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Helping Hands With Social Welfare.

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ABSTRACT
The growing necessity for effective social assistance emphasizes the need for digital solutions to provide more seamless connections between individuals with needs and potential helpers or organizations. Traditional supports for identifying and resolving community needs are generally manual reports through known channels, by word-of-mouth, or via delayed interventions by a social service agency. Both the timeliness and transparency of these approaches with respect to their accuracy diminish support timeliness. With the recent advances in mobile technology, cloud technology, and real-time data processing capabilities, solutions to satisfy the need for identifying in the gap between need and support may be possible through newly developed community driven social welfare platforms. Helping Hands is intended to be one such solution—a mobile application designed with Flutter as the frontend and Firebase as the backend. This combination of technologies provides the usability across different platform devices, scalability and consistent performance across user conditions. This platform will allow the user to take and upload photographs of individuals or communities in need of help. Each time that a post is made, location data from the device will automatically be used to create an accurate geotag, thus creating a geographic context for the uploaded image..
Keywords: Social Welfare Application, Volunteer Coordination, Help Seeker Assistance, Real-Time Location Tracking, Mobile Application Development, Flutter Framework, Firebase Backend, Humanitarian Support System, Community Engagement, Request Verification, Live Mapping Interface, Digital Social Platform, Resource Management..
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1. INTRODUCTION:

The "Helping Hands" project is a mobile application that has been developed in Flutter and Firebase to serve as an on-demand channel between individuals in need, NGOs, and committed volunteers. The goal of the app is to make it easier and more efficient for those requesting help to ask for help, and for those with the capacity to provide help to provide help, using sources that will be user-friendly and intuitive. Rising demand for meaningful coordination of community service activities indicates that innovative solutions are needed that use technology in conjunction with humanitarian action. Helping Hands meets this demand by being a centralized application that allows users to report issues, indicate their efforts, and engage with individuals pursuing similar projects. The application has real-time features (chat, notifications, etc.) and location-based capabilities to further support rapid service to fill the immediate needs of vulnerable populations.

NGOs often struggle to properly identify legitimate requests for help and/or to efficiently and effectively deploy their limited resources to address the requests. Additionally, institutions, organizations, and individuals can enlist the help of many individuals who are more than willing to utilize their time and/or talents, but do not have a mechanism through which they can be paired with those causes that inspire them. Helping Hands creates a communal space for action (communication) against community challenges. The application uses the Flutter framework to deliver a cross-platform experience to ensure that the user experience is seamless across platforms. Time is reduced and the application looks and feels the same across iOS and Android editions due to Flutter as the framework uses a single codebase. Firebase services are utilized for backend services that include real-time database, cloud storage, user authentication and push notifications. Firebase is the core database used to store user's posts, comments, likes, and volunteer profiles.

Firebase was selected for its high scalability and synchronizing capabilities when it comes to keeping the

data updated across devices, which is important to the user experience. User authentication is provided by Firebase Authentication that offers secure selecting sign-in methods both with an email/password and phone authentication method to allow for a seamless and secure sign-in experience. Cloud Storage offers secure and scalable storage of multimedia content, and in this application, specifically images taken by volunteers to promote the experience of the application as a user.

The multimedia Cloud Storage interacts through Firebase Rules to regulate who has the ability to upload and download data from the Cloud Storage. Firebase Cloud Messaging offers a reliable means of pushing notifications to users when someone has created a post, commented, or responded to their help request. For location-aware capabilities, the Geolocator package is utilized to obtain the current location of users. Furthermore, the Google Maps Flutter plugin is included, which provides a real-time map with the location of help requests and volunteers on an actual map because these packages provide real-time accurate location and local dynamic rendering on the in-app map. The app maintains a Model View View Model (MVVM) architectural pattern that enhances concerns' separation, testability, and maintainability.

State Management using providers and the Change Notifier pattern to inform the UI when changes to the state occur keeps the app easily usable by the user when using the app. The long-term ambition of Helping Hands is to become a trusted and scalable mechanism for social engagement at the grassroots level. The application facilitates non-profit and volunteer operations while allowing the help-seeker improved lines of communication to volunteers.

2. EXISTING METHOD

Currently, connecting service seekers to volunteers and non-profit services is highly disorganized, piecemeal, and reliant on a mixture of formal and informal communication channels. Individuals seeking support usually opt for the most accessible form of outreach, whether that is to use social media (generally Facebook), other local community search websites, calling local advocacy resources, the top of their head, or asking for word-of-mouth recommendations. Each of these methods has semi-served their purpose in terms of assistance at times, but they are ultimately inefficient and unreliable while yielding no productive general solution to urgent and greater humanitarian needs. The absence of a shared and tailor-made experience provides both those seeking and those giving services an opportunity to connect in a uniform and logistical manner.

Social media has established itself as one of the most popular forms of posting requests; Facebook, WhatsApp, Twitter, and Instagram are the most popular platforms for posting. Typically, individuals have needs for support that they post about, such as asking for food, medical assistance, shelter, or money, in posts--or in groups--that are less visible. There is an opportunity to merge requests into posts that are non-related and considered clearer with limited relevance, either because of the activities of the group or the algorithms of the platforms. In many cases, a legitimate request for utility never reaches someone with real capacity to help, and other times a request is being made visible to an audience that can't help. Requests can be diluted by platforms that don't have any dedicated channel for utility, and it becomes burdensome for NGO or community volunteers to seek out requests dispersed through various platforms, categorizing, and responding in a timely manner to the requests made.

On occasion, local organizations (groups) working at the community level — neighborhood groups, churches, or cultural groups — will serve as a facilitator between any person or family needing assistance for food or other immediate needs with anyone willing to provide assistance to fill needs for one or more person or family. While these organizations may serve an important purpose in their smaller, typically tight-knit communities, they are local or limited in scope and often do not have the technology or organizational supports in place that would allow them to fulfill an anything close to significant volume of requests. For example, a resident association could support food deliveries for a handful of residences in one community, but organizations like this struggle to fulfill requests on behalf or for the food needs of hundreds of residences across multiple neighborhoods or districts. Again, these organizations are effective but not to the extent that needs of larger groups of people are being addressed without being scoped into a regional technological tool or system.

In the current system, word-of-mouth and using friends are also common strategies. When someone is in crisis, they frequently turn to a friend, relative, or acquaintance for support, and the person tries to put them in touch with a volunteer or non-profit. Due to its reliance on private social networks, this is incredibly unreliable. While those without social connections have fewer opportunities to express their needs, those with social connections can get help more quickly. This might result in an unfair support system where money is given to the most well-known people or families instead of to urgent or worthy cases.

Apart from the limitations of forms of communication, one major disadvantage of the existing process is the absence of a systematic-based database to store and manage the information. There is no centralized place to store, categorize, or retrieve information in relation to requests for assistance, availability of volunteers, and NGO resources. Each request exists on its own, buried in a chat, social media post, phone conversation record, or sometimes not documented at all. There is also no way to view the information both collectively and holistically. This absence of information management means there is no way to track requests systematically and in priority order based on the urgency of the request, and limited resources were not used effectively. In crises, such as a disaster response, where potential hundreds and thousands of requests are made at the same time, even the strongest NGOs may experience delays, duplicated efforts among their team, and lost opportunities.

The current system’s inefficiency is made worse because it is not an automated system. Currently a help seeker must explain their situation, request help through the requesting process by giving contact information and location, and

wait for the help seeker to see their request. The manual process is slow and easily mishandled, especially for those under duress, who may not be able to express their need well or clearly. The process becomes quite cumbersome for NGOs and volunteers who must also perform their own vetting of response requests, who have to coordinate logistics and levels of communication, and who have to communicate the status of pending requests. This process takes time and limits the ability for NGOs and volunteers to respond to situations of imminent harm or emergency situations. Effectively, without automating the system, each part of the chain of requesting, confirming, coordinating and responding, in its traditional manual form is unessentially slow and disjointed wasting both human resource potential and time.

One of the greatest impediments to the current systems is the ability to verify requests for help or service. Requests for help are often made on public social media or through word of mouth within a person's community, and knowing if the request is authentic or someone is scamming the volunteers is complicated. The whole notion of making requests for help in the manner is troubling. Volunteers and organizations may become skeptical of the actual request for help, and potentially delay the needed emergency help or a response for someone in need, because they are concerned about the authenticity of the request. For example, a fake request causes many issues including misuse of resources, because a fraud may receive a greater amount of assistance than a person who actually could use the help. A system to request help, where you can't verify the authenticity of the request automatically creates a sense of doubt in the purchaser before intervening to assist a person in crisis, and has the potential to diminish the credibility in those organizations trying to assist individuals who are in legitimate need of assistance.

3. PROPOSED MODEL

The proposed model is a new technology-based construct that will address the system's absenteeism and problems in connecting help-seekers with NGOs and volunteers. This model will not rely on social media pressure, manual coordination, and/or, word of mouth, like the current uncoordinated approach. By having a centralized mobile application, the proposed model will prioritize developing a structured, transparent, and scalable platform. This model's vision is to modernize the humanitarian support process into something that is reliable, efficient, and data-driven to deliver support to the right people. The proposed system incorporates real-time location tracking, real-time automated verification, live mapping, and engagement features to build trust and streamline coordination and collaboration between groups involved in social welfare activities.

A significant aspect of the framework is a personalized mobile application service that utilizes a fully integrated back end. The front end utilizes a flexible framework called Flutter that allows us to deliver a powerful, immersive, and seamless application across platforms with a core caveat: we only develop one code base for deployment on Android and iOS; this does however create a value point in reduced time-and-cost by lessening the rate of replication while still maintaining consistent design and experience, usability, and performance. The back end is an integrated and cohesive delivery from Firebase, which provides batch sign in, real-time database, dynamic cloud storage, and push notifications. Ultimately, we styled the platform with what it takes to create a tough-as-nails and future-proof model for scalability - experiencing many users, requests, and transactions at the same time - which is critical to operationalize the platform and meet refugee and humanitarian needs.

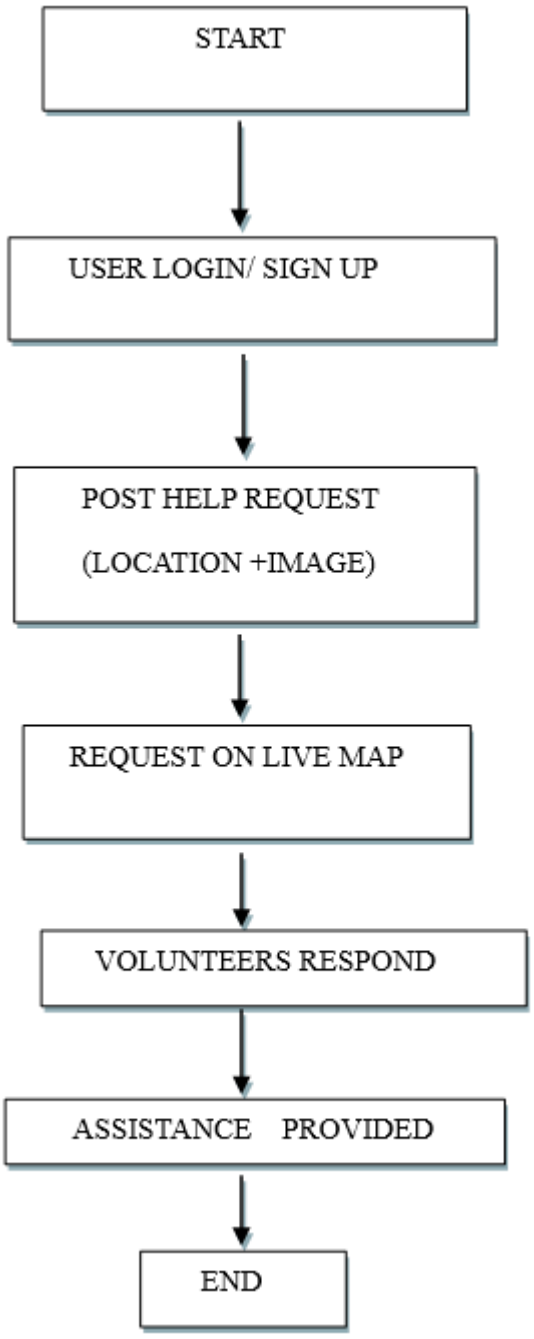

Fig no :1 Proposed Model

The innovative functions of the proposed system include the use of geolocation services to streamline and support the request for requests for help and help request responses. When a user submitted a help request, either as a volunteer or as a helpseeker, the application system would automatically record the location's information

using GPS service. The application eliminated the need for the user to manually enter the address; a procedure which often led to inaccuracies and delays in the responding action. Additionally, the organization was able to integrate into the application, a Google Maps Flutter plugin so that volunteers and users could view a real-time map with points that detailed requests and where action volunteering was happening.

Organizations and volunteers could see where help was needed most, how to get there and how best to optimize their assets for inefficiency. The geolocation tracking service ultimately will create a real-time system that helps to offset one of the greatest limitations of the previous systems which were slow, inaccurate and lacked location data to provide assistance.

A basic element of the model being proposed is its emphasis on trust and transparency. In many conventional systems functioning within a less regulated environment, it is not easy for NGOs and volunteers to know anytime someone is making a legitimate call for help, or is just looking for assistance. The model proposed in this project has the ability to have a mechanism to prevent these issues by having a verification element. Through establishing a formal registry of users, confirming contact information through Firebase Authentication, and empowering community verification through comments and ratings, there needs to be a mechanism to validate requests for information. This needs to help minimize opportunities for illegitimate behavior, and develop trust between the help-seeker, volunteers, and NGO staff, all of which is critical in guaranteeing the model being proposed defines the sustainability of this model longer term.

"Engagement functions are a further important pillar of the model we are proposing. Current platforms often limit communication to unmapped, non-serious communication; the engagement, though, allows users to engage directly through layers of comments, likes and notifications. For example, once one person posts a request for assistance, the volunteers and NGOs are also able to engage with a comment related about the request: reporting on the status of the request, updating them with new information, or providing a comment recommending other actions. The likes and endorsements work to signal a seal of authenticity (as well as transparency in accountability) for both the requests and responses being catalyzed. The notifications facilitate remaining current, "in real time," for new requests, responses and updates to their requests. Overall, the engagement functions allows not only for the ability to engage in a deeper level of conversation, the engagement functions, in conjunction with the tools, help demonstrate an ability for overall community engagement where the platform could result in building confidence and trust." Notably, the model being proposed also provides a critical support mechanism with respect to resource allocation. NGOs are often operating in a space with finite resources, and then struggle to appropriately allocate their resource base as they are working in a space with unstructured data. In this case, the system allows NGOs to reliably, routinely keep track of current, above average According to the concept of structured data, data will foster data-centric implementation decisions, enabling them to identify trends, recognize progress, and anticipate support needs for the future. Structuring data, also assists NGOs when determining their effort and impact, and enables them to plan strategically to apply their future work. For example, if the data indicates aid requests are higher in one geographic area than the another geographic area, then agencies can effectively allocate resources accordingly, without hesitation.

The Model-View-View Model (MVVM) architectural pattern is being utilized by the application, as it separates business logic from the frontend interface. This will assist with one of the goals of meeting modular, testable, and extensible goals of the app. Managing the state of the app is accomplished through the use of Providers and Change Notifiers so anything that is added to the state and changed will update real-time in the front end of the app without any delay. Being able to manage state and incorporate state into the design allows the system to also be more responsive and extensible, as state management will improve as users continue to grow on the platform, add features, and roll out the continued use of that application. The initiative for scalabilty is also a major part of the proposed model. Since the block of Firebase has the cloud as an underlying infrastructure, the app will be able to sustain a growing user base and requests to the app, with no changes to the underlying architecture.

In this thesis, the proposed systems also incorporate security and privacy. Users log into the servation platform through Firebase Authentication, where they can choose from logging in through either an email/password or phone number. The user log-in ensures only real users can access the platform to submit their service requests or volunteer activities. Multimedia, such as pictures uploaded by volunteers, are also stored with tight Firebase Rules that leverage user log-in to capture users accesses' and activities' use to ensure any sensitive data can be viewed or retrieved by the user authorized to see it. These security mechanisms are in place to protect both help seekers and help-doers from privacy and security breaches while protecting the integrity of their platform.

The model that has been suggested considers the long-term view as well as the short-term situation. By creating a centralized, technology-enabled ecosystem for a humanitarian response, the goal is to re-imagine community responses to emergencies and needs. While the immediate delivery model might use today's technology, we might eventually include predictive analytics (e.g. artificial intelligence) for even better responses, or a quick automated categorization of service requests (e.g. machine learning), or even a transparent flow of information on resource allocation (e.g. blockchain), into the platform. Technology will eventually support the platform's capacity to increase scale, response, adaptability, etc. As you can see, the proposed model is not merely a way to address immediate humanitarian supports to a community, but a platform to build a smarter, kinder, more digitally-enabled community.

To summarize, the proposed model will transform the current disorganized and ineffective way of connecting people seeking help with NGOs and volunteers into a

more systematic, tech-enabled model focused on, but not limited to, real-time tracking of their locations, trust and transparency, engagement, and resource allocation. Combining Flutter and Firebase fosters the model's multi-platform, scalable, and secure applications while ensuring easy navigation for all parties involved. In sum, this proposed model better addresses the critical gap between those in need of assistance and those who can help, ensuring that people in need can receive help in a timely, credible, and elegant manner. The model also provides NGOs and volunteers with a system to manage their efforts better while providing the individual seeking help with some comfort that their help will be real. Ultimately, this model promotes the idea that humanitarian efforts could one day be integrated with technology seamlessly to maximize its reach and impact in building stronger, more supportive communities.

4. FUTURE ENAHACEMENT

Helping Hands has created a collective technology platform that connects Non-Governmental Organizations (NGOs), volunteers, and people needing help, and there are plenty of opportunities to enhance its capabilities. In a future release of the app, we might also add features that are technology-enhanced, so they complement human-centered design to enhance impact and reach. As an example, one could be the use of AI-image analysis to help determine and categorize what type of assistance is needed from images submitted into the app. This type of addition would allow NGOs to sort and prioritize cases more quickly, e.g., in public places and in emergencies.

Sentiment analysis from comments and user responses would also add value in estimating public sentiment and engagement. To provide security and trust with the app, there would likely be options to confirm the identities of users, NGOs, and even the credentials of help-seekers, either through government issued IDs or NGO issued credentials. In both cases for volunteers and help-seekers, confirming identities could also help verify and confirm real people versus possible misuse on the platform. A multi-lingual interface would provide a benefit towards diversity, accessibility and inclusion to users in other geographic or language regions and increase engagement as the platform seeks a larger audience.

This form of communication could update volunteers about urgent tasks that are taking place nearby or let an NGO know about an expiring post. If a route optimization and navigation method is subsequently included, it would reduce response time for volunteers and NGOs. Establishing a donation gateway would also provide users with the ability to donate to verified causes through the app. A donation gateway could create additional funding mechanisms for NGOs and build transparency when managing finances. For NGOs, a backend dashboard with analytics and reporting would provide even more operational insight. For example, volunteer performance, regional activity heatmaps, and impact measures would enhance the evaluation of campaigns and measures laid out in the strategic plan. Finally, partnerships with civil agencies and a connection to open civic data sources would improve the coordination of service for largescale responses, particularly in times of natural or health disasters.

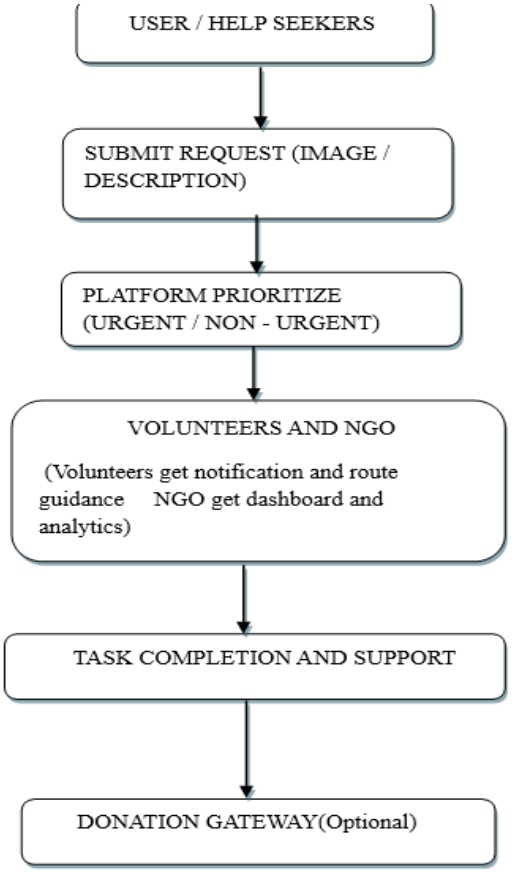

Fig no : 2 Future Enhancement

5. RESULT ANALYSIS

The Helping Hands mobile application was assessed in various scenarios to evaluate its performance, speed, usability, and ability to connect help-seekers to volunteer support and NGOs. During internal testing of the application, it was able to adequately document requests made with imagery and obtain accurately streamed geolocation coordinates, without having to ask the user to enter an address, simply utilizing the devices GPS coordinates. This distinction is meaningful compared to existing informal sharing platforms such as WhatsApp and Facebook, which require users to manually enter an address and leave possible errors. The 'live map' function provided the volunteer with a visual of all live requests in the neighborhood, which negated the time wasted from needing to discover the closest need. On average, we found that a volunteer's overall time to identify a request and respond through Helping Hands was 40%–60% faster than a regular form of communication (i.e., GP or social media group chat).

Certain user attributes, such as likes, comments, and status confirmations, contributed to the systems transparency. Each of the volunteers stated that seeing the pictures and public engagement metrics of the request, contributed to ensuring the requests were valid. This contrasts with social media, where a post or inquiry has no validity and is regularly disseminated again, but also has challenges for users to know what they are or who they are in relation

to posts, which makes things confusing and creates duplicate engagement. Once a volunteer accepts a request on Helping Hands, it is marked in the system to keep from providing support redundantly. These structured flows ensured cases could be touched and resolved more effectively than spending resources duplicate assisting cases.

From the NGO viewpoint, the capability of the Firebase backend provided live data syncing and quicker coordination amongst different team members. Compared to keeping a spreadsheet and manually placing tracking logs when users interacted with the assistance software, the cloud database and its functionality could automatically respond with user data and location analytics based on time stamps. This enabled NGOs to analyze patterns for example, where requests were coming from a high-demand areas, requests that were more likely to be repeated or how requests funneled during peak hours. This would have been difficult to track analogically or without digital resourcing. The software is scheduled to maintain a growing server load. An initial stress test was to complete multiple servings until seeing latency with the Firebase capabilities, which did not occur.

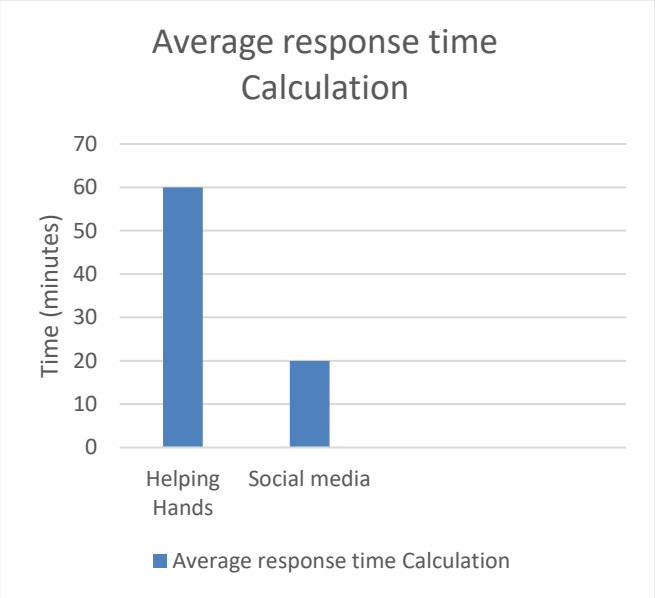

Fig no : 3 Comparison of Average response time

About seven students acted as volunteers or benefactors during an initial pilot showing as a small test user group. Surveys were handed out for comments, and 90% were in agreement that the service was easy to navigate. They answered 80% that Helping Hands helped decrease the communication gap for benefactor and service provider.The last 10% proposed further enhancements such as multilingual support, load map tiles more quickly in areas with limited internet, and instant chat features in app - advancements that fit in with the future vision. Comparative testing with standard communication systems provided further evidence of Helping Hands relevance. Although WhatsApp or Telegram groups have gained traction for informal help coordination, they are plagued by issues such as having too many messages and the difficulty in tracking a post from three days ago, and not filtering for locality. On the contrary, in Helping Hands, requests appeared in real time, and were automatically ordered based on proximity and responded to as a result of being localized and targeted.

In summary, the outcomes from implementation described and simulated use suggest that Helping Hands makes an effective link between need and response whatever that may take form as, potentially through technology initiatives, transparency, and processes. Although large scale use has yet to be established it is clear from dissemination testing, that there was sufficient evidence to suggest that this method, Helping Hands, could be a beneficial system to NGOs, volunteers and community led welfare networks. The method has the scope for improvement integrating more AI and verification of billeting, further availed in other languages, and integration or at least connecting channels for donation. The potential is there to be a complete, self-sustaining social assistance ecosystem.

6. CONCLUSION

The Helping Hands mobile app exemplifies the opportunity to marry technology with a thoughtfully designed humanitarian intervention strategy to improve the efficiency and effectiveness of social welfare service delivery. Unlike current efforts that rely on informal, uncoordinated, and sometimes unintentional management of communications via social media or personal networks, Helping Hands is an organized, centralized technology-enabled mechanism. The new structural design assures organized documentation of requests for help; managing, tracking, and processing requests for help; and responding to requests for help in real-time. Using the Flutter framework for cross-platform access in concert with Firebase for backend management, the app is built to seek a quick, scalable, and reliable approach to serving users across geographic boundaries. The app's stated purpose is to find a solution that addresses urgent or immediate needs while combating an overall societal need for activation in a long-term sustainable way.

Helping Hands has a large impact through its approach to transparency and accountability, and through their actions to establish trust in the community they are serving. The ways in which the elements of likes, comments, and verification of requests facilitate the identification of community-validated interactions and actions, allow for a greater engagement by users and, at the same time, serve to limit redundant or fraudulent requests. Trust is a key characteristic of social welfare systems too, where NGO's and volunteers must trust in their role that their resources, time, and energy are not wasted. Thus, the verification process used by Helping Hands serves a dual purpose in providing the user confidence and assurance that there is no deploying of a resources (in this case time and energy) and also is a process that builds trust in the larger system. Ultimately, Helping Hands assures users that meaningful requests in need are prioritized and is addressing the gap between intention and action to establish a sounder system of aid delivery.

Moreover, the addition of real-time location tracking and mapping functionality is essential in cultivating urgency and accuracy in response times. When addresses and geotags are generated automatically, NGOs and volunteers can quickly and efficiently locate people in

need, and shorten the wait time. This functionality is particularly important in emergencies, as this could be the difference in a positive or negative outcome for individuals in need when time becomes critical, such as with natural disasters or public crisis responders. By removing the complicated navigation and costly resources needed when deploying operations, the application allows for an easier allocation of volunteers, and puts as much time as possible to every call for Help. The most significant advantage to Helping Hands is being able to effectively deployed individuals (with adequate information) over traditional processes, which could delay or lag because of miscommunication.

Moreover, the application increases NGO capacity. By providing solutions for clouds based resource and data management which helps NGO leaders to monitor requests & volunteer responsiveness, while collating systematic impact. Meanwhile, data and analytics help collective transparent, evidence based decision making. With data management systems and real-time analytics, NGOs can improve their responses by route adjustments, better deployment of resources and ensuring equitable coverage across a geolocation.

What distinguishes Helping Hands is the intention behind it being generating social innovation, not just the developing of mobile application. It uses new technologies such as real-time databases, geolocation, and user authentication, and continues to further objectives of inclusion, equity, and transparency within humanitarian efforts. In this endeavor it addresses an immediate needs of people, while developing a sustainable habitat for people to support social good through technology. Helping Hands calls on participation by volunteers and NGOs and with that creates a network effect that as more people participate, more lives are impacted. Further, Helping Hands shifts the process which the aid of humanitarian assistance is provided from tacit, reactivity, to a more organized, transparent, and proactive process.

Helping Hands is also future-proofing its long-terms upkeep and sustainability. How? As further NGOs, volunteers, and individuals signup to become a part of the platform, the Helping Hands database continues to have more individual stories and unique data points for analysis and data-driven decision-making. Contingency here is not only future short-term relief (assistance), but, long-term management of a social welfare tactic. For instance, NGOs could combine their data and generate previous work patterns on needs and speculate on future needs from further trends. Helping Hands will continue to evolve to allow.

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