Information Technology to Support Volunteer Projects

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Abstract. **Volunteers and coordinators can improve their work by combining various tasks and tools into one integrated system. This online platform will serve as a centralized place for volunteer recruitment, planning, communication, training, and reporting. The article focuses on the project to develop an information system for managing volunteer activities. The study presents a comparative description of existing developments and practices in the field of volunteer automation. The issues of calendar planning and resource management for the successful achievement of the goals and objectives of the IT project are considered. The information system was designed using a unified modelling language, the results of which are presented in the form of UML diagrams. Thanks to the clear and simple interface of the web application, this IT project will allow for the coordination of volunteers, effective communication and connection between them, as well as the identification and resolution of routine problems in volunteering.**

Keywords: IT project, information system, volunteering, UML modelling, calendar schedule, Gantt chart.

I. INTRODUCTION

Volunteering is an integral part of modern society that supports and develops various social, cultural and civic initiatives. It refers to free voluntary actions performed by individuals without any reward or material benefit. Volunteers provide their time, skills, resources and energy to help those in need or to improve the social situation, environment or public welfare.

The essence of volunteering is selfless help and support for other people or the community. It is based on the principles of voluntariness, selflessness, mutual assistance and social responsibility.

Volunteering can take a variety of forms, including working for charities, social assistance, environmental protection, education, etc.

Volunteering plays an extremely important role in society by fulfilling several key functions. Volunteers provide support and assistance to people in difficult situations, offering financial help, counselling, training, and education. They also contribute to community development by fostering positive relationships and improving the quality of life. Additionally, volunteering helps individuals become more conscious citizens by promoting awareness and responsibility, as volunteers address social, environmental, and economic challenges within their communities. Moreover, volunteering offers opportunities for personal growth, enabling individuals to develop valuable skills in communication, collaboration, event organization, and project management.

II. FORMULATION OF THE PROBLEM

Volunteering is required in almost all areas of modern society, including healthcare and emergency situations. Due to the widespread availability of volunteering, information management systems have been developed to date that attempt to support their various processes and deal with the wide range and specifics of volunteer work. The article [1] discusses the features and shortcomings of existing volunteer management systems and presents an attempt to create a reference model of an information system for managing volunteer activities. Authors of the research [2] describe the prospects for using information and communication technologies in volunteer management, as new technologies in the workplace will provide ways to perform tasks with greater efficiency, thereby increasing both the experience of volunteering and the impact of volunteers on organisational operations.

Volunteer organisation leaders want to make sure they get a system that includes the most valuable features of volunteer management technology. Eli Samuels identifies five of the most useful features to look for in a volunteer management system, namely: a centralised volunteer database, volunteer hours tracking and reporting, automated volunteer engagement, effective communication, and volunteer engagement profiles [3].

Therefore, volunteering is an important tool for social development, but its potential is often not fully utilised due to a lack of systematic management. The organisation and coordination of volunteer projects face challenges related to resource management, communication and performance.

The IT project for the automation of volunteer activities will solve this problem by providing a convenient and functional tool for managing volunteer projects. It will help improve the efficiency of volunteering, facilitate more flexible planning and task allocation, facilitate interaction between managers and volunteers, and ensure reporting and monitoring of project performance. The information system will help volunteer organisations to optimise the use of their resources, improve the quality of volunteer services and increase their impact on the social sphere.

III. FORMULATION OF THE PURPOSE OF THE ARTICLE

The purpose of the article is to develop a project of an information system for managing volunteer activities, which will help improve the organisation and efficiency of volunteer projects.

Volunteer automation software is designed to coordinate, effectively manage, and monitor volunteer projects. It simplifies the processes of volunteer registration, task assignment, and reporting, helping to improve interaction between participants and increase the effectiveness of volunteer work.

IV. ANALYSIS OF SIMILAR APPLICATIONS

Researching existing analogues is an important factor in the preparatory processes for software design. This will allow you to study the best practices already used in similar systems, help you avoid repeating mistakes and find the most effective solutions. It is also possible to identify potential improvements, innovations, and gain insight into the competitive environment and the area in which the application will operate.

Table 1 summarises the advantages and disadvantages of existing web-based platforms and applications for managing volunteering [4-7].

Therefore, existing web-based applications can be a powerful tool for optimising the volunteer management process. They provide convenient access to information about volunteer opportunities. They allow organising and tracking volunteers' work, as well as improving communication and data exchange between volunteers and organisations.

V. PRESENTING THE MAIN MATERIAL

Volunteering has its own peculiarities that require a special approach to management. It has been determined that the main needs are coordination of volunteers, identification and solution of routine problems in the volunteer sphere (registration, accounting, reporting, etc.), as well as ensuring effective communication and connection between volunteers, organisations and, above all, people in need of assistance.

Before developing any software, it is necessary to define a list of requirements and challenges. Requirements help to understand what exactly needs to be achieved with the software and how it relates to the business goals of the entity or organization. They serve as a link between technical capabilities and the real needs of users or the business. Requirements also help to define what functionality and features should be included in the software and determine what technology, human resources, equipment and other resources will be needed to implement the project.

Therefore, to effectively manage volunteer activities, it is necessary to automate processes, which includes developing volunteer management software to handle routine tasks such as registration, task scheduling, data collection, and reporting, thus reducing manual labor and increasing efficiency. Integration of communication tools is also crucial for effective interaction among volunteers, organizers, project coordinators, and those in need, so the software should include systems like Telegram bots, email, shared workspaces, or messaging platforms to streamline communication. Additionally, managing volunteers involves handling sensitive information, so data security must be a priority, ensuring that personal data is protected and compliant with regulations. Finally, the software should be flexible and scalable to allow for future improvements.

TABLE 1. FUNCTIONALITY OF EXISTING WEB PLATFORMS AND APPLICATIONS

Title	Characteristics	Advantages	Disadvantages
VolunteerMatch	One of the largest web-based platforms for finding and managing volunteers. It enables organisations to post volunteer vacancies and allows volunteers to find projects that match their interests and skills.	An extensive database of organisations and volunteers to help you find suitable partners. Convenient search for projects by category and region. Intuitive and easy-to-use interface.	Limited functionality for managing volunteers outside the platform. Lack of integration with other volunteer management systems.
GivePulse	An universal software system for recruiting, engaging, scheduling and tracking volunteers through shifts, calendars and a customisable database to suit your needs. It allows organisations to create events, manage volunteer registration, communicate and track volunteer progress.	A user-friendly interface and easy-to-use platform that allows organisations to quickly create volunteer events and engage participants. Ability to manage volunteer registration, communicate with volunteers and track their volunteering progress. Integration with payment systems to collect donations and pay for volunteer events.	Limited functionality compared to other volunteer platforms, especially for larger organisations or projects with a more complex structure. Lack of some advanced features, such as additional analytics or task scheduling.
Volonter.org	The platform allows users to find volunteering opportunities based on their interests and skills. The goal is to build horizontal connections and establish effective communication between volunteers, volunteer groups and non-governmental organisations.	It offers a wide range of volunteer work, including: charity events, social projects and environmental campaigns. The platform provides a user-friendly interface for finding volunteer work, where volunteers can filter their search by location, type of work and duration.	Possibility of misunderstanding between volunteers and organisations. Security issues related to the safety of personal information.
Dobro.ua	The first and largest online charity fundraising platform in Ukraine, an effective and modern tool for raising funds for charitable and social projects of any kind. The main mission is to create a new model of systemic charity based on accountability, transparency, responsibility and citizen engagement.	A network where volunteers and organisations can communicate and collaborate on various charitable projects. The platform provides a user-friendly interface for finding volunteer work, where volunteers can filter their search by region, type of work and duration.	Insufficient activity and relevance of offers of volunteer projects. Poor tools for planning and managing volunteer events.

The main functions of an information system for automating volunteering include registration and authentication, allowing new volunteers to register and authorizing existing users. It enables project and task management, with features for creating, editing, and deleting projects, as well as assigning tasks to volunteers. The system tracks task performance, facilitating interaction between volunteers and project coordinators, and supports reporting and analytics by collecting data for decision-making. It operates in both online and offline modes, ensuring real-time interaction and data synchronization.

Users of the system range from volunteers who register, participate, and complete tasks, to project coordinators responsible for managing projects and interacting with volunteers. System administrators oversee access management and security, while analysts and managers use the system for reporting and decision-making. Additionally, sponsors and partners can engage with the system for project promotion and financial support.

Fig. 1 shows a block diagram of an information system for the automation of volunteering.
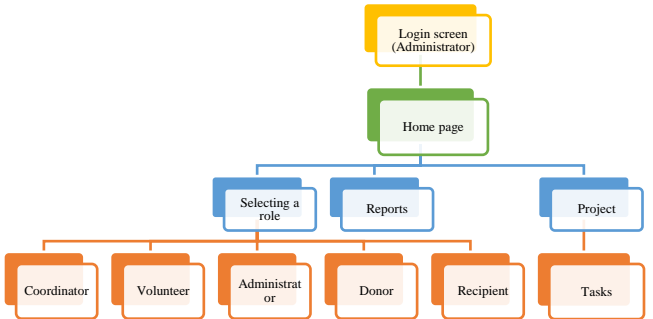

Fig. 1. Structural diagram of the information system.

Project management systems provide benefits in calculating project duration and tasks, building Gantt charts, distributing tasks among project participants, and controlling timelines, risks, and finances. The effectiveness of IT project management depends on the productive work of the project team, the formation of the composition and structure of tasks, the distribution of tasks among project participants, and the quality control of task solutions [8].

The development of the application was preceded by the creation of a calendar plan of the IT project (Fig. 2).
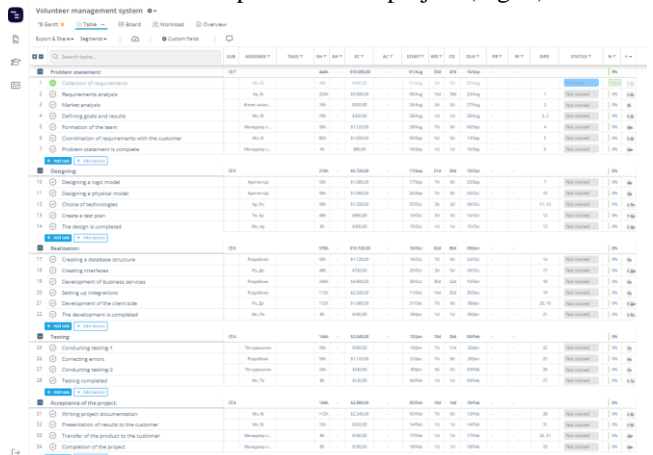

Fig. 2. Calendar plan of the project.

A Gantt chart was also built to illustrate the plan and schedule of the IT project using the online application Instagantt (Fig. 3).
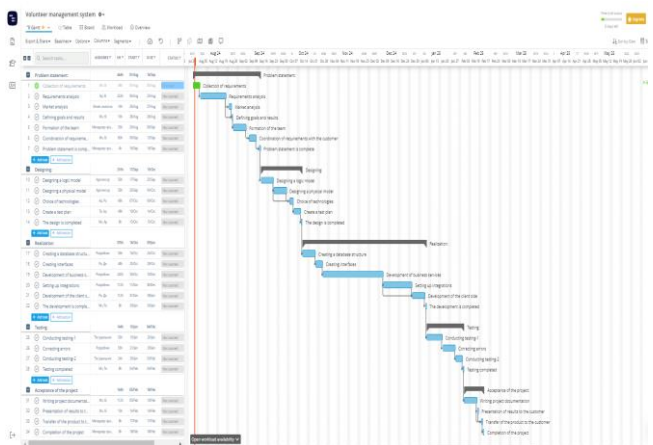

Fig. 3. Gantt chart of the project.

The design of the volunteer activity automation information system was carried out using the Unified Modelling Language (UML), which uses graphical notation to create an abstract model of the system. Today, UML is a widely recognized standard used by most system and application software developers. UML is supported by many object-oriented CASE products. Knowledge of UML is necessary not only for system analysts and designers, but also for ordinary programmers and software testers [9].

The use case diagram depicts the requirements for the system and helps to understand the roles of the system and their interaction with it. To understand the functionality of the system, business processes are depicted in a use case diagram (Fig. 4). The purpose of creating a use case diagram is to determine the context of the subject area for system design, as well as the need to develop an initial conceptual model of the system and its further improvement.
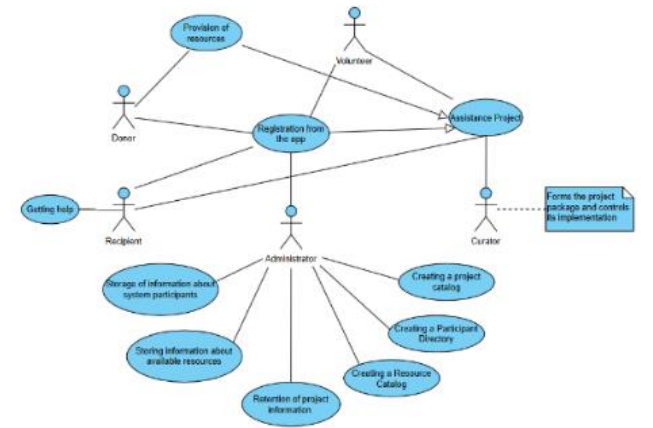

Fig. 4. Use case diagram.

Thanks to class diagrams, you can effectively represent the structure of the system, which simplifies the process of developing and further supporting a software product. A UML diagram of the classes of objects that implement the main processes of the information system for the automation of volunteering is shown in Fig. 5.
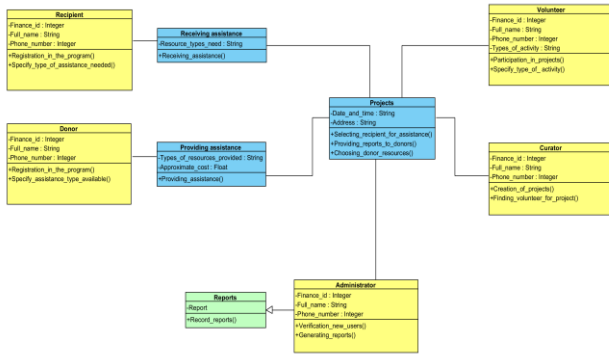
Fig. 5. UML diagram of system object classes.

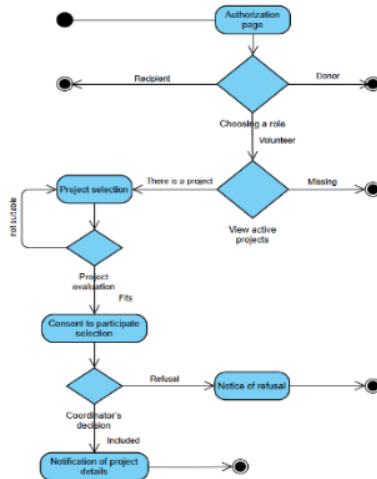Fig. 6 shows a UML activity diagram for a volunteer.

Fig. 6. UML activity diagram for a volunteer.

Therefore, volunteer organisations need an information system that is convenient and easy to use by clients and meets their requirements and needs. It should ensure the coordination of volunteers, identify and solve routine problems in volunteering (registration, accounting, reporting, etc.), and ensure effective communication and linkage between volunteers, organisations and, above all, people in need.

CONCLUSIONS

Today proves time and time again that it is very important not to stand aside and help each other in difficult times. Also, everyone who asks will receive, and everyone who seeks will find. This principle should accompany us all our lives. And it is through the development of an information system for the management of volunteer activities that each person can be brought closer to this credo.

This article discusses the project of an information system for automating volunteer activities. A web-based application can be a powerful tool for optimising the volunteer management process, providing convenient access to information about volunteer opportunities, organising and tracking volunteers' work, and improving communication and data exchange between volunteers and organisations.

The issues of scheduling and resource management for the successful achievement of IT project goals and objectives were investigated. Software design technologies were applied, such as: pre-project analytics of product issues, requirements analysis and determination of the list of functionality based on needs, modelling and visualisation of business processes using UML diagrams.

Further aspects of the relevance of this project include the possibility of improving the efficiency of volunteer activities, facilitating more flexible planning and task allocation, facilitating interaction between managers and volunteers, and ensuring reporting and monitoring of project performance.

Therefore, this IT project offers an innovative approach to managing volunteer activities through the design of a web application that solves current problems in the field of organising and coordinating volunteer projects. The results of the study have the potential to positively influence the development of the volunteer movement and contribute to its growth as a significant force in society.

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