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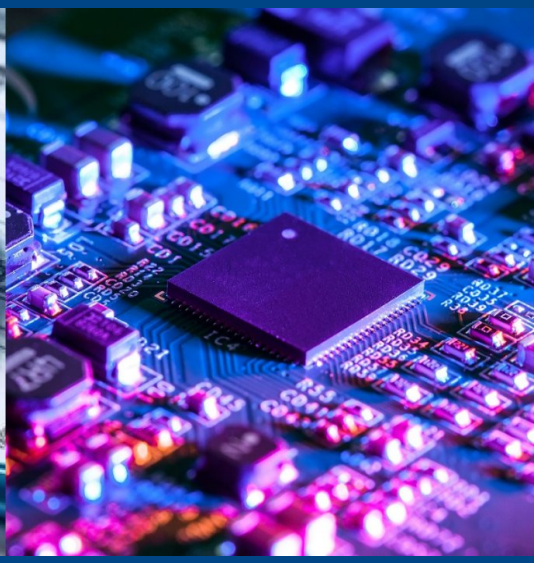

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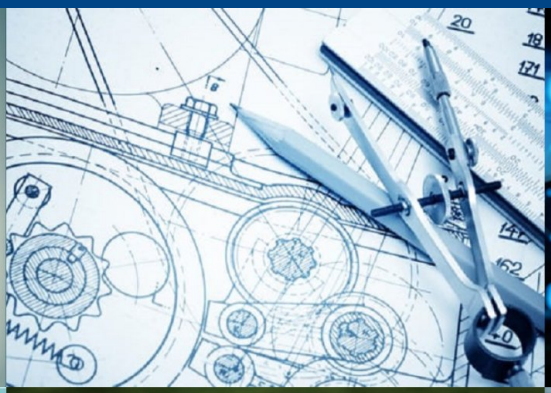

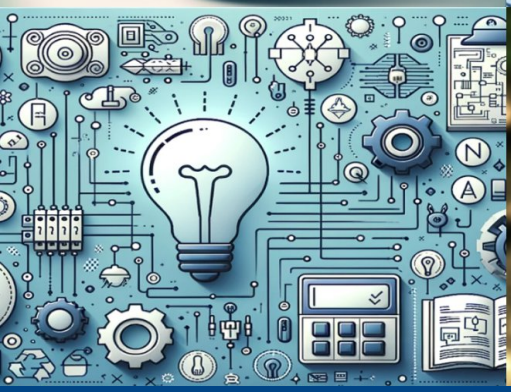

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Centralized NGO Donation and Volunteer Management System with Live Impact Tracking

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ABSTRACT: Non-governmental.organizations(NGOs) are essential in aiding disadvantaged communities; however, they encounter considerable obstacles because of insufficient transparency in handling donations, poorly organized volunteer efforts, and restricted access for recipients. Contributors frequently refrain from giving due to their inability to easily monitor the use of their donations and the effects their support generates. Furthermore, management diminish organizational efficiency. This document suggests a centralized platform for managing NGO donations and volunteer efforts, linking NGOs, donors, volunteers, and beneficiaries via a cohesive digital system. The platform guarantees openness through real-time monitoring of donations and how funds are used. A validated assistance request system is implemented to guarantee that only authentic needs are communicated to donors. The system includes a distinctive Live Impact Timeline that visually illustrates the entire process from request creation to final impact delivery, thereby improving trust and involvement. Additionally, the platform features intelligent volunteer management that matches skills, a unified resource inventory system to minimize waste, and communication tools for disseminating updates and success narratives. In general, the suggested system enhances transparency, collaboration and accessibility, ultimately optimizing social impact and bolstering donor trust

KEYWORDS: NGO Platform, Donation Transparency, Live Impact Tracking, Volunteer Management, Verified Help Requests, Resource Management, Social Impact System, Centralized Web Application

I. INTRODUCTION

Non-governmental organizations (NGOs) play a significant role in addressing social issues by providing support to underprivileged communities, including orphaned children, persons withdisabilities, and individuals in rural areas. Despite their importance, many NGOs face major challenges due to the lack of transparency in donation management, inefficient volunteer coordination, and limited accessibility for beneficiaries. Donors often hesitate to contribute because they are unable to clearly understand how their funds are being utilized and what real impact their contributions create. At the same time, volunteer management is mostly handled manually, leading to poor coordination, mismatches between volunteer skills and organizational needs, and reduced participation. Beneficiaries also struggle to identify suitable NGOs and lack an easy platform to request help, resulting in delays in receiving support. Furthermore, poor communication between NGOs and donors reduces trust and long-term engagement. In addition, inefficient resource management often leads to wastage in some areas and shortages in others due to the absence of proper tracking systems. To address these challenges, this project proposes a centralized NGO donation and volunteer management platform that connects NGOs, donors, volunteers, and beneficiaries through a unified digital system. The platform focuses on ensuring transparency, improving coordination, and enhancing accessibility. It introduces features such as verified help requests, real-time donation tracking, smart volunteer matching, and a unique Live Impact Timeline that enables donors to track the complete journey from contribution to real-world impact. By integrating these functionalities, the proposed system aims to improve trust, efficiency, and overall social impact.

1.1 PROBLEM STATEMENT

Despite the growing number of non-governmental organizations (NGOs), several critical challenges continue to affect their efficiency and impact. One of the major issues is the lack of transparency in donation management, where donors are unable toclearly track how their contributions are utilized, leading to reduced trust and hesitation in donating. In addition, most NGOs rely on manual methods for managing volunteers, resulting in poor coordination, mismatches between volunteer skills and organizational requirements, and decreased participation. Beneficiaries such as orphaned children, persons with disabilities, and individuals in rural areas face difficulties in

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identifying suitable NGOs and lack a simple and accessible platform to request help, which delays timely support. Furthermore, there is a significant communication gap between NGOs and donors, as organizations often lack structured tools to share updates, project progress, and impact reports, thereby weakening long-term engagement. Another important issue is inefficient resource management, where donated items such as food, clothing, and medicines are not properly tracked, leading to wastage in some areas and shortages in others. Additionally, the absence of a verification mechanism increases the risk of fake or misleading requests, reducing the credibility of the system. Therefore, there is a need for a centralized digital platform that ensures transparency, enables verified help requests, improves volunteer coordination, enhances communication, and supports efficient resource management to maximize the overall social impact of NGOs.

1.2 OBJECTIVE OF THE STUDY

The primary objective of this study is to develop a centralized NGO donation and volunteer management platform that enhances transparency, efficiency, and accessibility in social service activities. The system aims to provide a unified digital environment that connects NGOs, donors, volunteers, and beneficiaries, enabling seamless interaction and coordination. One of the key objectives is to ensure transparent donation tracking by providing real-time updates on fund utilization and impact, thereby building trust among donors. The study also focuses on implementing a verified help request mechanism to ensure that only genuine and approved needs are presented to donors, reducing misuse and increasing credibility. Another important objective is to introduce a Live Impact Timeline that allows users to track the complete journey from request generation to final impact delivery. The platform also aims to improve volunteer management by enabling skill-based matching and efficient task assignment, thereby increasing participation and productivity. In addition, the system seeks to provide beneficiarieswith an easy and accessible interface to find NGOs and request support. Efficient resource management is another objective, achieved through inventory tracking of donated items to reduce wastage and ensure fair distribution. Furthermore, the platform aims to strengthen communication between NGOs and donors by providing regular updates, event notifications, and success stories. Overall, the objective is to create a reliable, transparent, and impactful system that maximizes social benefit through effective use of technology.

II. LITERATURE REVIEW

Several studies have explored digital platforms for donation management, volunteer coordination, and social impact analysis using web technologies and data-driven approaches. The following works are closely related to the proposed system.

In paper [1], researchers introduced an online donation management system that enables users to contribute funds through digital platforms, improving accessibility but lacking transparency in fund utilization and impact tracking.

In paper [2], an NGO management framework was proposed to handle volunteer registration and coordination; however, the system did not include skill-based matching, leading to inefficient utilization of volunteer capabilities.

In paper [3], a web-based charity system focused on connecting donors and beneficiaries through centralized data storage, but it lacked a verification mechanism to ensure the authenticity of requests, which affected trust and reliability.

In paper [4], a resource management system was developed to track donated goods such as food, clothing, and medicines, but the system faced challenges in real-time updates and efficient distribution planning. These studies highlight the importance of digital transformation in NGO operations but reveal limitations such as lack of transparency, absence of verification systems, inefficient volunteer matching, and poor communication mechanisms. Therefore, the proposed system aims to overcome these challenges by integrating transparent donation tracking, verified help requests, smart volunteer management, and a unique Live Impact Timeline to enhance trust, efficiency, and overall social impact.

III. SYSTEM ARCHITECTURE

The proposed system is a centralized NGO donation and volunteer management platform designed to connect NGOs, donors, volunteers, and beneficiaries through a unified digital environment. The system follows a role-based architecture consisting of four main actors: NGO Admin, Donor, Volunteer, and Beneficiary, each with specific functionalities and access control. The NGO Admin is responsible for verifying help requests, managing

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donations, assigning volunteers, and maintaining overall system operations. Donors can view verified help requests, contribute funds or resources, and track the impact of their donations through real-time updates. Volunteers can register their skills, availability, and interests, and are assigned to tasks based on organizational needs. Beneficiaries can access NGO information and submit help requests through a simple and accessible interface. The system adopts a three-tier architecture consisting of the Presentation Layer, Application Layer, and Data Layer. The Presentation Layer is developed using HTML, CSS, and JavaScript or React to provide an interactive and user-friendly interface. The Application Layer is implemented using Java Spring Boot, which handles business logic such as request verification, donation tracking, volunteer matching, and communication workflows. The Data Layer uses MySQL to store user profiles, donation records, help requests, volunteer data, and resource inventory details securely. The system also integrates additional components such as payment gateway services for secure transactions, notification modules for real- time updates, and an inventory management module for tracking donated resources. A key feature of the architecture is the implementation of a verified help request system combined with a Live Impact Timeline, which ensures transparency by allowing users to track the complete lifecycle of support from request submission to final impact delivery. This architecture ensures scalability, reliability, and efficient coordination among all stakeholders, ultimately improving transparency, trust, and social impact.

3.1 SYSTEM OVERVIEW

The system follows a three-tier architecture consisting of:

1. Presentation Layer (Frontend) – Developed using HTML, CSS, and JavaScript or React to provide an interactive and user-friendly interface for donors, NGO administrators, volunteers, and beneficiaries to access system features easily.
2. Application Layer (Backend) – Implemented using Java and Spring Boot to handle core functionalities such as user authentication, help request verification, donation tracking, volunteer management, Live Impact Timeline generation, and overall system workflows.
3. Data Layer (Database & Storage) – Uses MySQL to securely store user details, NGO information, donation records, help requests, volunteer data, and resource inventory for efficient data management and retrieval.
4. Development Environment (Tools & Platform) – The system is developed and executed on Windows 7/8/10 using an appropriate IDE such as IntelliJ IDEA or Eclipse for coding, testing, and deployment.

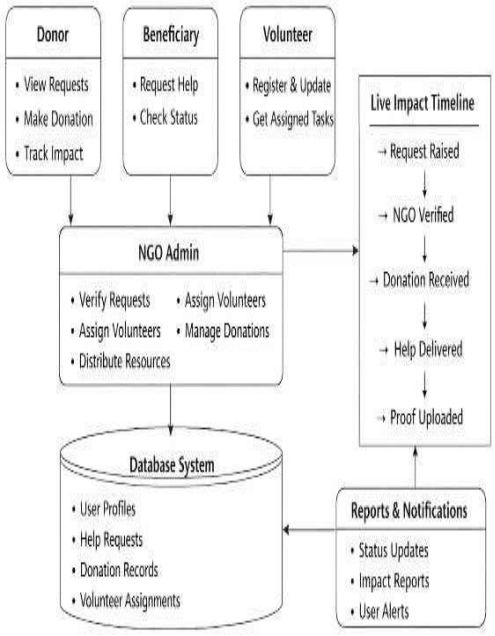

Fig.1 Architecture of the System

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3.2 USE CASE ANALYSIS

The Use Case Analysis explains how different users interact with the proposed centralized NGO donation and volunteer management system. It identifies the actors, their interactions with the system, and key functionalities

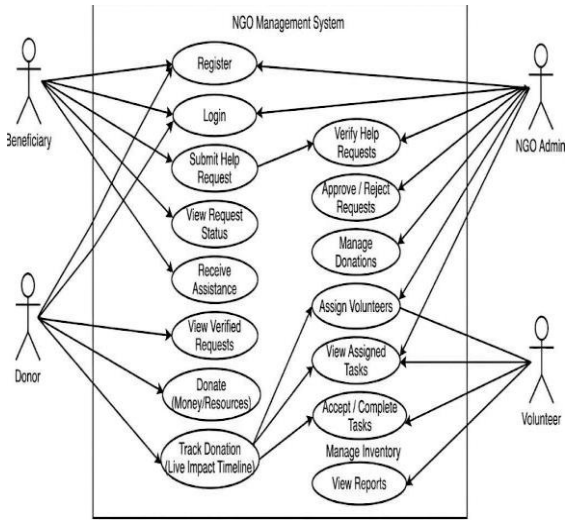

Fig.1 Use Case Diagram

Use Case Flow Example: Help Request and Donation with Live Impact Tracking

1. The User (Beneficiary/Volunteer) logs in and submits a help request with details such as type of help, location, and urgency.
2. The request is sent to the NGO Admin for verification.
3. The NGO Admin reviews and verifies the request to ensure authenticity.
4. Verified requests are made visible to donors in the system.
5. Donors view the request and contribute funds or resources.
6. The system updates the Live Impact Timeline with stages such as request raised, verified, donation received, and help delivered.
7. Volunteers are assigned to tasks based on their skills and availability.
8. The NGO distributes resources to the beneficiary and uploads impact proof.

This Use Case Analysis ensures that the platform supports transparent donation tracking, verified request handling, efficient volunteer coordination, and structured workflows for delivering real-world impact.

3.3 CLASS DIAGRAM ANALYSIS

The class diagram represents the structural design of the proposed Centralized NGO Donation and Volunteer Management System. It describes the major classes involved in the platform and explains how they interact to support donation management, help request handling, volunteer coordination, and impact tracking.

Key Components and Their Roles

1. User Class

The User class represents all system users including donors, volunteers, and beneficiaries. It stores details such as user ID, name, email, password, role, skills (for volunteers), and basic profile information. It provides operations such as registration, login, submitting help requests, donating resources, and tracking donation impact. This class acts as the core entity for user interaction within the system.

2. NGO Class

The NGO class represents registered non- governmental organizations. It contains attributes such as NGO ID, name, email, and contact details. It supports functions such as verifying help requests, managing donations, assigning volunteers, and updating the status of requests. This class is responsible for handling all organizational activities within the platform.

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3. HelpRequest Class

The HelpRequest class stores details related to requests raised by beneficiaries or volunteers. It includes attributes such as request ID, type of help (food, medical, education, shelter), location, urgency level, and status (pending, verified, approved). It provides methods to submit requests, update status, and retrieve request details. This class plays a key role in connecting beneficiaries with donors.

4. Donation Class

The Donation class manages all donation-related activities. It includes attributes such as donation ID, donor ID, amount or resource type, and donation status. It provides methods to process donations, track contributions, and link donations to specific help requests. This class ensures transparency and proper tracking of funds and resources.

5. Volunteer Class

The Volunteer class stores information about volunteers including volunteer ID, skills, availability, and assigned tasks. It supports operations such as registering, updating skills, viewing assigned tasks, and completing tasks. This class helps in efficient volunteer management and task allocation.

6. Admin Class

The Admin class handles system-level management and verification. It includes admin credentials and control functions such as approving or rejecting user registrations, verifying help requests, monitoring system activities, and managing reports. This ensures secure access control and maintains system reliability

7. ImpactTimeline Class

The ImpactTimeline class represents the Live Impact Timeline feature of the system. It tracks the progress of each help request through stages such as request raised, verified, donation received, help delivered, and proof uploaded. This class enhances transparency by showing real-time impact updates to donors.

The Data Flow Diagram represents how information flows between the Donor, Volunteer, Beneficiary, and NGO Admin modules in the proposed system. Users first register and submit their details, which are verified by the NGO Admin to ensure authenticity. Beneficiaries or volunteers submit help requests with details such as type of help, location, and urgency, which are forwarded to the NGO Admin for verification. Once verified, these requests are stored in the database and made visible to donors. Donors can view verified requests and contribute donations in the form of money or resources. The system records donation details and links them to specific help requests. Volunteers register and provide their skills and availability, and the NGO Admin assigns them to suitable tasks based on requirements. The system tracks the distribution of resources and updates the status of each request. A key component of the system is the Live Impact Timeline, which continuously updates the progress of each request from submission to final delivery. The system also sends notifications and updates to users regarding request status, donation progress, and task assignments. The NGO Admin monitors overall system activity, manages inventory, and ensures efficient coordination among all actors, thereby maintaining transparency and platform reliability.

IV. DONATION TRACKING AND IMPACT RECOMMENDATION ALGORITHM

The core functionality of the proposed system depends on a transparent donation tracking and impact management mechanism. Unlike traditional NGO platforms that only collect donations, this system ensures complete visibility and accountability by tracking each step from request generation to final impact delivery. The process can be described in the following stages:

4.1 Help Request Collection

The system collects help request data submitted by beneficiaries or volunteers in a structured format including type of help, location, and urgency level. Let:

- R represent a help request

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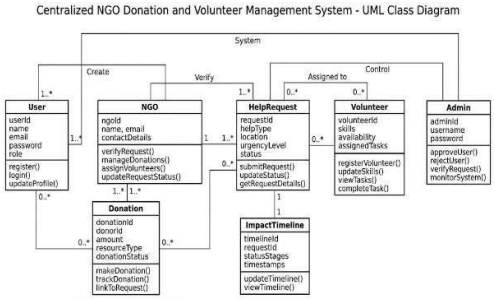

Fig.2 Class Diagram

4.2 Request Verification

The NGO Admin verifies the authenticity of each request before making it visible to donors. Let:

- V represent verified requests Verified Request:

V = Verify(R)

4.3 Donation Processing

Donors contribute funds or resources to verified requests. The system records and links donations to specific requests.

Let:D represent donation

4.4 Resource Allocation

The system allocates donations and resources to fulfill the needs of verified requests efficiently.

4.5 Volunteer Assignment

Volunteers are assigned to tasks based on their skills and availability.

Matching Formula:

Match % = (Sv ∩ Sn) / Sn × 100

4.6 Live Impact Timeline Generation (CORE FEATURE)

Each help request is tracked through different stages:

- Request Raised
- NGO Verified
- Donation Received
- Help Delivered
- Impact Proof Uploaded

4.7 Impact Tracking

The system continuously updates the impact status of each request and provides real-time visibility to donors.

Impact Function:

Impact = f(Donation, Delivery, Proof)

V. RESULTS AND DISCUSSION

5.1 RESULTS

The proposed centralized NGO donation and volunteer management system successfully demonstrates an integrated platform that improves transparency, coordination, and accessibility in NGO operations. The system enables users to register as donors, volunteers, or beneficiaries and interact through a structured workflow. Beneficiaries can submit help requests, which are verified by NGO Admins before being displayed to donors, ensuring authenticity and reducing misuse. Donors are able to view verified requests and contribute funds or resources while tracking their contributions through the Live Impact Timeline, which provides real-time updates from request generation to final impact delivery. The platform also supports efficient volunteer management by allowing volunteers to register their skills and availability, enabling NGOs to assign appropriate tasks and improve

participation. Additionally, the system includes a resource management module that tracks donated items such as food, clothing, and medicines, helping to reduce wastage and ensure fair distribution. The notification and communication features keep all stakeholders informed about request status, donation updates, and task assignments. Overall, the implementation of the system enhances trust among donors, improves operational efficiency for NGOs, and ensures timely support for beneficiaries, thereby maximizing social impact.

5.2 Comparison with Existing System

Traditional NGO platforms and donation systems mainly focus on collecting funds and providing basic information about organizations, but they lack transparency, structured workflows, and real-time impact tracking. In most existing systems, donors are unable to clearly understand how their contributions are utilized, which reduces trust and long-term engagement. Volunteer management is often handled manually, leading to poor coordination and inefficient use of volunteer skills. Additionally, many platforms do not provide a proper mechanism for beneficiaries to request help directly, making access to support difficult. Resource management is also limited, resulting in improper tracking of donated goods and causing wastage or shortages. Furthermore, the absence of verification mechanisms increases the risk of fake ormisleading requests, reducing system credibility. In contrast, the proposed system introduces a centralized digital platform with features such as transparent donation tracking, verified help requests, and a unique Live Impact Timeline that allows donors to track the complete journey of their contributions. It also provides smart volunteer management through skill-based matching and efficient task assignment. The inclusion of a resource inventory system ensures proper tracking and distribution of donated items, while communication features improve interaction between NGOs and donors. Overall, the proposed system offers improved transparency, reliability, and efficiency compared to existing systems, thereby enhancing trust and maximizing social impact.

VI. CONCLUSION

The proposed Centralized NGO Donation and Volunteer Management System provides an effective and comprehensive solution to the challenges faced by non-governmental organizations in ensuring transparency, coordination, and accessibility. By integrating features such as verified help requests, real-time donation tracking, smart volunteer management, and efficient resource allocation, the system improves overall operational efficiency and trust among stakeholders. The introduction of the Live Impact Timeline enables donors to clearly visualize the journey of their contributions from request generation to final impact, thereby enhancing engagement and confidence. The platform also simplifies the process for beneficiaries to request support and ensures timely assistance through proper verification and distribution mechanisms. In addition, the system strengthens communication between NGOs, donors, and volunteers through regular updates and notifications. Overall, the proposed solution not only improves the reliability and effectiveness of NGO operations but also maximizes social impact by leveraging technology to create a transparent and accountable ecosystem.

VII. FUTURE SCOPE

Although the proposed system provides an effective solution for improving transparency, coordination, and impact tracking in NGO operations, several enhancements can be incorporated in the future to further improve its functionality and scalability. One majorimprovement is the integration of artificial intelligence and machine learning techniques to automatically detect fraudulent or duplicate help requests and enhance decision-making processes. The system can also be extended by developing a mobile application to increase accessibility for users, especially in rural and underprivileged areas. Integration with third- party platforms such as payment gateways, government databases, and social media can provide verified data and expand the reach of the system. Additionally, blockchain technology can be incorporated to ensure secure and tamper-proof donation tracking, further enhancing transparency and trust. Advanced analytics dashboards can be introduced for NGOs and administrators to monitor donation trends, resource utilization, and impact metrics in real time. The platform can also include multilingual support and voice-based interfaces to improve usability for diverse users. These enhancements will make the system more intelligent, scalable, and suitable for large-scale real-world deployment, thereby increasing its effectiveness in maximizing social impact.

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