where community recovery and aid can operate through. There will be many community hubs throughout the Piñones community varying in size depending on its associated establishment. There also will be multiple community hubs per sector due to the constraints of each establishment willing to designate itself as a community hub as well as the large sizes of the sectors themselves.

2.6.2 PPRR 'Fleet'

The PPRR fleet mentioned in the program accounts for boat owners within the Piñones community. The hope for the program is that admin, co-researchers and future WPI projects coordinate with this group of community members allowing for the waterways surrounding the communities to be utilized as escape routes. Another use of this group would be in times of medical emergencies using the boats to evade traffic, shortening the time it would take individuals to receive medical attention.

2.6.3 Government

The government under certain situations will ideally also be in coordination with PPRR. Though many in the community feel local government has not reliably provided aid to the community in past emergencies, hopefully with the assistance of a structured program like this one, organizing aid and help as well as applying for grants or new community projects will have more weight due to formal organization of the community. In times of natural disaster and emergency, the governments at various levels have unique abilities and resources to provide essential aid to communities.

2.7 Participants

2.7.1 Specialists

The specialists within the community are those who possess a skill or have experience in a field that is beneficial to the community in times of need. The kinds of specialist that will be most favorable for the program will be those who have skills in fields such as auto-mechanics, repairmen, nurses, and other first aid workers. Though those specialists are important, other specialists will be those who provide customer service care as well such as community members who specialize in areas like hairdressing and artistry.

2.7.2 Volunteers

Volunteers are the lifeblood of the organization as well as the community's strongest asset. They would be described as any individual that is willing to help in any way. Volunteers are also important in this scenario because every aspect of the program relies on the presence and willingness of the public and involved parties to help. PPRR heavily relies on volunteers'

willingness to assist since all events and initiatives will require follow-through from volunteers for them to be successful.

2.7.3 Program Recipients

Though everyone listed so far is considered to be a participant of the program, this group is made up of those who are passive within the program. Seeing as many people within the community, especially the older members are often an issue to get in touch with there is a necessity to divide the program recipients into those that are Contactable and those who are considered Uncontactable.

Contactable

This group is explained by being the ones within the community that when something happens you know you can get in contact with them. It is good to know who belongs to this group because though they will still need assistance; you know you call them and don't need to have a structured plan in place.

Uncontactable

By identifying and designating a group of people to be "Uncontactable", this allows for the hub leaders and other leaders to have a plan in place to help this person knowing there will not be much communication in an emergency.

2.8 Program Recommendations

2.8.1 Identify All Sectors

When creating a program of this size, breaking down areas of authority into small units helps greatly with reducing individual's workloads. The three sectors that are currently mapped and displayed above in figure 2 are the three largest sectors within the Piñones community as well as the most densely populated. Although there are 9 known sectors, only three are currently included due to the ambiguity of where their borders are as well as the small number of people who live there. Going forward with this program, it would be beneficial to identify the rest of those sectors to reduce the amount of people per sector and increase community inclusion to all corners of the community.

2.8.2 Create PPRR Fleet

Currently, the PPRR Fleet is an idea that has been brought up by community members, sponsors, and advisors. Recruiting boat owners who are willing to help in a time of need will allow for concrete escape plans via the surrounding waterways to be put in place. Within this group, boat owners will be able to discuss their thoughts and insights based on their knowledge of waterways within the community. These discussions can lead to furthering plans that can distribute boating efforts evenly throughout the Piñones. This idea would be possible due to the multiple different access points to water with the Piñones community. Ultimately, this would reduce evacuation time in emergencies and enhance efficiency of distribution efforts.

2.8.3 Addition of Technology Committee

As currently planned, the administrative committee is responsible for the technical aspect of the program. It is recommended that a new branch of the program be created whose sole purpose is to work on the technological side of things. This will split the division of labor between the two groups, allowing the administrative committee to focus on more of the community aspect of the program and not have to worry about technology. Also, not everyone in this committee has a large amount of previous experience working with technology in the past. Introducing new individuals to the program who are familiar with the technology used will allow for the program to be more efficient.

Technical Manual

3.0 Foundation to Technical Overview

PPRR Overview:



FIGURE 3 PROGRAM OVERVIEW

In figure 3 users are shown a general overview of the program's movement. The diagram includes the foundational pieces of the program such as individuals in leadership roles in charge of coordinating community events. From there the diagram moves to the technical pieces of the program where community and community member information is kept and organized. The last section of the diagram displays the togetherness of the community with prepared resources and assets.

3.1 Technical System

The overall vision of the technical system is that providing infrastructure to a program that sets out to better prepare and organize the community will greatly bolster systematic coordination with the expectation that the platform will grow and expand and even maybe change direction in the future to better address the needs of the community and the PPRR program. Due to the nature of the program in its establishing stage including coordinating and organizing for a large subset of people in the community, having a system that provides distributed support in organizing and visualizing the facets of the program in the community.

Along with this, as described in chapter 1.0, there are many moving parts. A lot of people will be involved in the program as currently proposed with many different roles. The complexity also is derived from the fact that of all these individuals, much of the activity included in the program is spread out throughout the community geographically. In addition, the fact that community hubs are all individual different satellite establishments within the program beckons for a solid system to organize them all.

This technical system serves to provide the following benefits:

I. A Centralized Database with Relevant Community Information

The database is designed to organize the different assets within the community into spreadsheets that allow for the data to be sorted through and properly utilized when necessary. The database contains the information of different community leaders, community hubs, and information about community members skills and needs. In order to keep the data organized the different areas of information will be stored in different spreadsheets, for example community hub information and participant information will be stored in separate spreadsheets.

2. Maps of the Community

The program will provide maps featuring important locations in the community like the different sectors and neighborhoods. The provided maps will also contain emergency evacuation routes, community hub locations, points of safety like high ground and towers, as well as dangerous of hazardous areas like flood zones or rough ocean conditions. Lastly, these maps will also denote locations for emergency response and other authorities' locations.

3. To Foster Feelings of Safety and Preparedness Amongst Community Leaders and Members

Throughout Piñones, community hubs will help in assisting community accountability in times of need. Community hub leaders, as well as volunteers will take on the role of checking in on individuals and making sure that community members' needs are taken care of. This system will increase efficiency of resource disbursement throughout the community.

Before continuing it is important to note that when handling and personal or sensitive data it is necessary that the correct privacy precautions be taken.

3.2 System Architecture

The technological architecture of the system largely will be hosted on the cloud through the Google Drive Suite. Almost every aspect of the system can be shared between Google accounts, allowing as many users as desired to take administrative roles. This section will discuss each aspect of the system's technological side, including which technologies are used and how they link together. Figure 3 describes the flow of the system's architecture.

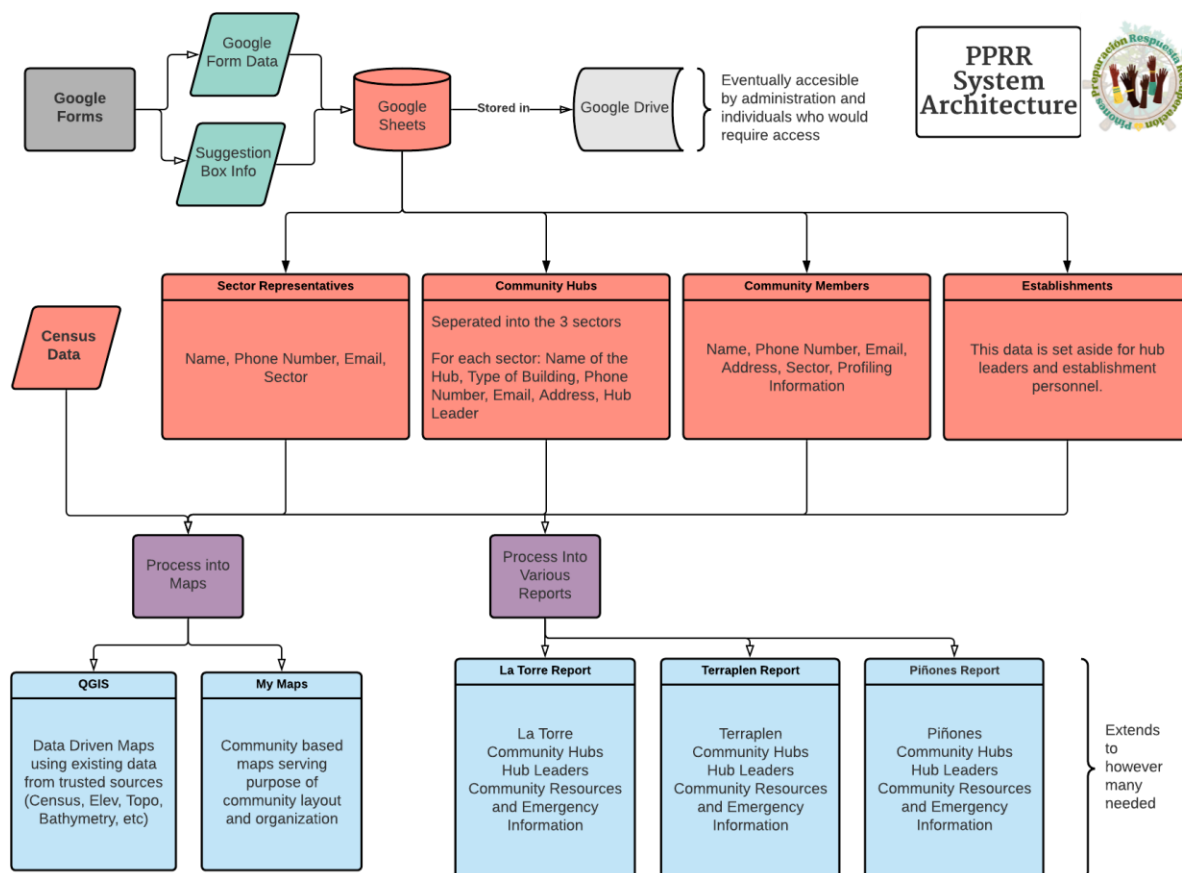


FIGURE 4 SYSTEM ARCHITECTURE CHART

3.3 Data Collection - Google Forms

To effectively prepare for and respond to an emergency, it is important to know which community members in specific areas will need what resources. Location, needs, and other profiling information will be collected, however it is important to remember that this information is sensitive, and privacy needs to be protected. Recording the location and resources of the community hubs and hub leader information is also vital. Gathering this data and inputting it into a database will allow easy organization and access for the admins.

Collecting data from the community will be achieved through the dispersal of questionnaires, both on paper and online. The online version of the questionnaire will be the primary point of data collection since it will ultimately be integrated with the following aspects of the system, allowing automated updates.

The platform used for these online questionnaires is Google Forms, as part of the Google Drive Suite. This platform was chosen for data collection due to its streamlined ability to save data to shared documents and update it in real-time. Upon a user's submission of a new response, Google automatically creates a new entry in the database for the submission.

Backtracking a bit, since this is ultimately the first stop the data takes in the system, it is important that every person submission makes it online into the database. This means that anytime a user opts to take the questionnaire via physical paper copy, somebody in an administrative role must manually enter the response into a new form entry so that the entry makes it in the database and is operable in future operations.

3.4 Data Storage - *Google Sheets*

The primary platform used for data storage or 'database' functionality is Google Sheets. As previously mentioned, all of the data collected via Google Forms will automatically find a home in a Google Sheets file somewhere in the system folder. The type of data collected was based on organizations participating in the PPRR program as well as sensitive information regarding community members. As noted above the security of this information should be taken seriously. It was decided to use Google Sheets due to its ease of access, easy maintenance, real-time updating and integration capabilities, and its low cost (it's free). These attributes make it the perfect candidate to allow efficient and easy storage of data for the use of this program.

3.4.1 Tables and Fields Stored

How the data is stored in the database in tables is as follows:

1. **Community Member Form Data** (questions can be seen in appendix)
2. **Establishment Form Data** (questions can be seen in appendix)

Which will in turn be filtered into tables as follows

1. **Sector Representative Table**
2. **Community Hubs Table**
3. **Program Participant Information**

3.5 Map Creation

A large aspect of the program will include the creation of maps that lay out the data of the community found in our form data. The first goal of the maps is to use existing data in combination with the data procured through PPRR to analyze geographic patterns within the community to better understand the needs in general as well as in times of emergency. This goal is where a lot of the census data comes into play. The United States Census Bureau has databases online that easily interface with GIS platforms. The second goal of the created maps is to create informatics and easily digestible medium to display the established community hubs throughout the community as well as sectors of the community that would belong to each community hub. Ideally, these maps would also have instructions included on what to do in emergency situations as well as eventually emergency evacuation routes that have been deemed possibilities in times of dire need.

3.5.2 Google My Maps

Google My Maps will also be a greatly beneficial mapping platform used in this program. More public-facing maps will be done in My Maps due to its ease of use, ease of continuation and maintenance, and its easy integration with Google's cloud suite platform Google Drive. Also, My Map's simplicity, familiarity (due to the fact that it's basically Google Maps with a customization plugin), and ease of information digestion make it a great mapping medium for use in emergency situations.

3.6 Report Generation

Generating reports derived from community participant information will serve as another way to properly synthesize the data of involved community members, leaders, and establishments. Using automated tools like Autocrat, which is an extension for google sheets, the information stored in the database(s) will be pulled and inserted into report templates to easily view data in the manner(s) that provide the most insight and benefit. A few examples of reports that will be generated are as follows

4.0 User Manual / Instructions

4.1 Attaining Access to Materials

4.1.1 Gaining Access from Administrator

The first step to one's ability to interact with or change the materials in the system is to gain access to the specified materials. Luckily, doing this is very simple. All that must be done is that someone who already has administrative access to the documents must 'share' them with your Google Gmail account. Once they have been shared with you, logging into Google Drive, Google My Maps, etc, will provide access to the materials.

4.1.2 Finding / Viewing Materials

- In Google Drive, the materials can be found under the 'Shared With Me' tab.
- To Access My Maps
 - a. Log Into Google account with
 - Gmail: WPIPPRR@Gmail.com
 - Password: PPRRAdmin
 - b. Search My Maps
 - c. Click on Link to My Maps
 - Homepage with the maps already created should appear
- Are there any others?

4.2 Understanding Materials

Chapter two gave general information on the technical aspects used within the system. This section, 3.2 will dive deeper into how these different aspects are used specifically in the system and what will be expected when one looks at them.

4.2.1 Using Google Sheets

There are already Google Sheets that are created and built to store the data initially collected. The spreadsheet is set up with multiple tabs all for the different aspects of the information. The different tabs are named Sector Representatives, Community Hubs, and Community Member Information. There are also two tabs for the forms but that will be discussed later.

4.2.2 Using Google Forms

There are two google forms in the system that are used for data collection. The first form is designed with questions about the different community members and the resources they have as well as if they are willing to lend resources during emergencies. The second form in the

system is designed to collect information regarding different establishments that can possibly be used as community hubs during emergencies and disasters.

4.2.3 Using Google My Maps

The Google My Maps is set up with multiple layers explaining different aspects within the community. The base layer uses shapes for the outlines of the different communities within the Pinones area, the shapes are shaded in with different colors to give the areas distinct outlines. The next layer is the flood and high zones of the Pinones area, with once again colored in shapes showing the different zones. The next layer is the layer pertaining to the community hubs. These hubs are displayed on the map with markers that, once clicked, display information about the hub such as hub leaders, capacity, and other information regarding resources. The last layer on the map is dedicated to the other resources within the community, similar to the community hubs, the resources will be marked with symbols relating to the resource and once clicked on, more information will be displayed about the resource.

4.3 Creating New Materials

4.3.1 Google Form Integrated with Google Sheets

As previously mentioned, when creating a Google Form there is the option to link it to a Google Sheet. What this does is cause all responses from the Google forms to be automatically uploaded into a Google Sheet. For this project, the Google Form titled Community Member Form is fed into the sheet called Community Member Information, and the form titled Establishment Form is fed into Community Hub Information.

4.4 Operation Manual

4.4.1 Creating a new map on Google My Maps

1. Search for Google My Maps on Google homepage.
2. Once there, click on the first link titled Google My Maps
3. Once on My Maps website, click on the button that says “create new map”. This will load a new map with no layers on it.

4.4.2 Adding data from Google Sheets to My Maps

1. In order to add data to the Map, you need to first create a new layer, to do so click on the button “add layer” in the left hand side dialogue box.
2. Once a new layer is created, to add the data from the spreadsheet, you will click the button that says import and a dialogue box will appear with 3 options, “Upload”, “Google Drive”, “Photo Album”.

3. Click on the Google Drive box which will bring up all the Sheets within your google drive, select the sheet with the data that you wish to map.
4. Once the sheet is selected the box below will appear It, it is important to make sure that for this box Latitude and Longitude are selected because that is how My Maps will know where to place the markers

Choose columns to position your placemarks

Select the columns from your file that tell us where to put placemarks on the map, such as addresses or latitude-longitude pairs. All columns will be imported.

Name ?
 Skill and Contact Information ?
 Neighborhood/Sector ?
 Latitude (latitude) ?
 Longitude (longitude) ?

[Continue](#)[Back](#)[Cancel](#)

5. Hit continue once you have the latitude and longitude selected. The next box that will appear will ask you which column from your data set you would like to be the title of the markers. Choose the column that will best describe the data being mapped.

Choose a column to title your markers

Pick a column to use as the title for the placemarks, such as the name of the location or person.

Name ?
 Skill and Contact Information ?
 Neighborhood/Sector ?
 Latitude ?
 Longitude ?

[Finish](#)[Back](#)[Cancel](#)

6. Once you hit finish, the points will be added to the map

4.4.3 Creating a new form on Google Forms

1. Open Google Drive with the account you plan on using for your forms to get information and collected answers.
2. Select Google Forms and Create
 - a. Once here you can Share the form with other creators.
3. Once you have the initial form open, you can name it and add a short description of your newly created form.
 - a. Before adding your desired questions onto the form, you have the option to customize the theme of the form by using the paint tool in the top right. This will allow one to change the color and font of the Google Form.
4. When creating each question, you want to add there are many ways you can format your required answers such as . . .
 - a. Short/Paragraph Answer
 - b. Multiple Choice
 - c. Checkboxes
 - d. Drop down

There is also an option to have individuals upload file types to the form. Along with organizing your answer requirements in different ways you are also able to add pictures and videos to each question box.

5. Once you have one question you can add more by clicking the plus button on the right or even duplicate the question you have made.
6. Along with adding more questions you can add different sections to your google form by clicking the equal sign.
7. Once you have completed your Google Form, using the top right share button you can copy a link to send out the finished form.
 - a. Using third party sites with a copied link you have the ability to create a QR code for your form.
8. Once your form is sent out and completed by others, on the top of the creators page you have the option to look at and manage responses. You can see responses as a whole or as individual responses.

- a. You have the option to display responses for each question in different ways such as; charts, barcodes, and graphs.

5.0 Drawbacks with Current System

5.1 Automatic Data Updates to Maps

One large problem encountered when working on this system was figuring out a way to have the data on the map be automatically updated when new data was inputted to the Google Sheet. All good systems should be as automatic as possible so the system manager does not need to spend time manually inputting data, but in this area a problem already exists of establishments not having proper addresses, which results in GPS coordinates needing to be manually inputted into the spreadsheet in order for locations to be mapped. Seeing as this manual input of coordinates is needed, it would be nice if once these coordinates were added to the spreadsheet the map automatically refreshed and pinned the new locations on the map. The way the system is set up now you must delete the layer then import the spreadsheet data whenever you want updates, though it is quite simple it still adds that layer of manual labor. One work around that was attempted was to use the extension for Google Sheets called Map My Sheet, though this extension was successful in automatically updating when new data was added, it lacked the ability to add shape files to the map which is needed when outlining the communities and their borders. Ideally there will be an online platform that allows for shape files to be uploaded to it and has the ability to automatically update when new data is added to Google Sheets.

5.2 Need for GPS Coordinates

As mentioned above a difficult obstacle that arises when trying to create a mapping system in a community such as Piñones, is the ability to find proper addresses for establishments in the community. Many of the streets in Piñones don't have real names, and the locals just use local knowledge when giving directions. So, when tasked with mapping these locations you must rely on GPS coordinates in order to gain a confident idea as to where the establishments are. Though they are easy to obtain using google maps when you know where the building is, if you do not know where the building is you would have to walk around the community until you find the building and take the GPS coordinates of your current position. The need to do this requires a lot of work from the system admins standpoint whereas finding a better way to gain the coordinate info

Appendix

Establishment Form Questions:

- What is the name of your establishment?
- What type of establishment?
- Telephone number?
- Email?
- Establishment leader's name, phone number, and email?
- In which sector is your building located?
- How many people can comfortably fit in your building / what is the capacity of the building?
- How many families approximately belong to your organization?
- Does the building have a generator?
- Does the building have a first aid kit?
- Does the building have a landline?
- Has your establishment been used as a community gathering center in the past?

Community Member Form Questions:

- Name?
- Nickname?
- Residential Phone?
- Cellular?
- Email?
- Address?
- What sector do you live in?
- How many people live in your home?
- How many people over 70 live in your home?
- How many people under 18 live in your home?
- How many adults and/or children have these needs
 - Bedridden
 - Wheelchair
 - Oxygen tank
 - Position bed
 - Diabetes
 - Asthma
- Do you need diapers? If so, what size.
- What skills or abilities do you possess to support the community?
 - Plumber
 - Electrician
 - Nurse

- Paramedic
- Carpenter
- Automobile mechanic
- Computer technician
- Refrigeration technician
- Fisherman
- Air conditioner technician
- Doctor
- Social Worker
- Do you have a generator?
- Do you have a solar powered generator?
- Do you have a landline?
- Vehicles available in case of an emergency?
 - Boat
 - Car
 - Van
 - Truck
 - Bus
- What certifications do you have?
 - CPR
 - First Aid
 - Lifeguard
 - Has emergency backpack
- Do you have an escape/evacuation plan for emergencies?