Smart NGO Management System

Bhavesh Dhabale[1], Dr. S. P. Khandait[2], Gayatri Kadhao[3]
[1,2]*K. D. K. College of Engineering*
[3]*PSK Technologies Pvt. Ltd.*

***Abstract*—Non-Governmental Organizations (NGOs) play a significant role in addressing social challenges in areas such as poverty, education, healthcare, and community development. However, many NGOs rely on manual or fragmented systems to manage volunteers, donations, beneficiaries, and events, leading to inefficiency, data inconsistency, and a lack of transparency. This paper presents a Smart NGO Management System, a web-based platform designed to streamline and centralize NGO operations. The system enables efficient management of volunteer records, donor information, beneficiary data, and organizational activities through a single integrated interface. The proposed solution is developed using the MERN stack, which includes MongoDB for database management, Express.js and Node.js for backend processing, and react for frontend user interaction. The system improves data accuracy, reduces manual workload, and enhances transparency in donation tracking and resource utilization. By providing a scalable, secure, and user-friendly platform, the system helps NGOs operate more efficiently and focus on their core objective of social service and community support.**

***Index Terms*—NGO Management, Web Application, Volunteer Management, Donation Management, Beneficiary Management, Data Management, MERN Stack, Social Service Platform.**

I. INTRODUCTION

Non-Governmental Organizations (NGOs) play an important role in addressing social issues such as poverty, education, healthcare, and environmental protection. However, many NGOs still rely on manual methods or separate tools to manage volunteers, donations, and beneficiary data, which leads to inefficiency, data inconsistency, and lack of transparency.

To overcome these challenges, a centralized digital solution is required. The Smart NGO Management System is a web-based platform designed to manage NGO activities such as volunteer registration, donor management, beneficiary tracking, and event organization in an efficient and organized manner.

The system is developed using the MERN stack, which includes MongoDB, Express.js, React, and Node.js. This technology ensures scalability, secure data handling, and a user-friendly interface.

By providing a unified platform, the system reduces manual work, improves data accuracy, and enhances transparency, enabling NGOs to operate more effectively and focus on their social objectives.

II. OBJECTIVES

The objectives of this project are as follows:

- To develop a web-based platform for managing NGO activities.
- To store and manage information related to volunteers, donors, and beneficiaries in a centralized database.
- To reduce manual paperwork by digitizing records and automating administrative tasks.
- To improve transparency and accountability in managing donations and resources.

III. LITERATURE REVIEW

The development of digital management systems for non-profit organizations has significantly improved data handling, transparency, and operational efficiency. Researchers have proposed various web-based platforms to manage NGO activities such as volunteer coordination, donation tracking, and beneficiary management. These systems demonstrate a shift from manual record-keeping to centralized digital solutions that enhance accessibility and coordination.

Several studies highlight different aspects of NGO management systems. Auti et al. (2023) developed a

centralized platform for managing NGO operations but faced challenges in real-time data processing [1]. Xiaofei (2022) focused on volunteer management, improving coordination but lacking scalability for large organizations [2]. Ali and Ilyas (2023) proposed a donation management system that improved transparency but raised concerns regarding payment security [3]. Desale et al. (2023) developed a volunteer data system that reduced paperwork but had limitations with large datasets [4].

Other research emphasizes system integration and collaboration. Berezko and Zhezhnych (2019) highlighted the benefits of digital collaboration but noted dependency on internet connectivity [5]. Batti (2014) and Khan et al. (2021) stressed the importance of structured data management but lacked practical implementation [6][7]. Khan et al. (2022) and Özkan et al. (2022) proposed systems for community service and disaster management, though they faced limitations in real-world testing and complexity [8][9]. Hiware et al. (2020) developed a centralized system but reported limited deployment in real environments [10].

Despite these advancements, challenges such as scalability, security, real-time processing, and practical implementation still exist. The proposed Smart NGO Management System addresses these issues by providing a scalable, secure, and integrated platform for efficient NGO management.

IV. METHODOLOGY

The *Smart NGO Management System* is developed using a structured and systematic methodology to ensure efficient management of NGO operations through a web-based platform. The methodology focuses on understanding the requirements of the organization, designing an effective system structure, implementing the solution using modern technologies, and ensuring the system works reliably through testing and deployment.

The development process begins with *requirement analysis*, where the major challenges faced by non-governmental organizations are carefully studied. NGOs often deal with large amounts of information related to volunteers, donors, beneficiaries, and social activities. Managing these records manually can lead to data loss, duplication, and difficulty in coordination. During this phase, the necessary features of the system are identified, such as volunteer registration, beneficiary management, donation tracking, and event organization. Understanding these requirements helps define the scope of the system and ensures that the platform addresses the real operational needs of NGOs.

Once the requirements are clearly defined, the next stage is *system design*. In this phase, the overall architecture of the system is planned to ensure that the application is efficient, scalable, and easy to maintain. The design includes planning the database structure, defining system modules, and creating the layout for the user interface. The system is divided into different modules such as volunteer management, beneficiary management, donor management, and event management. Each module performs specific tasks and works together to provide a complete management solution. The database design is also created to ensure that data can be stored, retrieved, and updated efficiently without redundancy.

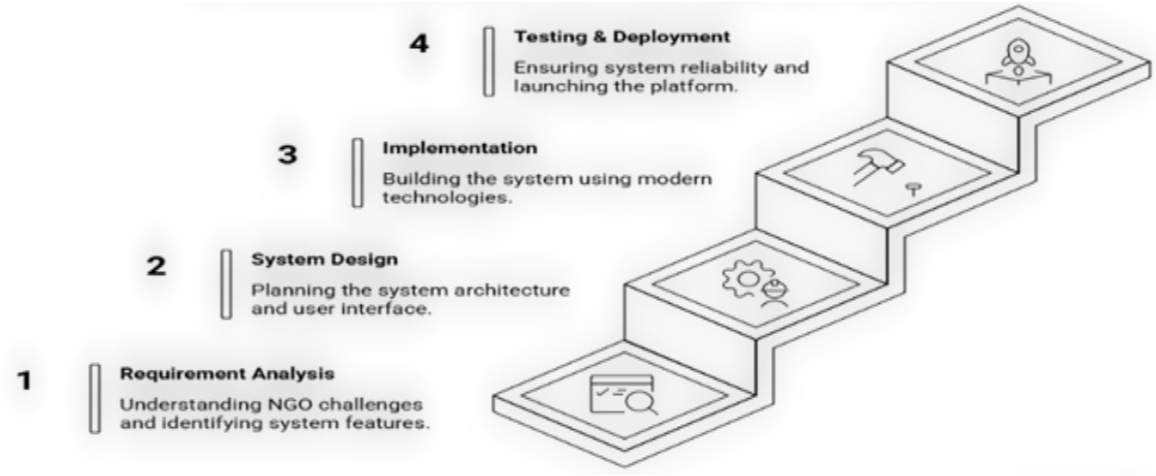

Fig.1 Steps of Development

After designing the system structure, the next step is *technology selection and implementation*. The system is developed using the MERN stack, which consists of MongoDB, Express.js, React, and Node.js. These technologies provide a modern and efficient framework for building scalable web applications. React is used to create the frontend of the application, which provides an interactive and user-friendly interface for administrators and users. The frontend allows users to perform tasks such as registering volunteers, managing beneficiary details, and viewing organizational activities.

The backend of the system is developed using *Node.js and Express.js*, which handle server-side logic and manage communication between the user interface and the database. The backend processes user requests, performs operations such as adding or updating data, and returns the required information to the frontend. MongoDB is used as the database system to store all the information related to volunteers, donors, beneficiaries, and organizational events. MongoDB provides a flexible and scalable way to manage large amounts of data, which is essential for organizations that continuously collect and update information.

Once the development phase is completed, the system undergoes *testing* to ensure that it functions correctly and efficiently. Testing helps identify and resolve any errors or issues present in the system. Various types of testing are performed, including functional testing, which checks whether each feature of the system works properly, and usability testing, which ensures that the system is easy to use and navigate. This stage is important to guarantee that the system performs reliably in real-world conditions.

After successful testing, the application moves to the *deployment phase*, where it is made available for use. The system is hosted on a server so that users can access it through a web browser. Deployment ensures that the system can handle real-time data and multiple users simultaneously. The database is connected to the application so that all information entered by users is stored securely and can be retrieved whenever required.

V. RESULT

The developed system successfully provides a functional and user-friendly web-based platform for managing NGO activities. The implementation demonstrates that users can easily access the platform, explore projects, view beneficiary details, and interact with various sections through a well-designed interface. The homepage effectively shows key information such as total impact, number of volunteers, and communities served, enhancing user engagement.

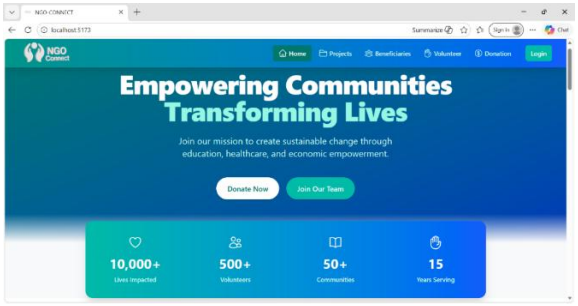

Fig 2. Home Page

The Projects module allows users to search, filter, and view different ongoing and completed projects, showing that the system can manage and display project-related data efficiently. Similarly, the Beneficiaries module organizes beneficiary information in a structured format, making it easy to access and understand details such as category, location, and involvement in projects.

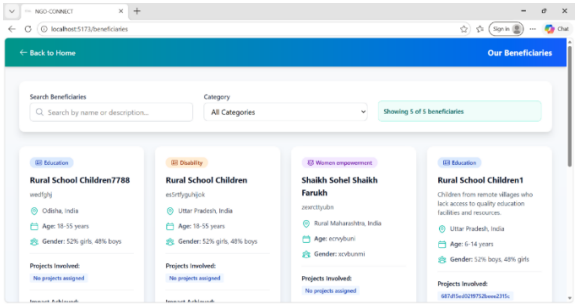

Fig. 3 Beneficiaries Page

The system also integrates a Volunteer module, which ensures secure access control, as seen in the authentication mechanism that restricts unauthorized users. This confirms that security features like token-based authentication are working effectively.

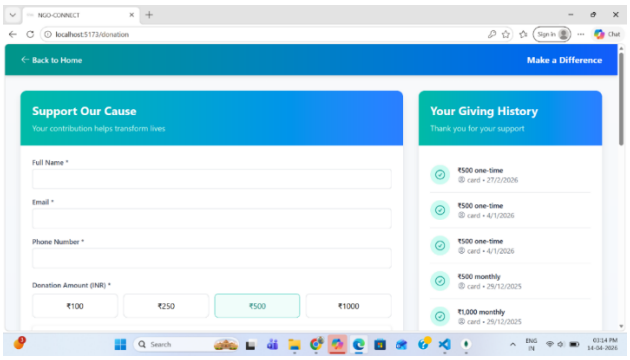

Fig.4 Donation Page

Overall, the system achieves its objective of digitizing NGO operations by improving data management, enhancing transparency, and simplifying user interaction. The results indicate that the platform is scalable, efficient, and capable of supporting NGO activities in a more organized and effective manner.

VI. CONCLUSION

The Smart NGO Management System provides a digital solution that simplifies NGO management and enhances operational efficiency. By automating administrative tasks, the system enables NGOs to focus more on their core mission of serving society. Future enhancements could include advanced reporting, AI-driven analytics, and mobile accessibility to further improve community impact.

REFERENCES

[1] N. Auti, S. Deshmukh, H. Sharma, S. Dhumal, and P. Shinde, "An advanced NGO management system for efficient operations," vol. 11, no. 5, May 2023. [Online]. Available: https://www.ijraset.com/research-paper/an-advanced-ngo-management-system-for-efficient-operations

[2] W. Xiaofei, "Volunteer management system," *Int. J. Trend Sci. Res. Dev. (IJTSRD)*, 2022, e-ISSN: 2456-6470. [Online]. Available: https://www.ijtsrd.com/papers/ijtsrd60064.pdf

[3] F. Z. Ali and A. Ilyas, "Charity donation management system," *arXiv preprint*, 2023. [Online]. Available: https://arxiv.org/abs/2509.04423

[4] J. Desale, K. Gautam, S. Khandare, V. Parikh, and D. Toradmalle, "NGO support software solution," *Int. J. Res. Appl. Sci. Eng. Technol. (IJRASET)*, 2023. [Online]. Available: https://www.ijraset.com/research-paper/ngo-support-software-solution

[5] O. Berezko and P. Zhezhnych, "Digital volunteer management system," *Int. J. Interact. Mobile Technol. (IJIM)*, vol. 13, no. 6, 2019, doi: 10.3991/ijim. v13i06.10238.

[6] R. C. Batti, "NGO information management system," *Eur. J. Business Manage.*, vol. 6, no. 24, 2014. [Online]. Available: https://www.iiste.org/Journals/index.php/EJBM/article/view/13869

[7] M. A. Y. Khan, S. Naveed, and M. Habib, "Non-profit organization management system," *Migration Letters*, vol. 18, no. 4, 2021. [Online]. Available: https://migrationletters.com/index.php/ml/article/view/11233

[8] N. Khan, S. Anjum, A. Maske, and D. S. Solanki, "Community service management system," *Int. J. Res. Appl. Sci. Eng. Technol. (IJRASET)*, 2022. [Online]. Available: https://www.ijraset.com/research-paper/increasing-efficiency-of-ngos-for-management-of-food-waste

[9] Özkan, U. Korkmaz, C. Dak, and E. Karaarslan, "Social service digital platform," *arXiv preprint*, 2022. [Online]. Available: https://arxiv.org/abs/2204.05884