VOLUNTEERS DEPLOYMENT AND DISASTER SITE

MIS 730-A
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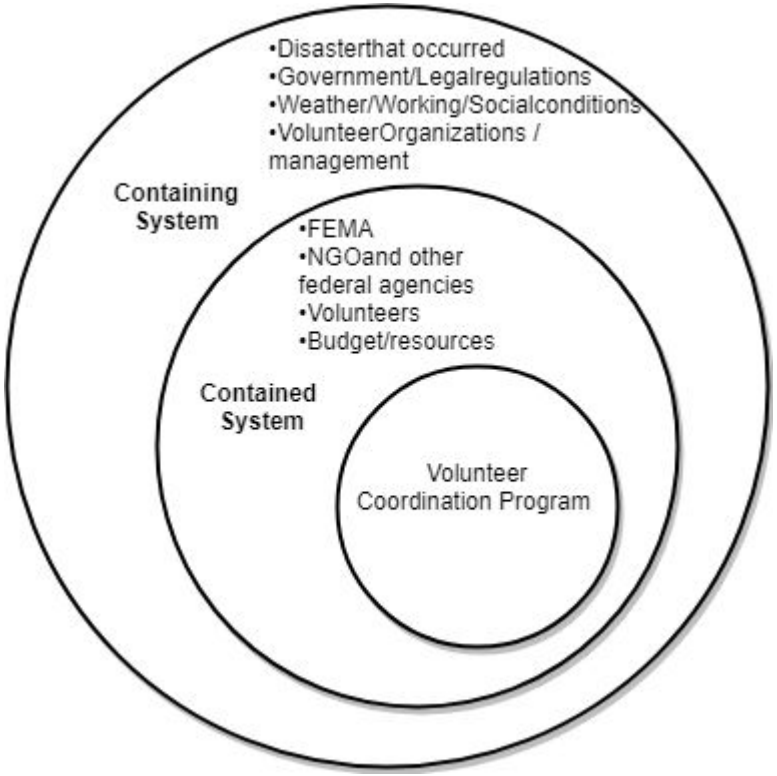
Ackoff 3 Step Process



Problem Statement

" Federal Emergency Management Agency (FEMA) has asked you to design a system to help coordinate the effective deployment of volunteers after the advent of a disaster such as an earthquake, hurricane or major flood or fire. "

Stakeholders – Key Activities and Goals

Identified Stakeholders:

1. Victims
2. FEMA
   - Response team – planning / on field
3. Non-Governmental organizations providing volunteers and other federal agencies
4. Volunteers
   - Organized/registered
   - Unorganized/unregistered/spontaneous

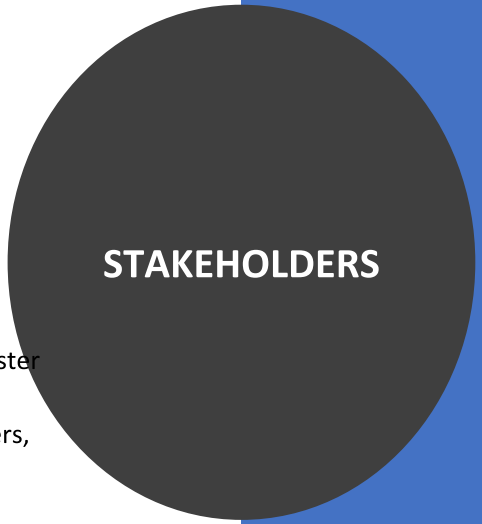
Stakeholders Key Activities:

Victims - Receive aid and assistance, exit disaster area

FEMA - Coordinate response, obtain volunteers, resource management

NGO's/Federal Agencies - Local incident management, volunteer sourcing, control center formation

Volunteers - Provide aid, utilize skills and time effectively, travel to/from response areas



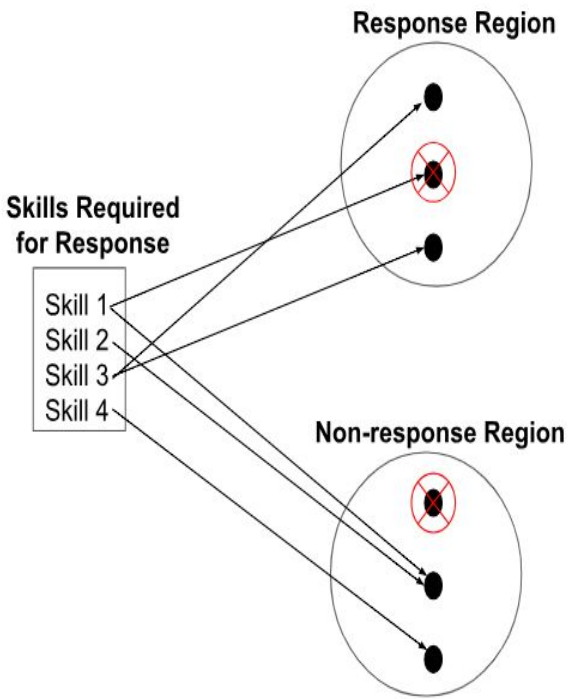
Goals (based on identified stakeholders above):

- Provide relief faster to victims by improving efficiency in volunteer management
- Develop an easy, fast and efficient way to coordinate volunteer efforts – both on-site and online.
- Prepare a volunteer solution which is an asset not liability for the response team – it should not take away response team's time and effort from what they are doing during rescue efforts
- Easy for volunteers to get informed and jump into action with as less hand holding as possible

Problems/Challenges related to Volunteer management

- How to coordinate requirement vs availability of volunteer? (schedule/need-based coordination)
- How to priorities relief programs and schedule volunteers based on that?
- How to assess the situation for how many volunteers are needed with what kind of skill set
- What is the best way to divide Volunteers groups? Maybe based on their competencies/skills and locations
- What is the best way to schedule transportation, stay of volunteers?
- How to coordinate among several volunteer agencies and volunteer groups?
- How to identify when an area is safe for deployment?
- Volunteers may not be available. What to do if a volunteer is unreachable?
- Confirmation that volunteers can accept an assignment/have reported to it?
- How volunteers are allocated if they possess skills that are required, but they are not close to the response area
- Orientation, training and registration of volunteers at each disaster site.
- How to manage unregistered volunteers – who are local, unskilled but are motivated to help?

Problem Scope



1. Volunteers (●) may be located outside of the response region

2. Depending on the nature of the disaster certain skills may be required

3. Volunteers that possess required skills may be located outside of the required response region

4. Volunteers may not be available (⊗)

5. Volunteers may have multiple skills that can be utilized as needed

6. Multiple volunteers may possess the same skills

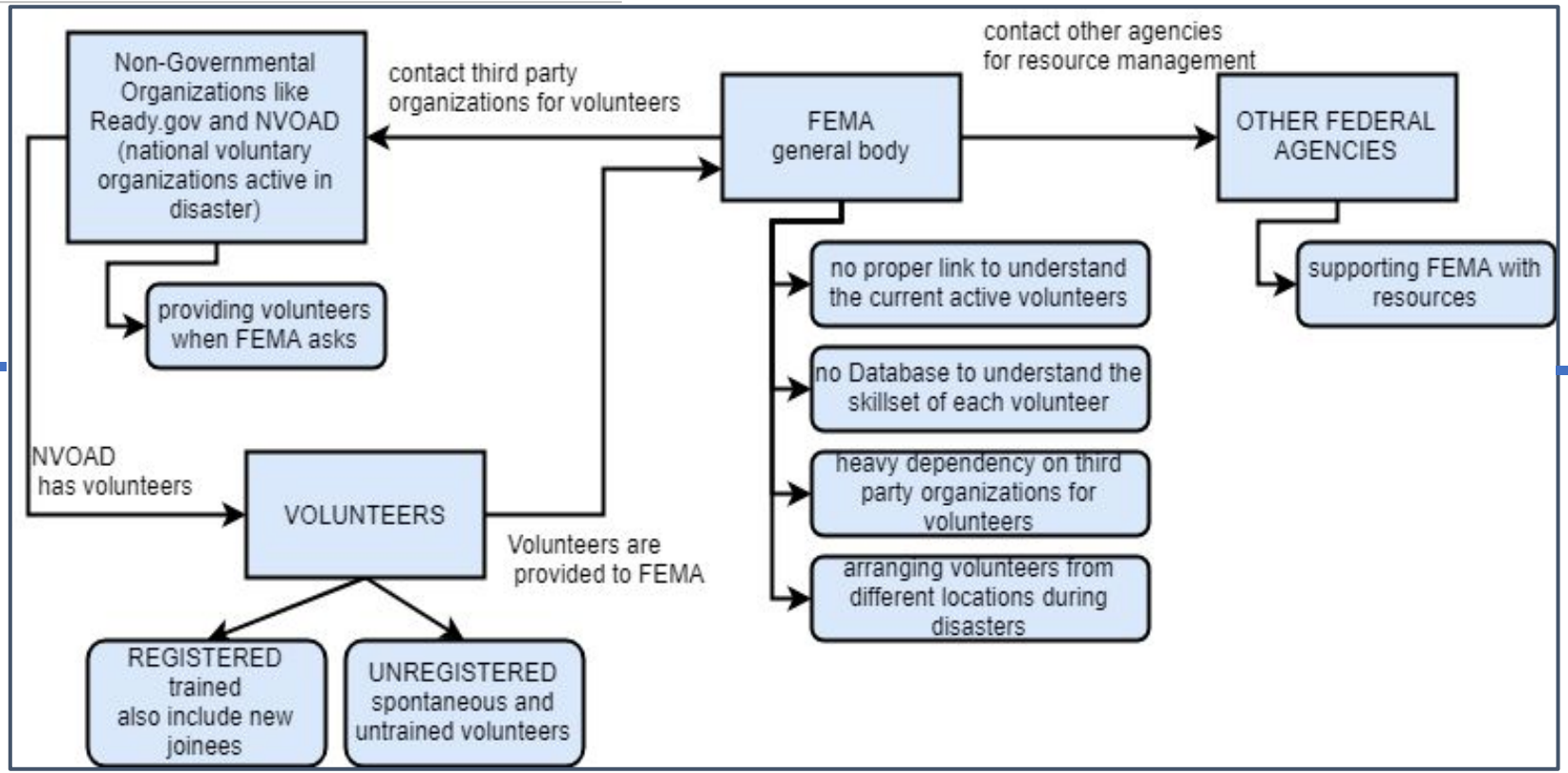
- Based on our research and detailed problem scenario review, we've narrowed our problem scope to:

"improving volunteer management program based on three key issues - Location, Skill, and local/unregistered volunteers".

- Here is a preliminary view of coordination problem where volunteers are not available either due to 1) location or 2) skill sets.

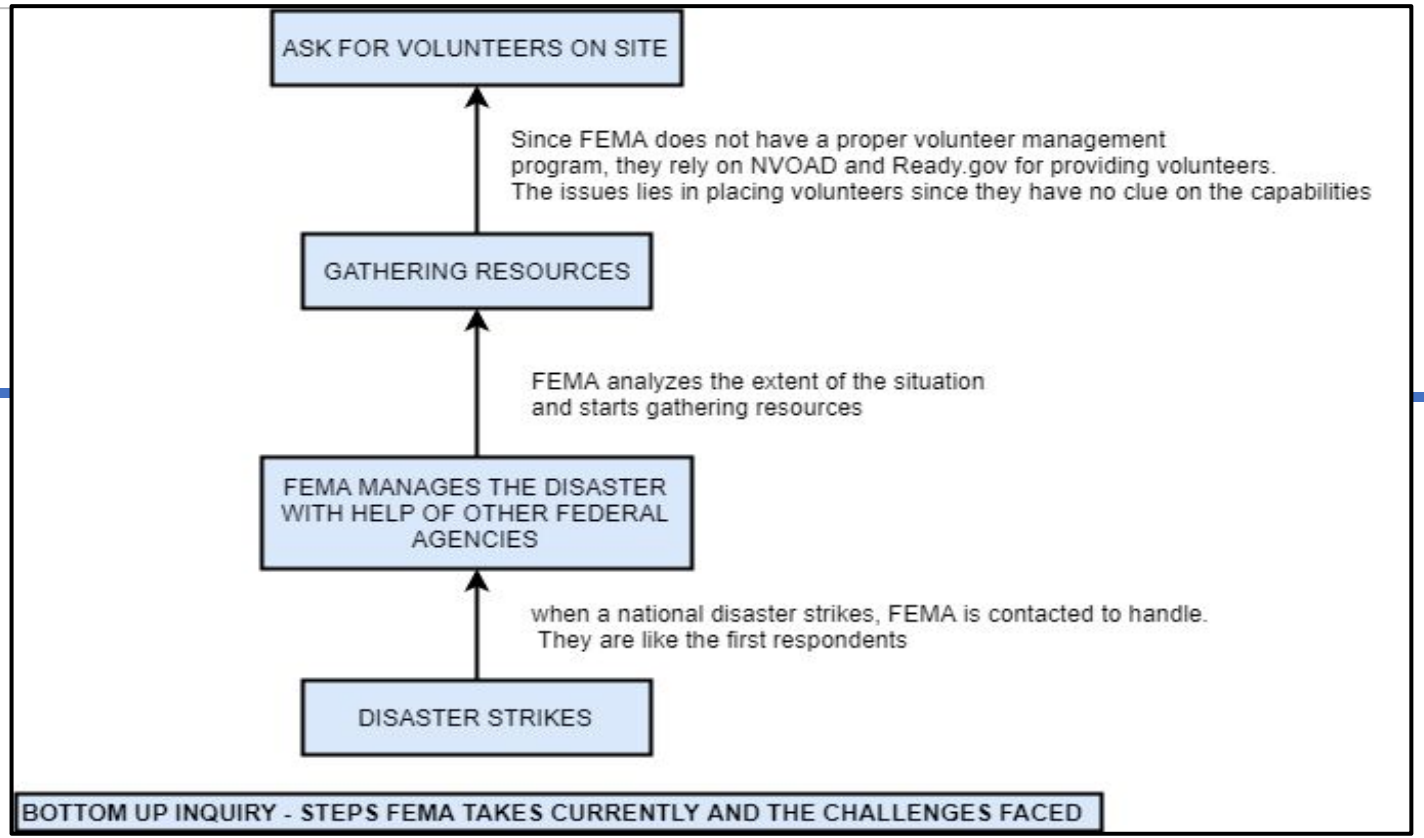
- Third problem to tackle is how to efficiently manage unregistered/unskilled, local volunteers who are most motivated to help on-site.

Problem Space – Stakeholder Structure Diagram

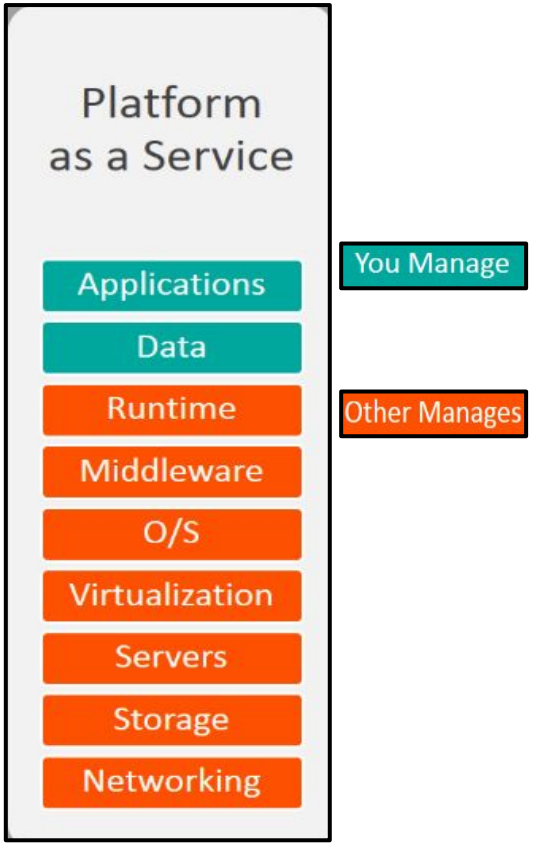


The structure represents the different stakeholders and the activities along with the problems they face.

Problem Space – Bottom Up Inquiry



Solution 1



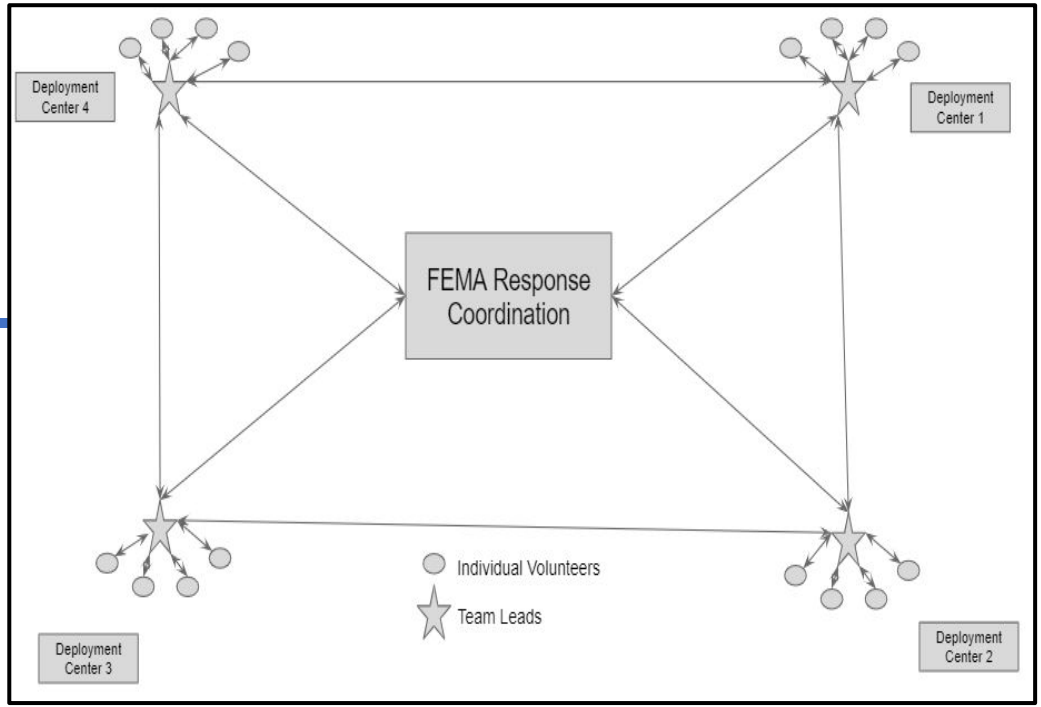
- Leverage third-party technology to facilitate integration and coordination efforts for volunteer management

- Hire **Volunteer Hub - a Platform-as-a-service** for volunteer management efforts

- It is a ready-to-use, flexible solution which offers many of the services we need to coordinate our volunteer management efforts

- It requires less cost and resources to implement

Solution 1



- FEMA will work with self-organised volunteer groups across the US.

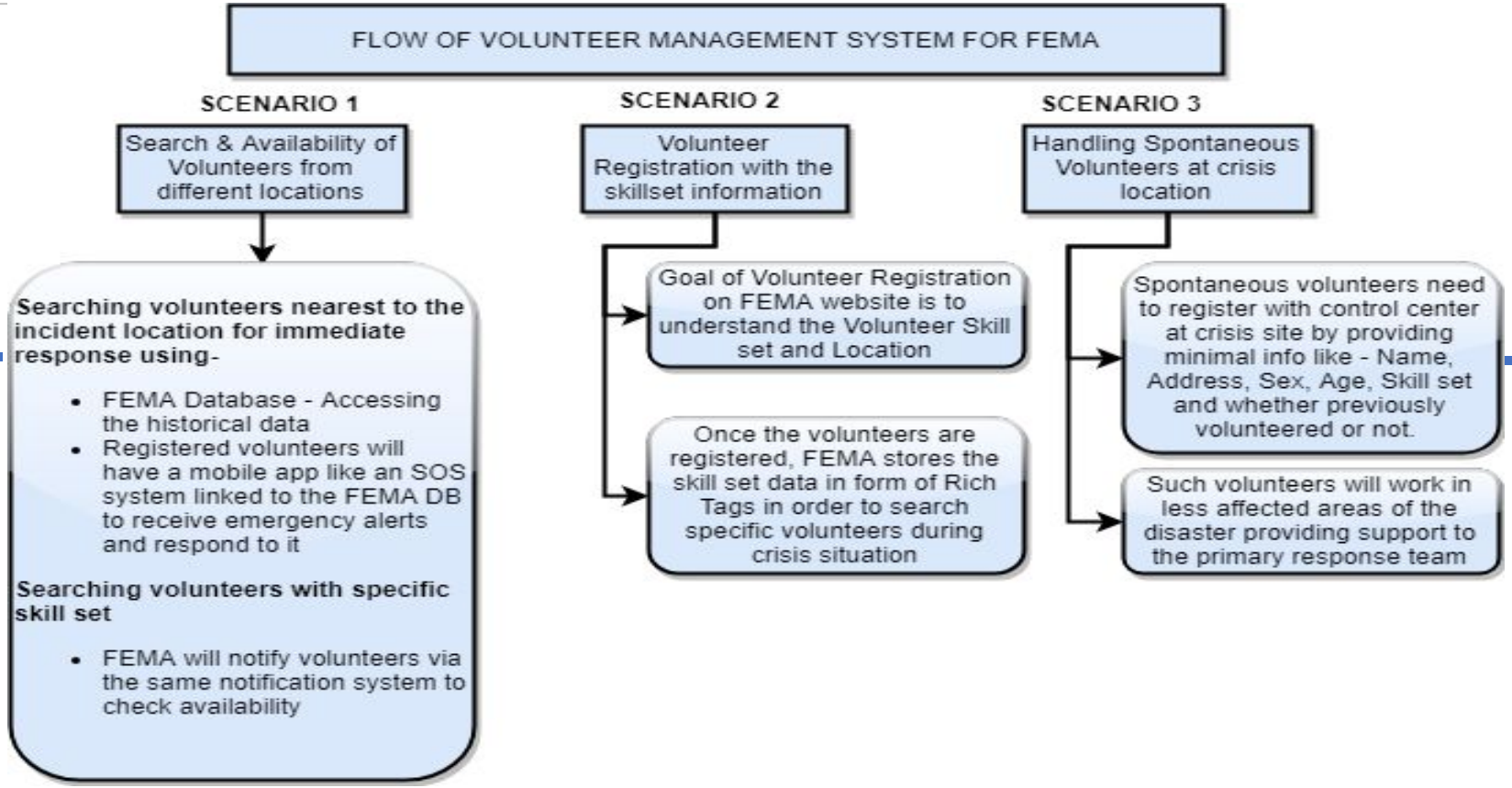
- These groups will have appointed team leaders who will be FEMA's contact point.

- They will be connected to FEMA via the rented platform ***Volunteer Hub.***

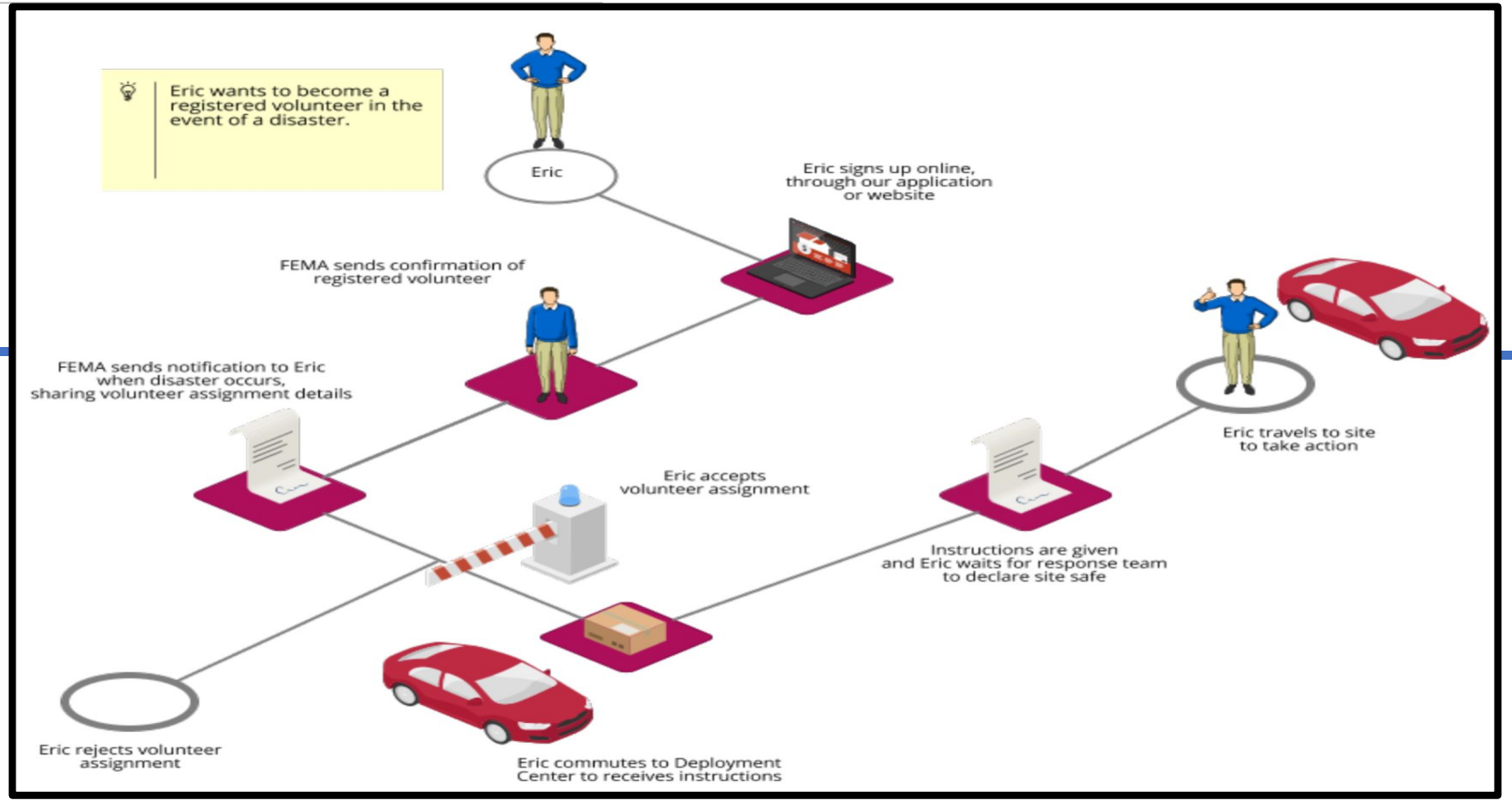
- FEMA will share notifications, integrate and coordinate with team leaders during crisis and non-crisis situations via Volunteer Hub.

- Team leaders will also be using Volunteer Hub to further coordinate with their respective groups. They will have second-level admin access to Volunteer Hub, which will enable them to work with their volunteer groups using this rented service.

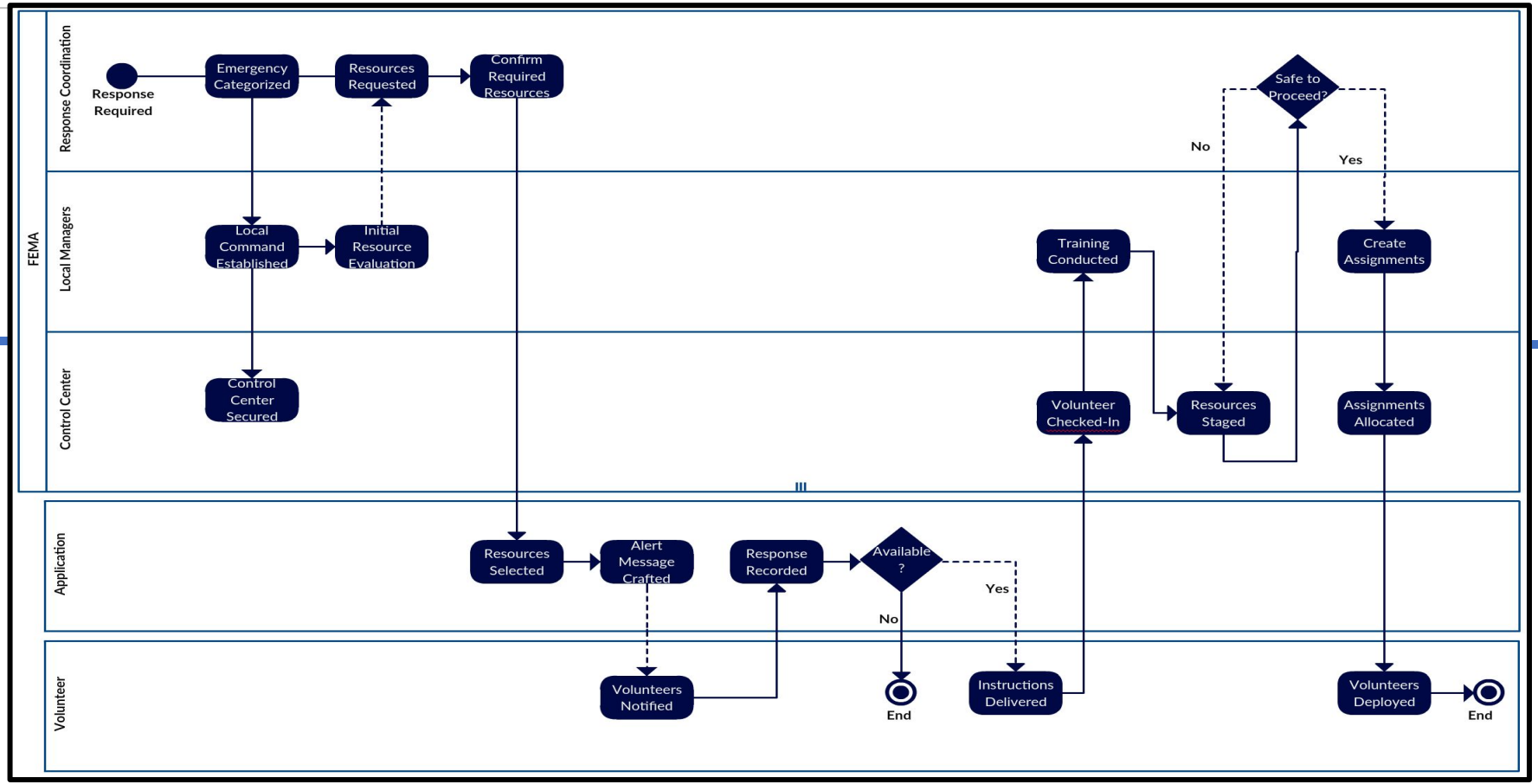
Solution 2 – Scenarios



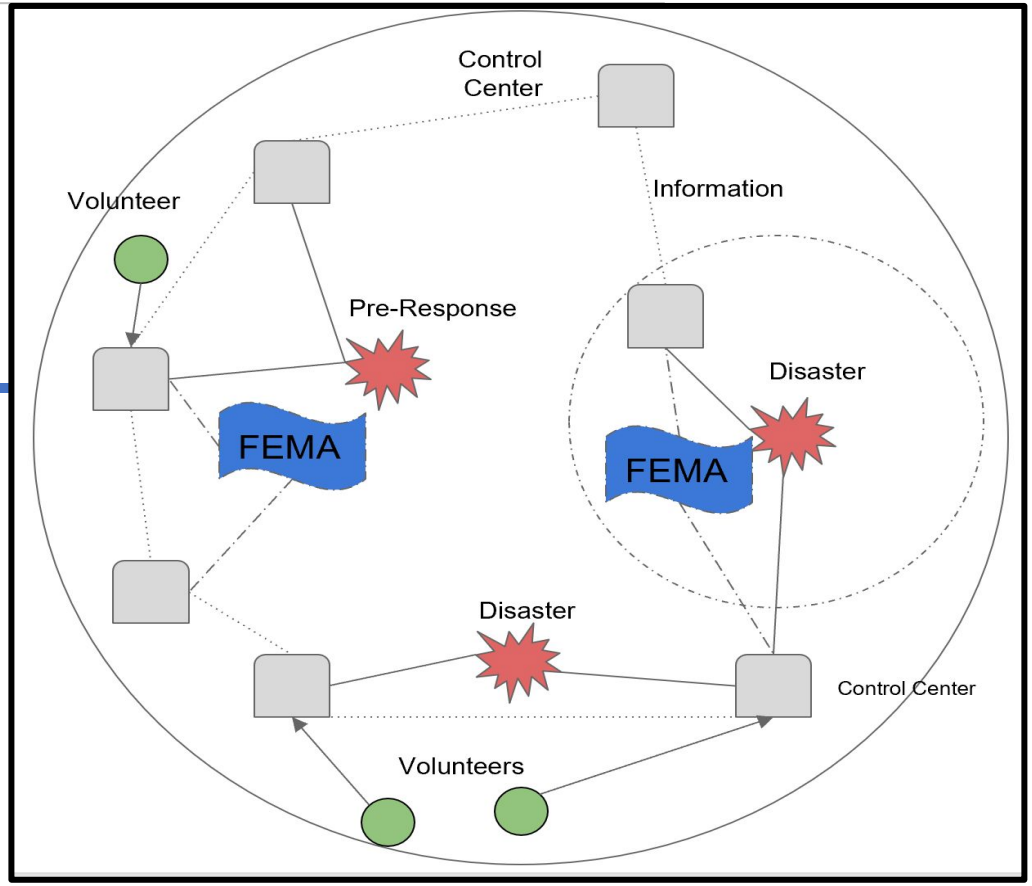
Solution 2 – Logical View



Solution 2 – Process View



Solution 2 – Volunteer Control Center



Control Center:

- A hub for registered as well as unregistered volunteers to convene, gather supplies, and get instructions before heading into disaster site.

- Volunteers will sign-up so their location and whereabouts are noted by FEMA.

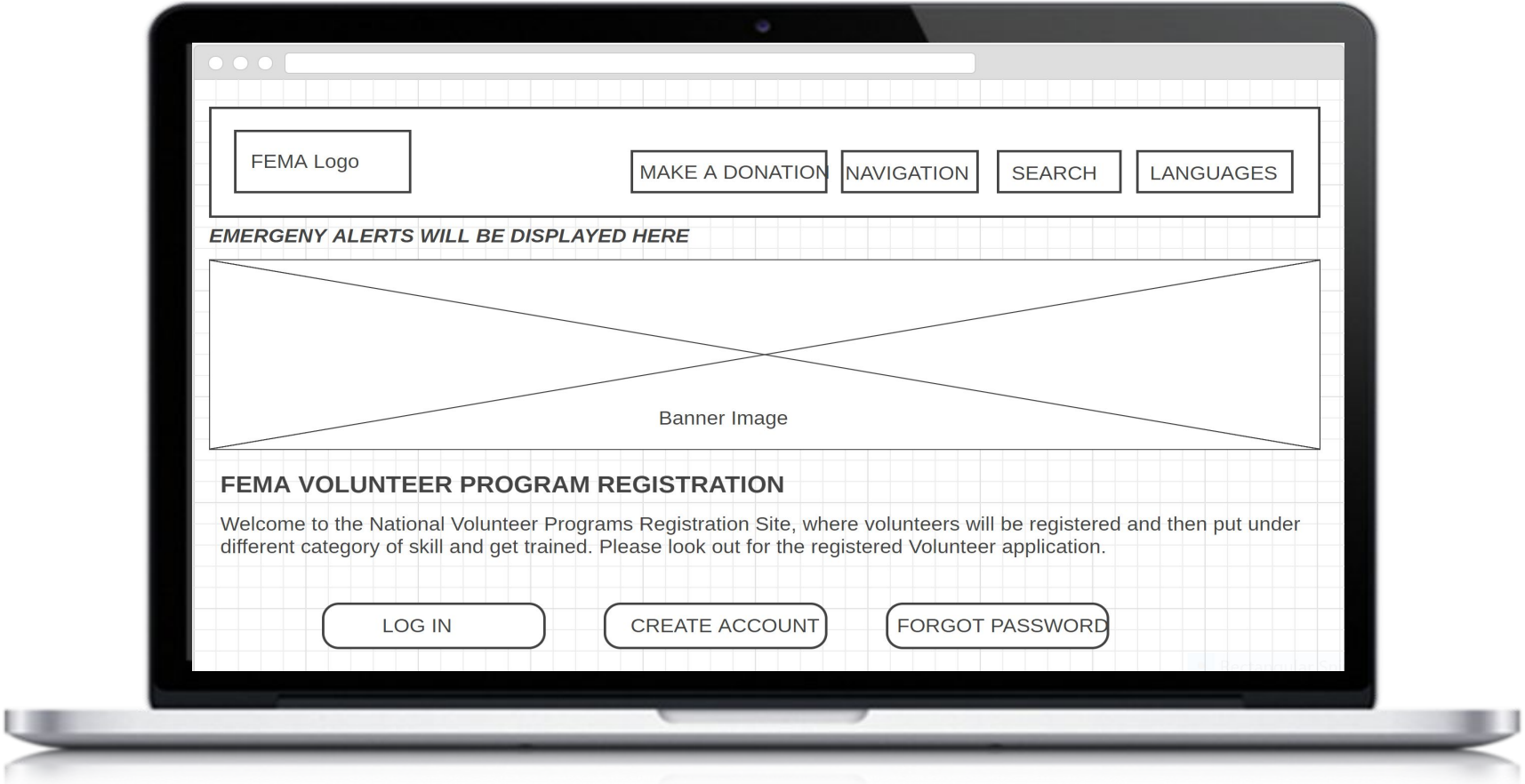
- This will also help FEMA keep track of how many volunteers and with what skills are located at each center.

- Local sites will be able to better control volunteer traffic.

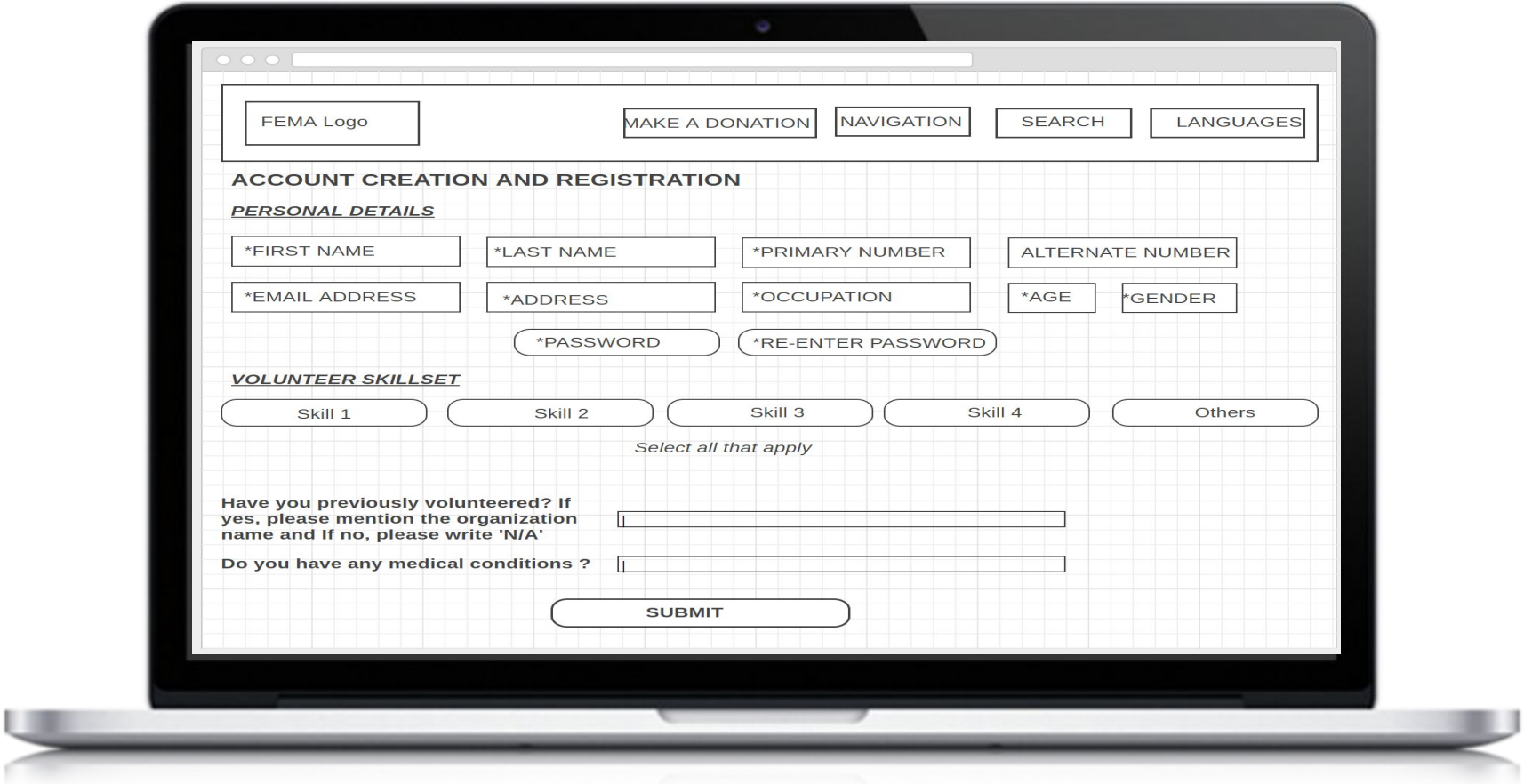
- Each hub will be established near the disaster areas.

- These separate centers will have central hub to communicate with.

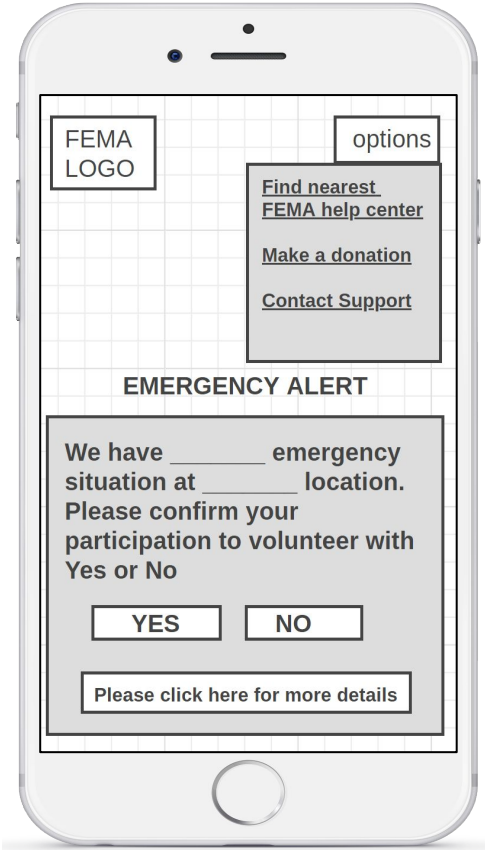
Solution 2 – Development View (FEMA Website Prototype Pg 1)

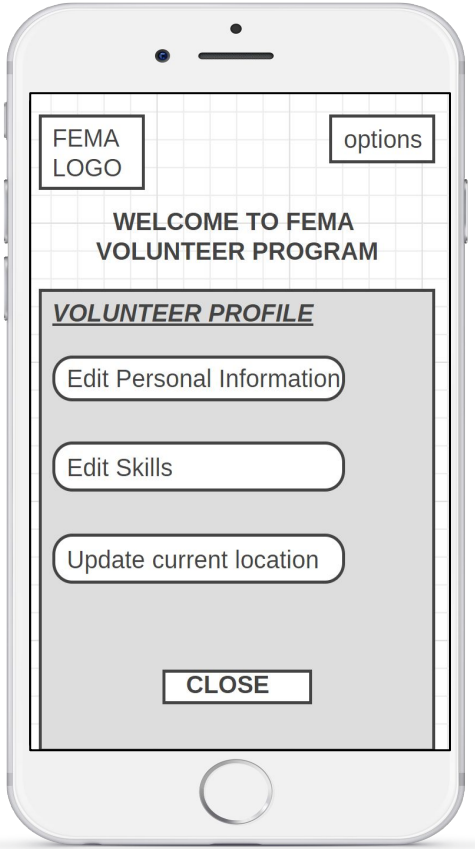


Solution 2 – Development View (FEMA Website Prototype Pg 2)

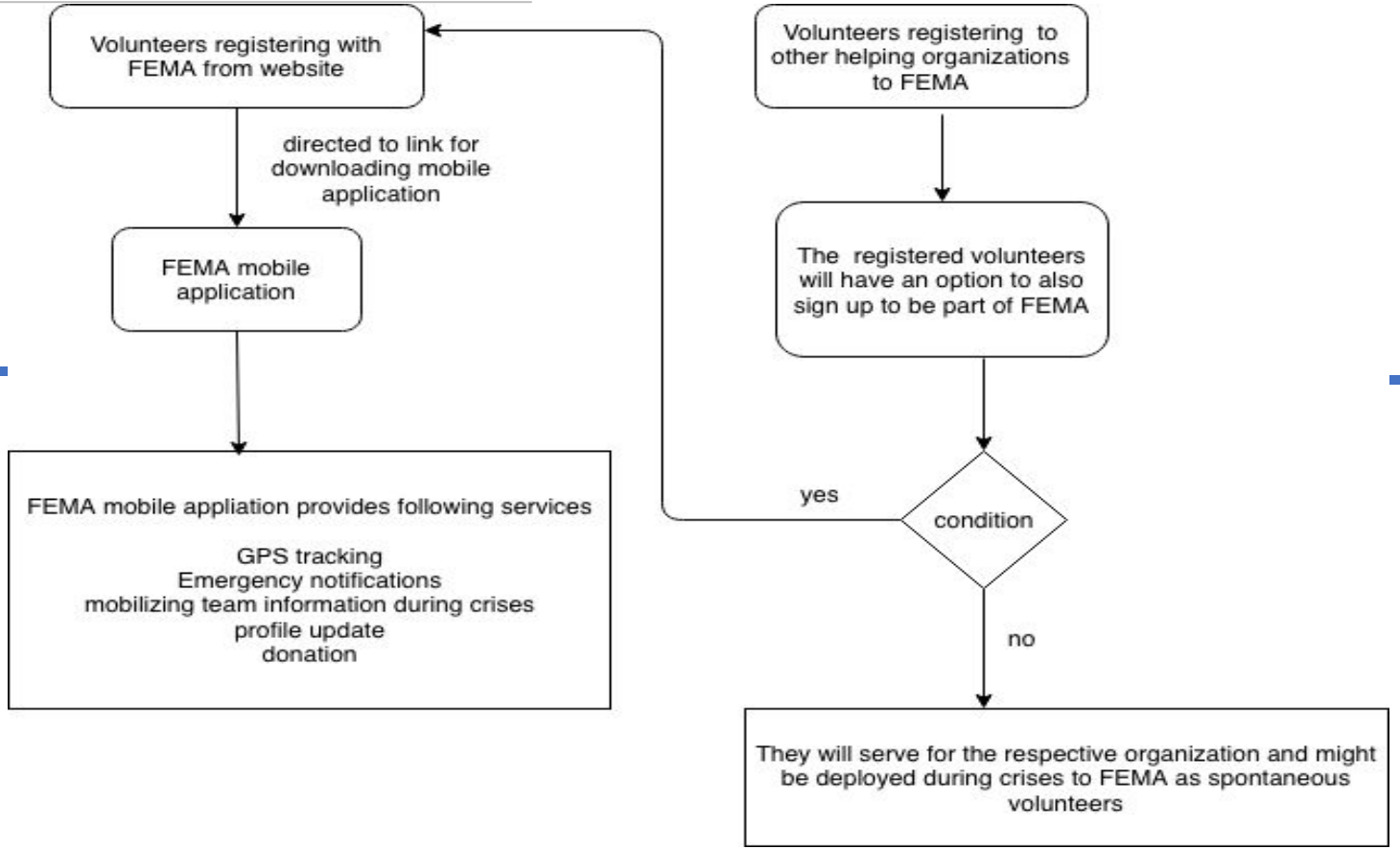


Solution 2 - Development View (Mobile Application Prototype)

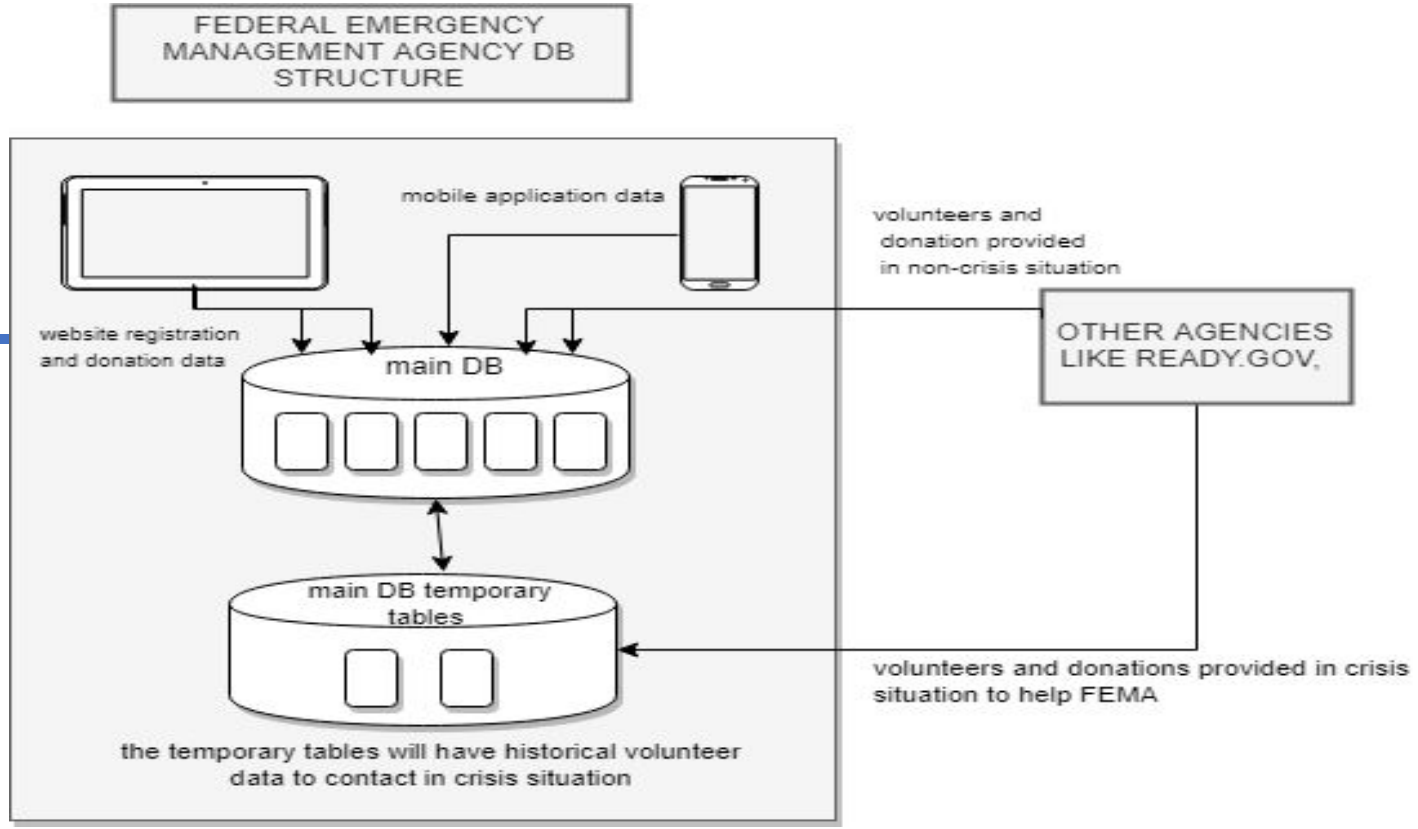




Solution 2 – Development View (Website Usage & Mobile Application)



Solution 2 – Physical View (Overall Software Architecture)



Solution 2 – Estimated Costs

Control Center and operations –

Fully responsible by owners of the control centers (public facility, school, warehouse etc). -$0.00

Development Team for this project requires; front-end web developers, Android, and iOS developers.
- Front-end developers - 5 x 90k = $450,000/yr
- iOS & Android developers 6 x 80k = $480,000/yr

- Equipment and other upfront costs = $50,000

Software- We will also require a visualization software that we can use to gain knowledge about about volunteer database. This will run our development team around $12-70 per user.
- Developers & Administrators - 15 x $70 = $8,400/yr

- Non-Developers - 30 x $12 = $4,320/yr

Hardware - Our server costs will be covered under AWS pricing, and this eliminates any starting infrastructure costs. 600k users + $450 (est) = $5,520/yr (variable based on traffic and features)

Cost –

The first-year cost is $998,240. Subscriptions costs will stay fixed, but development and subscriptions can be reduced, as well as equipment costs.

Solution 2 – Estimated Costs (contd)

Cloud Hosting –
We chose to host our application and back-end in the cloud provided by AWS.

”The AWS Global infrastructure is built around Regions and Availability Zones (AZs). AWS Regions provide multiple, physically separated and isolated Availability Zones which relate to low latency, high throughput, and highly redundant networking. The AWS Cloud spans 57 Availability Zones within 19 geographic regions around the world.”

The existing AWS infrastructure allows fast response times and ensures that our services will always be up and running. The distribution of data centers insure that our application will be resistant to any disaster.

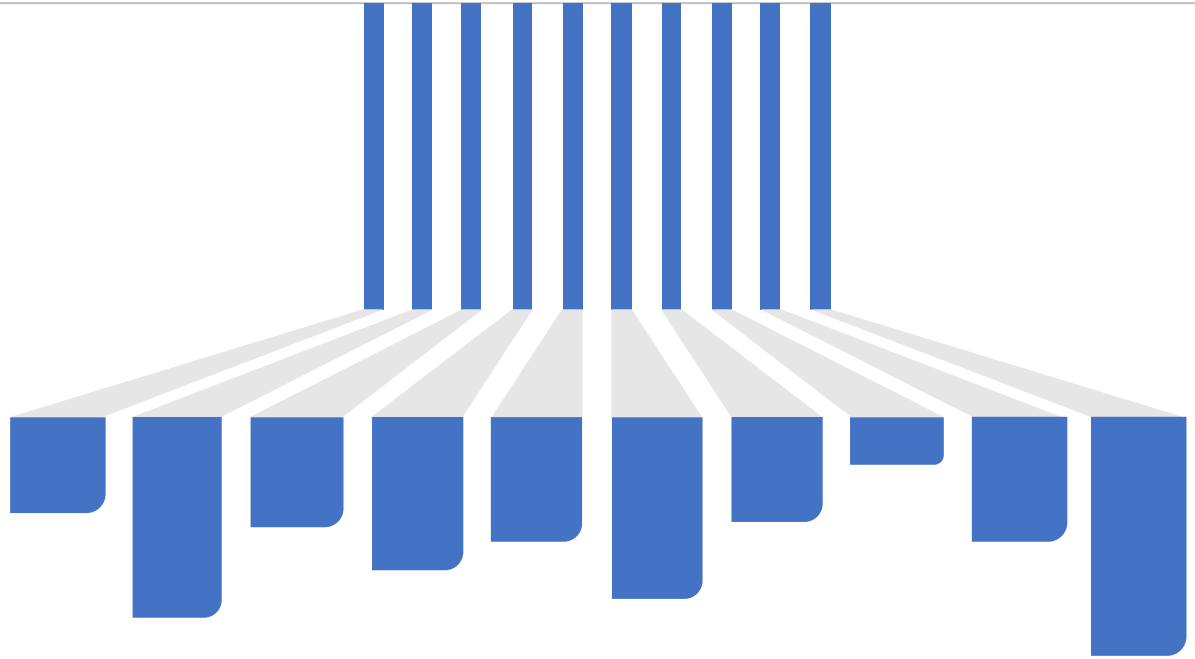
Solution 2 – The Recommended Solution vs Solution 1

After demonstrating the different features each solution has to offer, we have decided to proceed with Solution 2 as our recommended solution.

Recommended solution allows better scalability and integration with number of volunteer groups as compared to Volunteer Hub, which is limited with number of organizations we can integrate them with.

Data Privacy and data security of our volunteers and volunteer programs is in our hands and not going to a third party. In solution 1 we were using third-party platform, and even though we might have certain control over the data, but complete control wasn't there.

While there are more "dots" to manage versus the other solution, FEMA has more control over volunteers and the ability to better forecast on how many volunteers will respond, and overall control during disasters, normal training of volunteers and managing them via proprietary FEMA application.



THANK YOU