Lab 1 - Helping Hands Product Description

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1. Introduction

Social services are public works programs, usually funded and operated by government agencies, to assist individuals in their times of need. These programs may include the offices and agencies that provide food assistance to those living below the poverty line. They may involve helping the disabled or those suffering from psychological issues or transitional living for youth that find themselves homeless. These programs are intended to provide the substance for a “social insurance” in the United States that helps the majority of Americans at some point in their lives with essential living concerns such as health, education, shelter and income (Barnes et al, 2021). The programs are spread across different departments and operated using different bureaucratic structures, sometimes national in scope, such as with agencies like Health and Human Services (HHS), and sometimes confined to local state or municipal operation.

While the role of these social services can provide a great benefit for those struggling to meet their basic needs, their impact can be lessened by many factors. Some departments have overlapping or contradictory goals with other organizations. Some may offer one of many confusingly similar programs tended by different organizations with very different goals or criteria. Some lose funding or cease operation altogether as political goals or government realignment shifts the landscape beneath them (Barnes et al, 2021). In this manner, we see these programs and affiliated departments as an ephemeral, confounding paradigm.

Unfortunately, the situation on the ground can be even worse for these programs. Often, constituents and potential applicants will not seek the assistance of these programs because they do not know they exist, can not know if they are eligible or do not trust the attending institutions (Edelman, 2022). Those who show up to offices of these programs become disenchanted with the organization when low-level staff treat them poorly or are unable to tender practical help. These inbound citizens-in-need often feel that, without any assistance in navigating the bureaucratic “red
tape”, the process becomes too confusing. All of these factors may undermine the practical impact of programs intended to offer assistance.

Charities exist to fill in these gaps created with society or even government assistance. However, charities fall victim to many of the same concerns. Charities may struggle to get enough money to maintain a consistent operation. The safety, cleanliness, hospitality or efficiency can vary drastically from one charity’s location to another. While the necessity for attracting volunteers is ever present, the ability to accurately communicate with volunteers and supervisors may not exist once everyone shows up (Bushnaq, 2021). The day-to-day operations of different charities will differ greatly, some running smoothly while others are amok with poorly trained volunteers undermining efficient operation (Charity CFO, 2020). Isolated ad-hoc decisions may slowly replace manageable procedures as operations become untenable. Additionally, as these operations adversely affect inbound at-risk persons, these people may lose trust in the charity. This is not sustainable over time.

On top of all these concerns, the recent COVID-19 pandemic has only exacerbated the situation (Ashcroft et al, 2021). Outreach workers and social workers are finding it extremely difficult to safely seek at-risk members of the community and difficult to engage in traditional in-person collaboration with affiliated organizational stakeholders. This situation is only made worse when all the institutional or operational knowledge is maintained by only one or two individuals at the top who cannot effectively manage and engage with everyone (Burt et al, 2010). As the goals and difficulties within social services and charities can be very similar, the need to increase collaboration internally and externally should become apparent.

All of these issues could be alleviated to some degree by providing a digital communications platform for all entities involved. If departments got feedback from constituents, that could alert managers to procedures not being followed or staff spreading misinformation. If organizers could broadly relay relevant information when it happens, it could allay confusion for staff, volunteers or
anyone seeking help. If anyone seeking assistance could easily see what is available to them and get feedback from organizations as well as the people they’ve helped, it could provide clarity to the workings of the program and instill a deeper sense of trust.

Helping Hands is a website that seeks to provide a platform for this type of communication. As a place for representatives, leaders and charity stakeholders to present their services and programs in a way that is easily accessible to anyone, this site can facilitate different departments and charities collaborating in the same place without the need to hire their own segmented IT team or isolated servers. With a focus on providing online search results specific to the offerings of each social program or charity, Helping Hands could make it much easier for at-risk individuals to find a provider of services close to where they are. Incorporating both sides into the relay of information, posting information from organizations along with their clientele, users can peruse discrepancies in operations before putting themselves into further risks or quagmires.

As the breadth of charities and social services can cover an innumerable and vast array of needs, Helping Hands will focus on programs and charities that provide for certain subsets of at-risk individuals who are most vulnerable such as the chronically homeless, people seeking free medicine, people seeking food. With a straightforward website design, these at-risk persons could find help when they otherwise might abandon their search.

2. Helping Hands Product Description

Helping Hands is a website and web application designed to be accessible from any computer or handheld device that can run a modern web browser. It allows users to log in or, if they wish to search anonymously, provide results specific to their indicated needs. It aims to simplify the process of connecting those in need with the appropriate resources.

2.1 Key Product Features and Capabilities

Helping Hands will benefit from the commonality that most modern websites have: the ability to display quality content on every device with a web browser application. Instead of
needing to install additional software on their device, a user simply needs to tell their browser the domain name (“uniform resource locator”, a.k.a. “URL”) that directs the browser to the website hosted in “the Cloud”.

The website will present users with the ability to select their intentions, whether they seek assistance for specific needs or looking to volunteer, and lets them drill down into their specifics before perusing search results near them that fit those criteria. Search results should present users with organizations and programs in their area marked in a list with what services they offer, times available (if appropriate) and, if the user has enabled their browser to post their precise location, the distance to any of these results.

Browsing to any results should show a page with the program or organization’s information, provided by a representative of it, showing all the necessary information about it to include times, services, notes and caveats as well as information curtailed to the type of user visiting the site such as policies for volunteers or notes to incoming clients. These organizational pages will be supplemented, below the organizational provider’s content, with community-driven content such as an “upvote” system and a user forum. The upvote system is a spot for users to vote on whether the location or program meets specific common criteria such as safety or cleanliness. The forums are a place for users to contribute to an ongoing discussion about the location or program.

For users who log in to represent an organization or charity that they manage, they will have the ability to modify the content of the pages that they can take ownership of. They can see metrics about views and posts to their site and post their own notification updates. Optionally, they can link other forms of communication such as email addresses to be used for urgent outreach.

If the page for an organization or social program has urgent outreach enabled on it, an at-risk user seeking assistance will have the option to send a request for outreach to these organizations. When this request is sent, the users location, list of needs and any additional notes the user wishes
to add are sent to representatives of that organization or program with the expectation that they will send someone to the individual’s location as soon as possible.

For organizations who do not yet have a representative logging in to populate their information, web scraping algorithms will scour the internet to find relevant information about these unlisted organizations or programs wherever they are, attempt to retrieve a list of what services they provide and list any contact information that may exist. These “scraped” pages are also an opportunity to present users with a solicitation to encourage these providers to log in, start using Helping Hands and populating their own information.

When organizational representatives set up an account and log into it, they may have the option to let moderators vet their account. With an optional combination of their true name or organizational email, they can elevate their account to vetted status, meaning their information or the information they post on the organization pages they maintain will have a visible indicator for users to see its vetted status. This will allow users to differentiate which providers and groups are more trustworthy.

Although creating an account is not required to peruse the website, logging in does afford additional benefits. Posts made to forums or the voting system will be less restricted by moderators. Any content posted by a vetted user can carry the symbol of its vetted status. Additionally, logging in lets a user’s settings and preferences be retained across online sessions.

All of this functionality will be supported by the databases and algorithms functioning on the back-end, running on Cloud servers, doing background tasks and waiting for users to browse to the site.

2.2. Major Components (Hardware/Software)

The first component that every normal user will see is the website itself, rendered in the web browser using common markup languages and syntax: HTML, CSS, JavaScript, the same components used to render almost all websites on the internet today. This is a common interface
available to almost everyone browsing the internet today, so access should be easy. Once a user comes to the website, they have the option to log in, to create an account or to start searching anonymously. Additionally, the website will ask the browser to provide the user’s location, which the user can allow or disallow at their pleasure.

**Figure 1**

Helping Hands Major Functional Component Diagram

Session-tracking algorithms will keep note of anonymous users’ preferences for what they desire, whether to seek help or volunteer, their specific preferences and location. This helps render relevant results and provides useful metrics for providers. The server functionality and search results will be powered by a common scripting language such as Python.

For representatives of an organization, they can elect to take ownership of an existing program page or elect to create a new page that does not yet exist. Once they do, they will be provided with a menu of selections to drill down on what services they provide. Based on their responses, pre-sorted information boxes will present for them to fill out, typing in basic responses
regarding their organization. These responses will then be used to populate a templated and
searchable web page with their content.

All information flowing into and out of the website must be stored in databases. These
databases, hosted in the cloud, must be protected by standard security practices while tracking all
relevant data for account holders, user metrics, organizational information, program information,
etc. Account holders may be linked in this database to the organizations they represent and that may
be linked to the programs or locations that they operate. Additionally, these pages for organizations
or programs will have keywords attached to them to make them searchable by their services or
specificities.

The databases will also need to hold the community-driven content for each page, including
forums and the voting system. This will be linked to the database content of the associated page
after driven through the web servers basic moderation algorithm, which will attempt to filter
malicious words or repetitive spam content, or optionally flagging content for the manual review of
an actual human moderator.

The scripting language running the web server will also have to run various algorithms for
maintenance and content. A web scraping algorithm will periodically search the internet for key
terms indicating additional programs or organizations in an area that do not yet have a page so that
it can then present basic placeholder pages for them. Additionally, there will need to be algorithms
that can tie into the application programming interface (API) of services that can render localized
results such as Google Location Services.

The code and build environment for this server will be progressively updated, tested and
maintained on a collaborative environment such as GitLab or GitHub. The maintainers of this
project will continue to adapt and enhance the code while maintaining integrity with automated
testing and reporting to program stakeholders. Incremental updates will be pushed onto the web
server as they become viable.
3. Identification of Case Study

Helping Hands is primarily designed for three types of users: at-risk individuals, potential volunteers and stakeholders in any social organizations, whether that organization is a charity or a government-affiliated social program. By bringing these different users together more effectively and in parallel with other organizations also using Helping Hands, a system of communal feedback can be developed where responsiveness and clarity can be established with the community and among everyone involved.

At-risk users who need specific assistance can avoid much of the confusion or opaque processes that usually come with trying to find a viable social program. Helping Hands can be the key factor that helps them to sort through and engage with the proper programs and services. They can output simple responses to get relevant providers with the option to have a service bring outreach to wherever they are in the event they cannot travel to a provider’s location. As the status of that program or location changes, it can be updated on the page for any user to view.

Similarly, anyone seeking to volunteer can easily enter some basic criteria to hone a search for an organization needing volunteers in their area. Browsing to the potential volunteer organization’s page, they can get a head start with feedback on what to expect when showing up or what kind of help the location is urgently seeking. Even if there’s a way to help beyond volunteering, such as donating money or items, this could be easily conveyed from provider to user using provided templates.

The organizations themselves can forego the need for a dedicated IT team on retainer just to maintain a basic digital presence. With Helping Hands, anyone with basic typing skills can fill in the necessary information on demand and update it as needed. Additionally, they can see crucial feedback on user metrics and traffic to their site, relevant search terms, recent community forum
posts, etc. This creates a feedback loop where the organization can adapt to the feedback of the community and vice-versa.

Though some at-risk users, especially transient or chronically homeless individuals, may have difficulty getting online access, the availability of online access may be greater than some realize. With the free availability of public internet assets, such as the computers at municipal libraries, many users can get onto the internet as long as they are in proximity to these locations. Additionally, most individuals in the transient population now own a cell phone and use it regularly (Rhoades et al, 2017). Although their cellular access can become sporadic, they may have phone availability around half of the time on average and can get access to internet “hot spots” such as locations with free WiFi access. Even in the event that a user doesn’t have internet access directly, a “good samaritan” with internet access could easily step in to browse on their behalf.

4. Helping Hands Product Prototype Description

4.1 Prototype Architecture (Hardware/Software)

4.2 Prototype Features and Capabilities

4.3 Prototype Development Challenges

5. Glossary

1. 501c3 Organization - An organization or group that is tax exempt, often due to providing charitable services through non-profit or not-for-profit methods.
2. At-risk Individual - A person with ongoing risks to health or safety.
3. API/Google API - Application programming interface is a connection between computers or between computer programs. Programmatic interfaces to Google Cloud Platform services.

5. Crowd-Source - Obtain (information or input into a particular task or project) by enlisting the services of a large number of people, either paid or unpaid, typically via the internet.


7. GUI (Graphical User Interface) - A human-computer interface that uses windows, icons, and menus that can be manipulated by a mouse (and often to a limited extent by a keyboard as well).

8. Major Functional Component Diagram - Used in modeling the physical aspects of object-oriented systems that are used for visualizing, specifying, and documenting component-based systems.


10. Spam – Unwanted, unsolicited digital communication sent in bulk, often by an automated program.

11. Stakeholder - Person with an interest or concern in something, especially a business.

12. Uniform Resource Locator – URL; a human-readable name used by internet protocols to locate an asset on the internet.

13. Web Server - Software and hardware that uses HTTP and other protocols to respond to client requests made over the World Wide Web.

14. Web Scraping - Automatic method to obtain large amounts of data from websites.
6. References


