JENTIK

Jurnal Pendidikan Teknologi Informasi dan Komunikasi
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Development of a Laravel-based Publication, Research and Community Service Information System

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Article Information:
Received November 23, 2023
Revised December 25, 2023
Accepted December 26, 2023

Keywords:
Community Service; Lecturers; LPPM; Research; Prisma

Abstract

The need for accurate data is really needed when departments or faculties are to be accredited, and to map lecturers who will have the opportunity in the following semester to carry out research or community service. Due to differences in data held by departments, faculties, or data at the LPPM (Institute for Research and Community Service), different data can occur due to lack of discipline in lecturers who have carried out research and service to collect reports to departments, faculties, or to LPPM. To facilitate reporting of research and community service activities by lecturers to the Department and to management, an information system is needed that can improve research and community service performance. The system development method used in this research is the SDLC (System Development Life Cycle) method. The SDLC method uses a system approach called the waterfall approach, which uses system development stages, namely requirements analysis, design, coding, system testing and support stages (maintenance), using the PHP programming language and MySQL database. The research results show that the information system developed makes it easier to manage and organize data from lecturers' research, service and publications and can help lecturers, departments and faculty leaders in obtaining the information they need online and in real time. It can be concluded that the Prisma Information System fully supports the submission of service research proposals, a faster and easier process, safer data and guaranteed credibility, dynamic configurability, more responsive design, and assistance documentation, as well as other new features.

A. Introduction

The Tri Dharma, which must be upheld by the academic community, particularly professors, cannot be isolated from a university (Sasia & Doringin, 2023; Unyil & Masruri, 2023). Tri Dharma activities education and teaching, research, and community service are required of lecturers. Higher education institutions' institutes and units oversee and organize all research and community service projects undertaken by their lecturers (Hidayat, 2019; Sugiyatno et al., 2023).

A lecturer's primary responsibility is to perform the three Tri Dharma tasks of higher education: community service, research, and teaching. Apart from the teaching process, another task of a lecturer is to conduct research which is one of the Tri Dharma of higher education. Research is carried out to develop knowledge and it is hoped that the results can make a real contribution to society. Apart from education and research, another task is to carry out service activities carried out by lecturers so that the knowledge possessed by

How to Cite : Coastera, F. F., & Risdianto, E. (2023). Development of a Laravel-based Publication, Research and Community Service Information System. *JENTIK: Jurnal Pendidikan Teknologi Informasi Dan Komunikasi*, 2(2), 60–66. https://doi.org/10.58723/jentik.v2i2.230
ISSN : 2963-1963
Published by : CV Media Inti Teknologi

lecturers can provide benefits and be felt by the community (Budiman, 2023; Fitriana et al., 2021; JRS & Sitinjak, 2023).

One of the keys to the successful achievement of an organization or university is the existence of a good information management system. LPPM (Institute for Research and Community Service) is present as an organization that mediates and facilitates lecturers to actively participate in conducting research and service for the community and nation (Sugianto, 2019). This is an effort to develop an atmosphere of research and service and open up opportunities for the academic environment to participate in the community by taking advantage of existing opportunities. Apart from that, the need for information from Research and Community Service Institutes is very necessary in a fast time and with a high level of information accuracy to support the development of lecturers themselves in particular and in general, so that the relevance of the information data is guaranteed.

At Bengkulu University, the process of research services and lecturer service is currently managed by the system. However, the existing system is outdated. This of course can result in security vulnerabilities in the application, so that some features cannot function properly and are vulnerable to being infiltrated by malware. It can be said that the application development process is very important for the research process and community service at universities.

Several previous researchers have carried out research and development of information systems or data processing systems in higher education, one of which is Hamzah (2016). Hamzah developed a data processing system in the form of a web database that can process data on research and community service activities at Respati University, Yogyakarta, which refers to activities in the lecturer's workload, namely in the field of research and community service. The data processing system is also supported by features to serve data input, search processes, data recapitulation at management level (study program, faculty, university) and storage of activity results in the form of electronic documents. Other research was conducted by Kusuma et al (2022), in this research the LPPM STIKI Malang research and community service information system was created with features for proposing research and community service by lecturers, validating proposals by LPPM units and study programs, as well as reporting activities by lecturers. Based on the tests that have been carried out, it can be concluded that all existing features function well and can help users. Then there are those too Halimah & Anggi (2019) who developed a web-based Information System to manage all research and community service data in the IBI Darmajaya Information Systems Department according to Simlitabmas standards. Besides that, Widyawati et al (2020) in other research, it was concluded that the system is capable of processing document data electronically for every research and community service activity and the information system can be used as a system that monitors research and service performance activities in the form of documents in the form of photo files of activities during research and service activities at locations.

Currently, the process of administering research and service activities at Bengkulu University in progress reports and final reports of activity processes carried out manually is often not neatly organized. This can occur because the document preparation process is carried out manually, which results in a high level of human error. Each of these documents has related data, for example the names of lecturers that appear in the decision letter should match those that appear in the assignment letter and sometimes errors occur in reports. An information system that may enhance the performance of research and community service is required in order to make it easier for lecturers to report the beginning and conclusion of their research and community service projects to the Department and the LPPM. In order to help lecturers, departments, and faculty leaders obtain the necessary information online and in real time, researchers are creating a Laravel-based Publication, Research, and Community Service Information System. It is hoped that this information system will make it easier to manage and organize data from lecturers' research, service, and publication results.

B. Research Methods

The web development method used refers to the waterfall method. The Waterfall method is a software development method that allows system creation to be carried out systematically and structured or sequentially according to the current development cycle (Badrul & Ardy, 2021; Rifai & Yuniar, 2019; Supiyandi et al., 2022). The stages carried out are as follows:

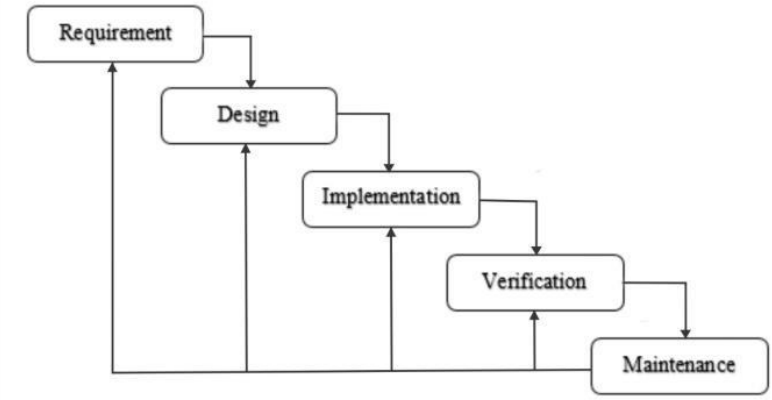

Figure 1. Waterfall Method

1. Requirements Analysis
   At this stage, system developers need communication that aims to understand the software that users expect and the limitations of the software.
2. Systems Design
   System Design helps in determining hardware and system requirements and also helps in defining the architecture
3. Implementation
   Systems are first developed in small programs called units, which are integrated in subsequent stages. Each unit is developed and tested for functionality which is called as Unit Testing.
4. Verification
   All units are developed in the implementation phase of testing each unit. Post integration the entire system is tested for check and failure.
5. Operation & Maintenance
   This stage is the maintenance stage. Maintenance includes found in the previous step.

The literature study was carried out through interviews, namely a method of collecting information by conducting direct questions and answers with parties including the Chair of the LPPM, lecturers and several other sources directly to get a clear picture of the research object. The information obtained is used to adjust the output produced by the system.

The schedule and time for conducting research can be seen in table 1.

Table 1. Schedule and Implementation Time

Activity	Time
Literature Study	Month 1
Data Collection and Analysis	Month 1
Application Development	Month 2
Application Testing	Month 2
Evaluation of Application Maintenance	Month 3

C. Results and Discussion

Site Map

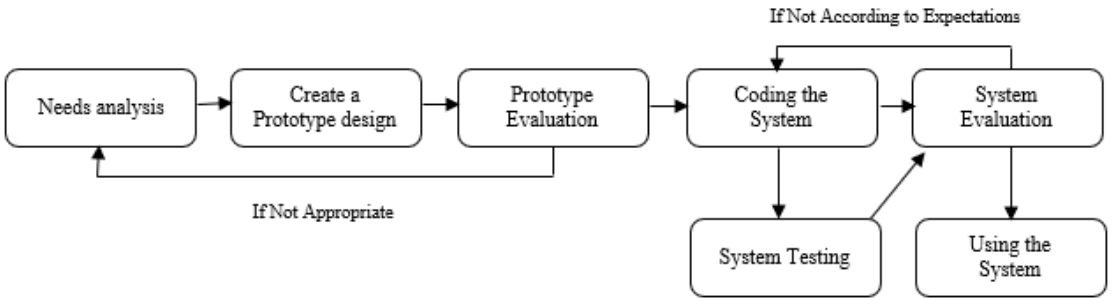

Figure 2. Prisma System Flow Site Map

The site map is an explanation of the Prisma Lecturer Research and Service flow, starting with analyzing system requirements. After producing a system requirements analysis, then from the system requirements analysis a prototype design is created. The prototype design is then evaluated to determine the suitability of the prototype with the system design. If it is not suitable, it will be analyzed again to see what needs are lacking. If it is appropriate then it will continue with system coding. After system coding is complete, system testing will then be carried out to produce system evaluation results.

Display Results

1. Home page

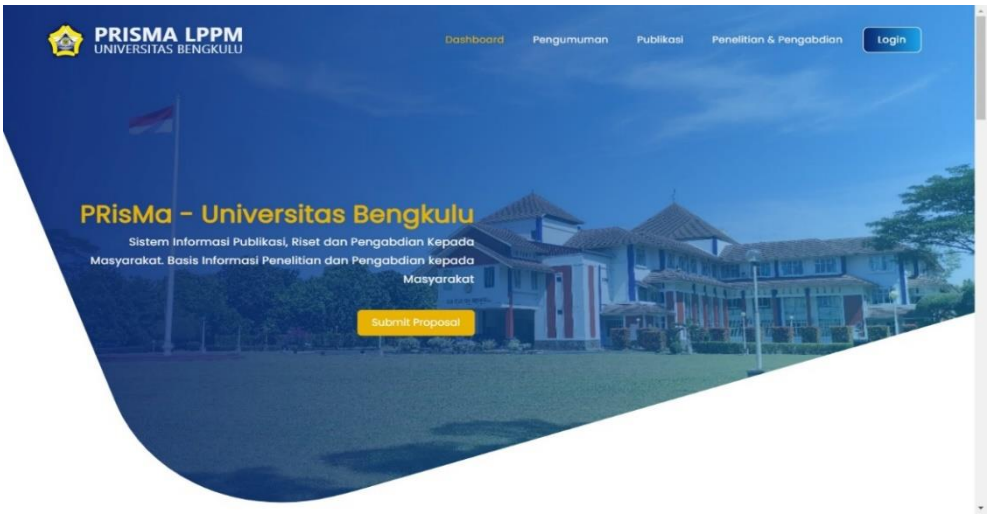

Figure 3. Home Page

2. Login Page

Figure 4. Login Page

3. Announcement Page

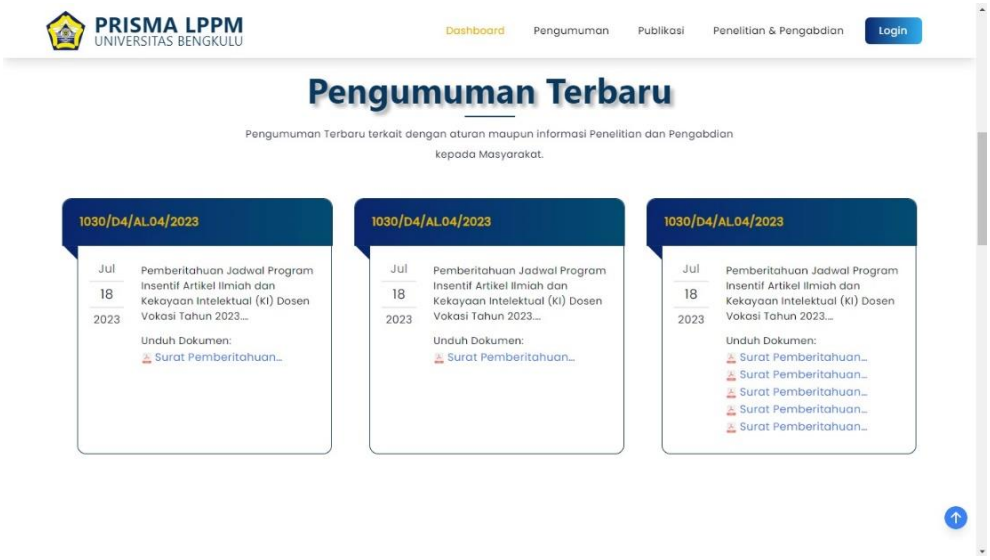

Figure 5. Announcement Page

4. Research and Community Service Performance Page

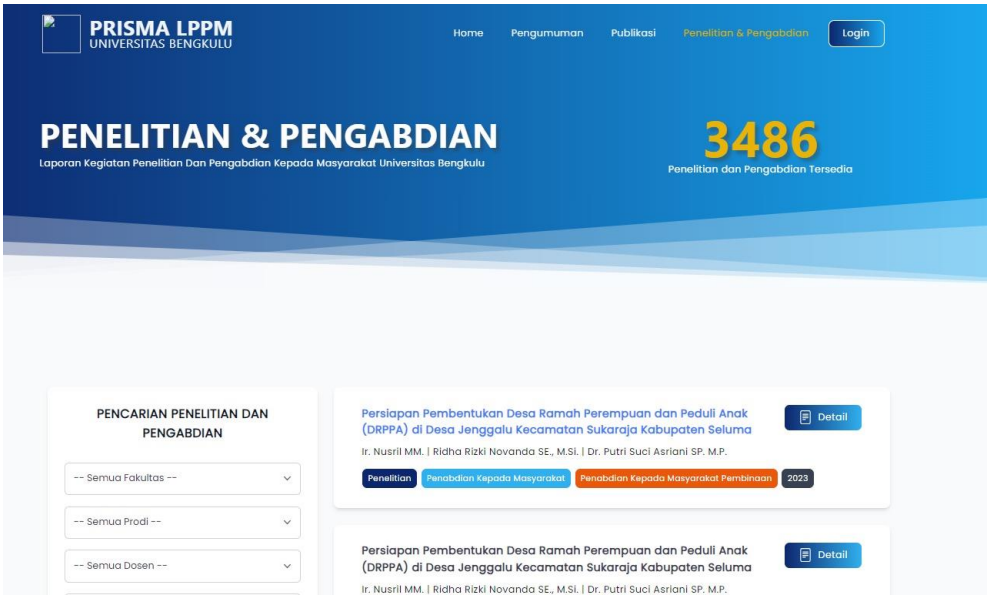

Figure 6. Research and Community Service Performance Page

6. Publication Page

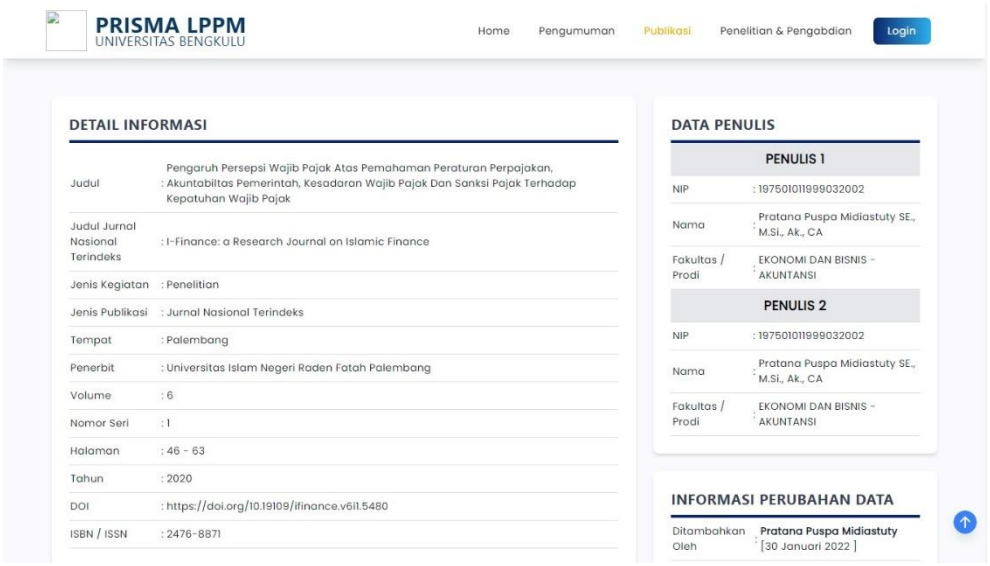

Figure 8. Publication Page

It is hoped that the system can be further developed to be more sophisticated, namely mobile or Android based.

D. Conclusion

The development of the Prisma LPPM application at Bengkulu University to facilitate reporting of research and lecturer service in higher education is a significant step in increasing the effectiveness and efficiency of higher education tri dharma activities. The application developed in this research succeeded in making a positive contribution by simplifying the management and collaboration process between institutions, lecturers and universities.

E. Acknowledgements

Thanks are addressed to the Information Systems Center Team and the LPTIK Leadership Team at Bengkulu University.

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