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Rescue Agency Locator

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Abstract—After disasters and emergencies, the absence of a formal platform for communication between the needy and the providers of relief usually creates a delay in response and poor utilization of resources. In order to overcome the dire gap, we offer Resource Connect, a mobile application based on Android operating and developed using Kotlin framework that ensures communication between users, relief agencies, and administrators. The system allows users to register, request for support, follow the status of their questions, and contact available Relief agencies directly. At the same time, relief agencies can log in and view user requests and alter statuses, while the administrator deals with the agency records and offers a seamless workflow. Unlike the existing relief management systems where communication is in pieces and manual, Resource Connect incorporates a central interface, user-friendly, role based access and secured login. This systematic way increases clarity, avoids miscommunication, and reduces the response time. It includes a modular architecture with such components as user, agency, and admin, with a backend system and MySQL and PHP. It was created after the agile methodologies and tested in such stages as unit, integration, and system testing. The solution that is being proposed helps in the field of disaster and emergency management as it presents an easy digital platform that enhances coordination and accountability in relief operations. Possible future improvements may be AI- powered request prioritization, real-time tracking, integration into governmental databases, multilingual support. On the whole the Resource Connect is a scalable and efficient solution to modernize the humanitarian aid management.

***Keywords*—Relief management, Android app, Kotlin, disaster response, authenticated user, workflow.**

I.INTRODUCTION

When natural catastrophes, emergencies, and mass- scale calamities strike, rapid and accurate coordination between the aid requires and the relief providers are essential for minimal human sacrifices and losses. However, there are still numerous relief efforts in the world that are impeded by disparate communication, lack of transparency, and a lack of centralized platforms to aid with resource distribution.

Traditional approaches which are mostly manual based or fragmented digital solutions equate to massive delays, inefficiency, and duplication of work. To answer these urgent challenges, the idea for the Resource Connect mobile app was developed. Resource Connect is a Kotlin-android application that will help to reduce the distance between those people who are in need of help and who are able to provide it – identity relief agencies. The application brings in a role-based access structure which includes three major stake-holders. users, relief agencies, and administrators. Users are able to register, send requests for help, track status updates, and communicate directly with agencies. Other than that, relief agencies can edit the status of current requests, oversee their availability, and simplify communication with the users. Administrators follow a supervisory function, providing the integrity of the agency registrations and screening the whole system's workflow. The reason behind this project is to draw from happening incidences in the real world where victims of disasters found it hard to get at the right support outlets. These barriers usually cause inefficiencies and delays in distribution of reliefs. Furthermore, agencies charged with the task of conducting relief efforts encounter challenges in prioritizing requests, following up on response proceedings, and related operations that involve different stakeholders. This absence of systematic approach normally results into redundancy, lack of visibility and provision of unfulfilled needs on ground. The problem statement therefore focuses on lack of a centralized, accessible, and efficient communication channel, to link the affected individuals to the relevant providers of relief. Users are often unable to access information that is current while the agencies are limited by less than ideal tools for managing and addressing requests for relief. Regarding scenarios of such nature, there is a need to have a system that is not only technically sound but also is intuitive enough to be adopted by many people in high- stress emergencies. The purpose of the project is the development of the mobile-based solution that would facilitate relief management through the introduction of digital means of seeking help, connectivity with the relevant agencies, and management of administrative procedures.

Through Kotlin, the application language that is contemporary and optimized for Android development, the application guarantees smooth operation, improved security and responsive user interface, specifically for mobile platforms. The horizon of Resource Connect is in its prospects of appealing to both governmental and non- governmental organizations participating in the process of relief. Although the existing version targets basic requests and interactions with the agency, the architecture allows scaling it up for real-time tracking, AI-powered prioritization, and the connection to national emergency registry in the long run. Essentially speaking, Resource Connect is an important step towards digitizing humanitarian response efforts to provide a lean communication facility, which is convenient and relatively easy to access. As a result of this application, it is expected to give users in distress power, to make it operationally efficient for relief agencies, and to bring transparency into the disaster management ecosystem. Being the most prevalent mobile OS around the world, Android can guarantee that Resource Connect is within reach for a huge number of individuals, especially in the developing areas where relief services are often required more than anywhere else. The use of Kotlin as the language of choice for development allows not only performance and security, but also productivity of developers, since the language is concise and interoperates with Java.

II. RELATED WORK

Effective disaster and emergency management has always relied on efficient communication, proper data, and an integrated response system. In the 21 st century, different types of mobile applications have been developed in order to facilitate disaster relief and emergency reporting. This section calls for review of five major research efforts in the area, which entails a discussion of its scope, strengths, limitations, and its relevance to the proposed system, Resource Connect. [1] Disaster Management Application based on Android for After-disaster Rapid Mobile Assessment – A Study by Jason Widagdo et al. This research describes the Mobile Indonesia Damage Data Assessor (MIDDAS), an Android-based client-server system, which is to contribute to damage assessment in the aftermath of natural calamities. The main emphasis lies upon empowering the field assessors to gather and post the data on damaged buildings, which can be further utilized by the decision-makers to estimate costs of recovery. The system increases the rate of data collection and eradicates the delays experienced due to manual reporting to the database through allowing data to pass to a web server for assessment in real-time. Although the system plays a major role in post disaster evaluation, it is devised mainly for the use of assessment staff members, and not the public at large. Unlike Resource Connect which allows both aid seekers and relief agencies to enjoy two way communication channel enhance empowerment, MIDDAS is data based with no provision for request tracking, real time communication or agency status update. Resource Connect broadens coverage by ensuring the end-to-end workflow that connects all stakeholders. users, agencies, and administrators.

[2] A Prototype of Android-based Emergency Management Application – Muchtar Prawira et al. This study describes the development of an emergency management prototype in which the users can report an emergency using panic button, power button or even voice command. The system utilizes GPS or location tracking via the network and determines the distance between the victim and the closest helper with the help of the Google Distance Matrix API. Performance tests indicate that the response rates are fast in particular with the use of in-app panic buttons. The power of this system is that it alerts and is a location aware system in real time. The solution is however mainly a solution for one-way emergency alerting, whereby emphasis is on informing authority or helper, and not the management of continuous relief activities or systemization of request. In comparison, Resource Connect extends beyond the alert generation function with comprehensive lists of agencies, requests-tracking, and status updates — hence enabling structured communication and management of relief operations based on roles. Moreover, Resource Connect overlaps both administrative control and lives up to long-term crises instead of a simple emergency alert. [3] Acceptance of Mobile Application on Disaster Preparedness – Victor James Escolano et al.

The current research is to study the acceptance of the mobile applications which are created for the disaster preparedness amongst the personnel of the disaster management in the Philippines. The application, which is part of a larger smart disaster management architecture, is tested for utility, involvement, and usefulness. According to the results of surveys and focus groups, people accept such a mobile solution for disaster readiness well, and they are interested in it. Rather than the previous studies, this paper discusses human and social aspects influencing technology adoption. Although it sheds a lot of light on creating user-friendly disaster applications, it does not contain details at implementation level and over which it lays a comparatively greater emphasis on preparedness simulations than active disaster response. On the other hand, Resource Connect is fully implemented and aims at a real-time management of disaster and relief. It does not only take into account user interaction, but also pays attention to the operational efficiency, role management and communication logistics in emergent situations. In addition, though the current implementation in the study is only on simulations and data capturing, Resource Connect is designed for real-time operation based on actual data entry, dynamic status, and administrative control – all of which are critical components.large-scale relief efforts. [4] Disaster Management Using Internet of Things – Himadri Nath Saha et al. The study of the usage of the IoT technologies within the disaster management lifecycle at several of its stages is conducted by this study. risk identification, preparedness, response to the emergency and recovery. It talks about how sensors, wireless communication, and the auto time alerts can

increase the time of response and data precision. The paper suggests a general architecture, in which the IoT-devices are monitoring the environmental parameters around the clock and transferring the necessary data to centralized systems for subsequent decision-making. Even though it does not incorporate the property of sensor integration, modular functionality of Resource Connect may support IoT in the future for the purpose of real-time hazard detection or user location tracking.

III. METHODOLOGY

The approach to building the "Resource Connect" mobile application would smoothen communication and improve efficacy in disasters management. The first step in the process is a thorough requirement gathering process, in which the development team consults various stakeholders, such as relief agencies and potential user, via surveys and interviews. This first encounter is critical in terms of detecting the gaps in the existing systems, and the understanding of the needs of the users, and as such, the application will be addressing the problems of the real world. The driving factor behind this venture has its origin in the urgent need to be able to utilize a structured system through which the process of managing relief requests is made easier while ensuring smooth communication between affected users, agencies, and authorities. The selected one for developing the "Resource Connect" is based on Agile Software Development Life Cycle (SDLC). This one is chosen for its flexibility and iterative nature, which can provide feedback at all times and rapid adjusting of decisions, depending on the stakeholders' input. Development process is broken into various iterations and each iteration takes one to four weeks. Each iteration contains a full cycle including planning, requirement analysis, design, coding, and testing resulting in a working product that can be shown to stakeholder. Such iterative approach doesn't not only minimize project delivery risk, but also provides that the application is matured during keeping pace with users' expectations. On the design phase, the team is concerned with the building of robust system architecture using UML diagrams for picturing interactions between the different components of the application. The architecture interfaces with three main modules. admin module that controls registration and oversight of relief agencies, user module whereby, users can register, and make requests, as well as track the statuses, and agency module, to allow them to manage their operations and update statuses in real-time. Every module is tailored to meet certain user roles in order to make the platform easy and comfortable to use. The practical development stage uses the Kotlin framework for Android due to the efficacy and the convenience of its use in developing a smooth user interface. The application contains the vital functions, including secure user authentication, role-based access controls, a responsive design to improve user experience. The backend of the application is supported by a MySQL database, which guarantees effective management of data and secure data storage for user information and agencies.Testing is an essential part of the methodology, and it has several phases like the unit testing, integration testing, and user acceptance testing (UAT). Thorough testing is done at the end of every iteration to identify errors and fix them hence making the application functional, reliable and perfect as the needs are specified. Specifically, UAT entails the use of actual users to test the usability and functionality of the application for further refinements in line with the feedback provided by the users. In addition, the employed approach involves feasibility study addressing economic, technological, and social implications of the project. Coming to the point, this study is an affirmation of the viability of the project and makes sure that the developed system stays within the budget requirements and is technically viable with low resource requirements. The social feasibility element is concerned with user acceptance and places emphasis on the need for training and support in order to smoothen the transitions to the new system. Conclusively, the methodology for building "Resource Connect" combines user feedback, agile development principles, and thorough testings to develop a mobile application to further enhance disaster relief management. In filling the communication gaps between the relief agencies and users, not only does the application effectively optimize resource use, but also enhances the general efficiency and effectiveness of relief operations. One of the potential future enhancements could be the implementation of advanced features with real-time tracking of the relief providers' statuses, AI-based analytics for decisions, and multilingual support: thus, improving the app even more. the applicability and range experienced by the application in disaster management ecosystem.

IV. OBJECTIVES

1. Streamline Communication: Provide effective communication between relief agencies and users by a centralized platform.

2. Enhance Request Management:Structured path should be put in place for users to sign up, send requests, and track their developments.

3. Provide Real-Time Updates: Have relief agencies update request status in real time to ensure that users receive the right information on time.

4. User-Friendly Interface: Make the app's interface user-friendly by using Kotlin so that people with different tech experience can still use it conveniently.

5. Secure Authentication: Enable strong authentication to protect users' information and control who is allowed to access the system.

6. Role-Based Access Control: Apply role-based access control to deliver the right experience to users based on what they do in the system.

7. Organized Workflow Management: Introduce a clear structure for handling a disaster to ensure that everything is done in the best way possible.

V. IMPLEMENTATION

1. Overview of Architecture:

The structure of the "Resource Connect" application is created to improve the organization of handling disaster relief requests. It makes use of various building blocks that help users, agencies, and administrators work and exchange information smoothly.

2. Client-Server

In the application, the client-server architecture means that the mobile interface talks to a server running on the back end. Splitting the system allows data to be processed easily, stored safely, and user requests and replies to be efficiently managed.

3. Modular Design:

Features of architecture are organized into three main areas.

Admin Module: Manages relief agencies, oversees registration, and makes sure the right tasks are completed in order.

User Module: Users are able to login, send requests, and follow how their request is being processed.

Agencies Module: Allows those in relief agencies to log in, see new requests, and update their own situation.

4. Database-Management:

The application relies on MySQL to keep information about users, the agencies, and the statuses of requests. With the data stored centrally, it is easy to check its accuracy and make any needed updates, improving how fast the company responds.

5. Secure-Authentication:

The system also has secure ways to authenticate users and confirm that only the right people can view sensitive data. As a result, users feel that the application is more secure and reliable.

6. User-Interface-Design:

The application uses an easy-to-use interface that is built with the Kotlin framework for Android. The design ensures that users do not have a hard time finding what they need in the application.

7. Integration-Communication-Flow:

The architecture helps the modules interact clearly through APIs that are clearly defined. It guarantees that there are no interruptions while data is transferred to the

This means the client and server stay connected, making it possible for real-time updates and alerts needed for handling disaster relief.

8. Scalability and Future Enhancements:

Since the system is modular, it supports adding AI- powered analytics, up-to-date tracking tools, and other functions that may be needed in future.

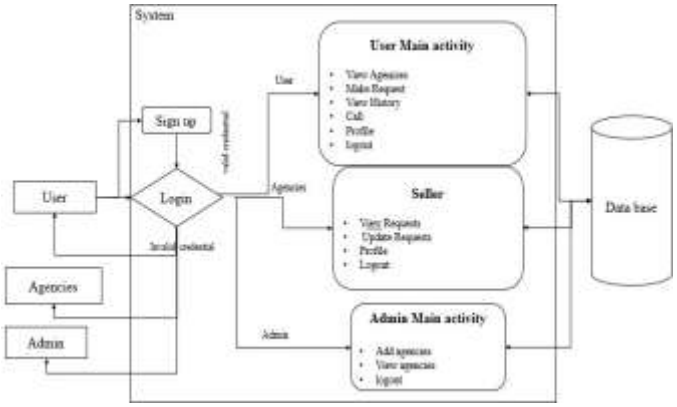

Fig1. Architecture for Rescue Connect

VI. PROBLEM DEFINITION

1. Inefficiencies in Relief Management

Because there is no single system to handle requests and resources, relief operations often deal with severe inefficiencies. Many of these systems still use manual ways or single pieces of digital software, which cause response times to be slow and communication between involved parties to suffer. Users report having difficulties in identifying the right organizations for help, while those providing relief find it tough to keep real-time track of the status of requests received. Such problems mean that management is not efficient, information is not clear, and agencies are late in responding to emergencies.

2. Challenges Faced by Users

Users also have to deal with challenges other than finding the best agencies. they usually do not have well-defined instructions for making the right requests. Due to the lack of knowledge on procedures and documents, many users end up sending requests that are not properly made. When emergencies arise, users are likely to stress out, making it challenging for them to work with current systems, which could result in not getting aid in time. Such platforms can also be hard to use on mobile devices, and there are usually no ways for users to mention their concerns, hindering the company in finding lasting issues to work on.

3. Difficulties for Relief Agencies:
It is difficult for relief agencies to organize incoming requests and keep their operations up to date. Absent a unified system, agencies usually send requests by calling or emailing, and this can make things delayed and cause errors. Because each country has their own system, it becomes difficult for agencies to manage requests, assign resources, and give updates to users on time, affecting their efficiency.

4. Absence of Transparency and Tracking:
A lack of clear understandings and recording in the current system increases the issues experienced by users and organizations. Often, users do not know the progress of their ticket, leaving them unsure and unhappy, especially when they need help immediately. If tracking is not organized, people may stay in touch with agencies until they get answers, adding even more pressure to overworked helpers. Not having agreed- upon ways to communicate data can mean that users may receive different information about the same thing. If agencies cannot be audited or reviewed on their request histories, the public may begin to doubt the honesty in the relief process. As a result, when such a system is not clear and trackable, it negatively impacts how organizations manage relief as well as their customers' experience.

5. An important concern is that users, relief agencies, and administrators do not have an integrated platform to work together. Centralized coordination helps join everyone up, share information for greater awareness, and keep everything open in the process of responding to disasters. The solution would allow for quicker and better management of relief requests, better allocation of funds, and more trust between the involved parties by being accountable.

VII. OUTCOMES

1. Centralized Relief Request Management:
With the system, users can easily submit and check their needs because everything is managed in one place. It's easier for agencies to track their requests when they are all managed through a single system.

2. Improved Communication Channels:
Communication helps users and community agencies to know what is happening, making sure all are informed. With up-to-date people using the app know exactly what's happening with their requests. Sharing updates and problems among agencies.

3. EfficientStatus Updates by Agencies:
Agencies are able to change the request status instantly, so users stay up-to-date. This takes away the need for users to contact the team, as they can show the progress on their own project page.

4. Enhanced User Experience:
This app is made to be clear and simple, so everyone, regardless of their skill level, can find their way around easily user can submit easily.

VIII. DISCUSSIONS

By using the "Resource Connect" app, the management of disasters has improved by overcoming problems in old systems and adopting modern ways to efficiently handle resources and messages. The discussion includes different aspects of the application, including how it works and what it can achieve for the wanted outcome in line with what the problem statement requires. The system's main advantage is that it centralizes the whole process of handling relief aid. Older ways of working involve different, manual tasks that may lead to misunderstandings and inefficiency. It helps solve this problem by bringing them all together on a carefully designed and common platform. The platform makes it possible for users to ask for support, check on their requests, and quickly connect with agencies. Such agencies are given the ability to log onto the platform, check new requests, and mark their role in the request, thus keeping users informed as things progress. Having a set protocol increases how smoothly relief efforts go and prevents any unnecessary confusion during disasters. For Android, the application is built with the Kotlin framework, which makes the interface both stable, easy to use, and responsive. As a result of Kotlin working well on Android, the app is easy to use and can be accessed by people with different levels of knowledge. Also, using MySQL as our backend means we can handle data quickly and securely, saving user requests, details of agencies, and updates on their status easily. When the system has secure authentication measures, it can therefore be trusted to ensure sensitive information is secure and only available to authorized users. The modular design of the application helps make it serve its purpose well. Admin Module, User Module, and Agencies Module are the main modules, and each one has a particular function within the system. The Admin Module helps administrators take care of agency registrations and supervise the work, resulting in a well-structured agency. This module aims to make the system easy for users by using intuitive screens for registering, requesting, and checking their request status. At the same time, the Agencies Module allows relief providers to manage their activities well.

quick responses. By using a modular design, everyone can get a unique experience, and the system can also grow and include more features in the future. Resource Connect focuses on making sure everything is clear for both staff and the public. Allowing users to see and manage the progress of their requests, as well as get details from the agencies, increases the trust between everyone involved. It is also easier for chief executives to track how relief agencies work and distribute resources because everything is coordinated by one body. This method deals with one of the major issues found in traditional systems. People get frustrated and wait longer to receive help because they are unaware of how the relief efforts are going. Evaluating and testing Resource Connect played a big role in its success. Several tests, namely unit, integration, and UAT, were performed to ensure the application is working and easy to use. The team included comments from stakeholders as they went along, so the application could be fine-tuned after each round of testing. Applying an iterative approach along Agile rules means the application meets what is expected by users and is operational under several scenarios. Besides, the feasibility study carried out in development clearly indicated that the application is profitable, feasible, and approved by the community, again showing its high potential. The system is unique in the way it uses the latest technologies and best management methods for disasters. By relying on similar systems such as MIDDAS and AI for managing disasters, the application adds effective and innovative elements to improve what it does. As an example, role-based access control makes certain that every stakeholder accesses only the tools and information appropriate to their job, which leads to more simplicity and improved results. Furthermore, the developers have built the application to adapt to further changes, such as tracking in real time, AI for managing resources, and linking with both government and NGO databases. With these enhancements, disaster relief efforts from MapBox may be improved and made available to more people. There is still a lot of room for Resource Connect to grow in the future. It would be helpful to track relief supplies in real time using GPS to make the process even more transparent and accountable. Using AI, requests could be sorted by urgency and the availability of resources, so help is given to those who need it the most. Also, joining hands with official and non-official organizations can help the application attract more users and prove its significance in managing disasters abroad and in homelands. Resource Connect is moving disaster relief management ahead by a great deal. Centralizing how the process is handled and taking advantage of the latest technology means the application improves on traditional systems, ensuring the requests are handled properly and everyone knows what's happening.

Due to its simple parts, firm architecture, and clear accountability, it is helpful in responding to disasters. While there are things that could be better, including an offline version and the ability to use multiple languages, because the software can be upgraded and scaled, it will stay aligned with future needs of disaster management.

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