

Design and Development of the Siparama Web (Student Choir UKM Information System) at ITB Widya Gama Lumajang

Evi Wahyuning Tias¹, Cahyasari Kartika Murni², Fadhel Akhmad Hizham³

Department of Informatics, Faculty of Engineering and Informatics, Institut Teknologi dan Bisnis Widya Gama Lumajang, Indonesia^{1,2,3}

Corresponding Author: Evi Wahyuning Tias (evitias9@gmail.com)

ARTICLE INFO

Date of entry:
14 February 2026
Revision Date:
8 April 2026
Date Received:
24 April 2026

ABSTRACT

Siparama is a web-based information system designed to facilitate the dissemination of information regarding the ITB Widya Gama Lumajang Student Choir Club. This system is used to streamline the registration process for new members, manage archives of proposals and accountability reports (LPJ), and share information about the club's activities. The case study in this research was conducted at the ITB Widya Gama Lumajang Student Choir Club. The system development method used was the Waterfall method, which consists of the requirements analysis, system design, implementation, testing, and maintenance stages. System testing was conducted using Black Box Testing, simple White Box Testing, and the System Usability Scale (SUS). Testing results showed that all features on the Siparama website functioned in accordance with the system's functional requirements. Additionally, the SUS test yielded an average score of 72.67, which falls into the "Acceptable" category with a "Good" adjective rating. This study concluded that the Siparama website has made the processes of information management, member registration, and archiving of student club activities easier, more organized, and accessible online to users.

Keywords: Black Box Testing, Siparama, SME Information System, System Usability Scale (SUS), Waterfall, White Box Testing.



Cite this as: Tias, E. W., Murni, C. K., & Hizham, F. A. (2026). Design and Development of the Siparama Web (Student Choir UKM Information System) at ITB Widya Gama Lumajang. *Journal of Informatics Development*, 4(2), 70-75. <https://doi.org/10.30741/jid.v4i2.1979>

INTRODUCTION

Advances in information technology are driving organizations to adopt digital systems. One such organization in need of an information system is the Student Activity Unit (SAU). In a campus setting, the use of a website can help organizations disseminate information, facilitate online member registration, and manage archives digitally. The ITB Widya Gama Lumajang Student Choir SAU still conducts new member registration and manages activity archives manually, making data difficult to manage, increasing paper usage, and requiring a significant amount of time to search for archives. Additionally, storing documents on personal Google Drive accounts risks data being scattered or lost during leadership transitions. These conditions highlight the need for a web-based information system capable of facilitating information dissemination, the member registration

process, and the management of activity archives in a more effective and organized manner. The objective of this research is to design and develop the Siparama website as an information system for the ITB Widya Gama Lumajang Student Choir Club to assist with information dissemination, online registration of new members, and centralized management of activity archives.

Theoretical Framework and Hypotheses

An information system is a collection of interconnected components designed to manage data and transform it into information that is useful to users (Santoso et al., 2025). In this study, the information system is used to support the process of disseminating information about the student organization, registering new members, and digitally managing activity archives. A website is an internet-based platform used to disseminate information online, making it accessible anytime and anywhere (Mustaib et al., 2022). The Siparama website was developed as the official information platform for the ITB Widya Gama Lumajang Student Choir. The Waterfall method is a software development method carried out sequentially, starting from requirements analysis, system design, implementation, and testing (Supiyandi et al., 2022). The Waterfall method is suitable for this research because the system development process is carried out in a structured manner, and the system requirements have been determined from the beginning of the research.

The website was built using the Laravel framework with the PHP programming language and a MySQL database to ensure the system operates dynamically and is fully integrated (Hutauruk & Pakpahan, 2021). The Laravel framework was chosen because it simplifies the website development process through the implementation of the Model-View-Controller (MVC) architecture, thereby making code management more structured and easier to develop.

METHODS

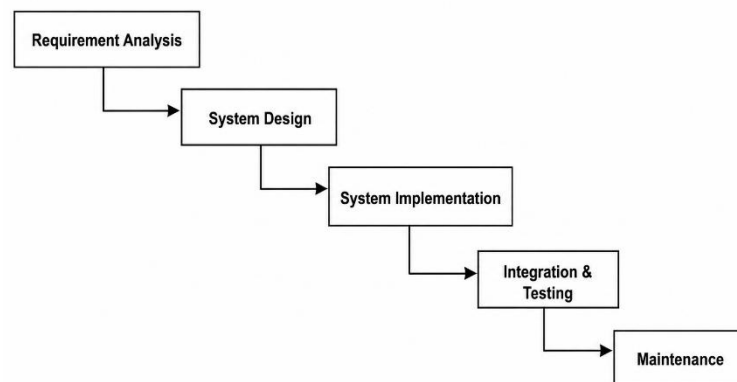


Figure 1. Stages of the Waterfall Method

Source: Adapted from Royce (1970)

The research method used in this study is the Waterfall development method. The Waterfall method was chosen because the system development process is carried out in a phased and structured manner, so that each phase can be completed before proceeding to the next one. This method is appropriate for the Siparama website study because the system requirements had been clearly identified from the outset of the research. The stages in the Waterfall method for this study consist of requirements analysis, system design, implementation, and testing. During the requirements analysis stage, a questionnaire was administered to collect data on system requirements, along with observations and a literature review. The system design stage involved creating flowcharts, use case

diagrams, activity diagrams, and an Entity-Relationship Diagram (ERD) to illustrate the system's workflow. The implementation phase involved building the Siparama website using the Laravel framework, the PHP programming language, and a MySQL database. The developed system features SME information, online registration for new members, an activity gallery, and management of proposal archives and accountability reports (LPJ). The final phase is system testing, which is conducted using the Black Box Testing method to test system functions, simple White Box Testing to examine the program's logical flow, and the System Usability Scale (SUS) to measure the website's usability based on user experience.

RESULTS AND DISCUSSION

The results of this study indicate that the Siparama website was successfully designed and developed as a web-based information system for the ITB Widya Gama Lumajang Student Choir. This system was developed using the Laravel framework with a MySQL database and features key functionalities such as club information, online registration for new members, management of proposal archives, and accountability reports (LPJ), as well as a gallery of club activities. During the implementation phase, the system was successfully realized in accordance with the design created in the previous phase. Users can access club information, view the activity gallery, register as new members, and download activity archives without needing to log in. Meanwhile, administrators have access rights to manage member registration data, upload proposal and accountability report (LPJ) archives, manage the club profile, and manage the activity gallery. System testing was conducted using Black Box Testing, simple White Box Testing, and the System Usability Scale (SUS).



Figure 2. Screenshot of the Siparama Website Home Page
Source: Siparama Website, captured by the authors (2025)

The home page serves as the website's main page, displaying information about the student club, access to new member registration, and an archive of the club's activities.

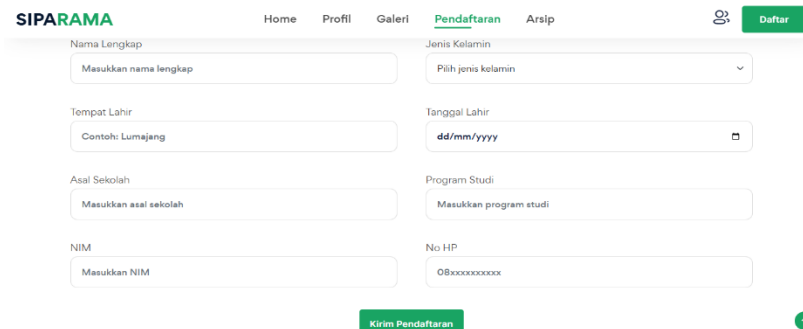


Figure 3. Member Registration Page
Source: Siparama Website, captured by the authors (2025)

The registration page is designed to help prospective members register online through the Siparama website.



Figure 4. View of the Proposal and Final Report Archive Page

Source: Siparama Website, captured by the authors (2025)

The archive page is used to display proposal documents and activity reports for student clubs, which users can access and download.

a. Black Box Testing

Black-box testing was conducted to determine whether all functions on the Siparama website were operating in accordance with system requirements. The testing involved evaluating key features without examining the source code, but rather based on the input and output generated by the system.

Table 1. Summary of Black Box Testing Results

No	Feature	Test Scenario	Result
1.	Admin Login	The admin enters the correct username and password	Valid
2.	Upload Proposal and Activity Report Files	The admin uploads the proposal and activity report documents	Valid
3.	Student Club Profile Management	The admin manages student club profile information	Valid
4.	Gallery Management	The admin uploads the SME activity gallery. Valid	Valid
5.	Member Registration	The user fills out the new member registration form	Valid
6.	Download Archives	The user downloads the activity archive documents	Valid
7.	Search Archives	The user searches for activity archive documents	Valid

Source: compiled by the author (2026)

The results of the black-box testing indicate that all functions on the Siparama website operate in accordance with the previously defined functional requirements.

b. White Box Testing

White-box testing was performed on the proposal and final report upload features to ensure that the program's logic flows properly.

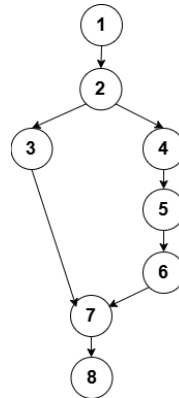


Figure 5. Flowchart for Uploading Proposal Archives and Activity Reports

Source: Developed by the authors (2026)

Based on the test results, a cyclomatic complexity value of 2 was obtained, indicating that there are two independent paths in the program flow: Path 1 (1 - 2 - 3 - 7 - 8) and Path 2 (1 - 2 - 4 - 5 - 6 - 7 - 8). The test results show that the data validation process, file upload, and storage of archived data to the database proceed according to the designed flow.

c. System Usability Scale (SUS) Testing

A System Usability Scale (SUS) test was conducted to determine the ease of use of the Siparama website based on user experience. The test was conducted on 15 respondents, comprising 3 administrators and 12 student club members, using the 10-item SUS questionnaire.

Table 2. Calculations for the System Usability Scale (SUS) Test

Number of Respondents	SUS Score	Category	Grade Scale	Adjective Rating
15 Respondents	72,67	Acceptable	C	Good

Source: compiled by the author (2026)

Based on the calculation results, the average SUS score was 72.67. This score indicates that the Siparama website falls into the “Acceptable” category with a “Good” rating. These results show that the system is fairly easy to use and is capable of helping users access SME information, register new members, and manage activity records more effectively.

CONCLUSION

Based on the research findings, the Siparama website was successfully designed and developed as an information system for the ITB Widya Gama Lumajang Student Choir Club using the Waterfall method. The development process consisted of the following stages: requirements analysis, system design, implementation, and testing. The system provides features for club information, online registration for new members, management of proposal and activity report archives, and an activity gallery. Black Box testing results showed that all system functions worked properly, while White Box testing showed that the program’s logic flow operated as designed. Additionally, the SUS testing results yielded an average score of 72.67, which falls into the “Acceptable” category with a “Good” adjective rating; thus, the website was deemed user-friendly and capable of facilitating the delivery of club information more effectively.

REFERENCES

- Abdillah, T., Dai, R. H., Yunarti, S., & Hadju, R. R. (2023). Perancangan Sistem Informasi Penguatan Kapasitas Mahasiswa, Alumni dan Organisasi Kemahasiswaan Menggunakan Framework Laravel. *Digital Transformation Technology*, 3(2), 336–345. <https://doi.org/10.47709/digitech.v3i2.2797>
- Abidin, Z., Kurniawan, J., Suntoro, D. A. P., & Yuliasuti, G. E. (2024). Rancang Bangun Website Profil Ikatan Mahasiswa Arosbaya Menggunakan Laravel dan Bootstrap 5 Dengan Metode Waterfall. *Prosiding Seminar Implementasi Teknologi Informasi Dan Komunikasi*, 3(2), 257–268. <https://doi.org/10.31284/p.semtik.2024-2.6222>
- Bakhri, A. S., Elanda, A., & Rahmawati, E. (2021). Rancang Bangun Sistem Informasi Company Profile dan Monitoring Calon Pelamar Pada Perusahaan Berbasis Web (Studi Kasus : PT.Faros Bakti Utama Persada). *Jurnal Interkom: Jurnal Publikasi Ilmiah Bidang Teknologi Informasi Dan Komunikasi*, 16(3), 42–52. <https://doi.org/10.35969/interkom.v16i3.171>
- Hutauruk, A. C., & Pakpahan, A. F. (2021). Perancangan Sistem Informasi Organisasi Kemahasiswaan Berbasis Web pada Universitas Advent Indonesia Menggunakan Metode Agile Development (Studi Kasus: Universitas Advent Indonesia). *Cogito Smart Journal* |, 7(2), 315–328.
- Lubis, A. I. (2023). Rancang Bangun Sistem Informasi Organisasi Berbasis Website Menerapkan Metode Waterfall. *Media Online*, 5(3), 182–192. <https://doi.org/10.47065/bulletincsr.v5i3.495>
- Mustaib, R. I., Dwiyanaputra, R., & Muaidi, M. (2022). *Sistem Informasi Company Profile Kantor Desa Sandik Berbasis Website*. 3(2), 177–188.
- Rosidin, M., H., M. H. Z., & Sulisty, W. Y. (2025). Perancangan Sistem Informasi Manajemen Asosiasi dengan Metode Waterfall dan RBAC di Majelis Diktilitbang Muhammadiyah. *Jurnal Teknologi Dan Sistem Informasi Bisnis*, 7(3), 401–409. <https://doi.org/10.47233/jteksis.v7i3.2012>
- Samiun, S. A. H., Abdullah, S. D., & Sirajuddin, H. K. (2022). Sistem Informasi Pengelolaan Kegiatan Ukm Di Lingkungan Universitas Khairun Ternate Berbasis Web. *Media ElektriKa*, 15(1), 17–31. <https://doi.org/10.26714/me.v15i1.7569>
- Santoso, S., Apriyanto, A., Susilo, A., Sutiyono, S., Rosmalina, R., Mukaromah, S., Jamaludin, J., Hariyanto, R., & Tamsir, N. (2025). *Buku Ajar Pengantar Sistem Informasi*. PT. Sonpedia Publishing Indonesia.
- Sucipto, A., Jupriyadi, Nurkholis, A., Budiman, A., Pasha, D., Firmansyah, G., & Sangha, Z. K. (2022). Penerapan Sistem Informasi Profil Berbasis Web Di Desa Bandarsari. *Journal of Social Sciences and Technology for Community Service (JSSTCS)*, 3(1), 29–37. <https://doi.org/10.33365/jsstcs.v3i1.1512>
- Supiyandi, Zen, M., Rizal, C., & Eka, M. (2022). Perancangan Sistem Informasi Desa Tomuan Holbung Menggunakan Metode Waterfall. *JURIKOM (Jurnal Riset Komputer)*, 9(2), 274–280. <https://doi.org/10.30865/jurikom.v9i2.3986>
- Yunita, I. R., Farikhatun, N., Ismiyati, R., & Setiawan, I. (2024). Sistem Informasi Administrasi (Si Admin) Unit Kegiatan Mahasiswa (UKM) menggunakan metode Extreme Programming. *Jurnal Teknologi Sistem Informasi Dan Aplikasi*, 7(4), 1557–1565. <https://doi.org/10.32493/jtsi.v7i4.44842>