Development of a Web-Based Research and Community Service Information System to Improve Higher Education Services

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Abstract: Currently, the Institute for Research and Community Service (LPPM), Universitas Negeri Medan (UNIMED), tried to continue developing a research and community service information system according to the needs and become the portfolio of each user. This study will create a new feature in the research and community service information system, namely the user portfolio intended for prospective researchers. The process of research and community service at Universitas Negeri Medan carries out in stages, although it implements conventionally. Weak control over the implementation of these activities causes research and community service archives poorly documented. It makes it difficult for stakeholders to find documents when they are needed. The current technological developments have indicated the utilization of online databases to support human activities. Based on this, the actuality of a web-based research and community service information system used to record the research and community service process is essential. This study uses the waterfall method to ensure that the final product meets expectations by completing the communication, planning, modeling, construction, and deployment stages.

Keywords: Information System, Waterfall, Research, Community Service, Services

1. INTRODUCTION

The purpose of research and community service institutions is to produce research and community service by developing quality innovations as solutions to stakeholder problems in academic and non-academic fields. The creating a climate and culture of research and community service for lecturers and students through training, coaching and mentoring. Technological innovations creation is to encourage Indonesia's economic development by commercializing research results and community service. Provide solutions by academic studies of the needs, challenges, or problems faced by the community, either directly or indirectly. Carry out activities that can eradicate marginalized people (preference option for the poor) at all strata, namely people excluded economically, politically, socially, and culturally. Transferring technology, science, and art to the community for the development of human dignity and the preservation of natural resources. Produce scientific works, patents, and intellectual property rights used to improve the quality of research and community service. Produce research-based innovative products and community service that can enhance the image and reputation of Universitas Negeri Medan. Encourage creativity, innovation, and productivity of lecturers in conducting quality research and service at local, regional, national, and international levels. Produce research and service, development, and innovation services/products used to generate income. Enhance the function of the Research and Community Service Institute as a medium and means of scientific communication based on research results, community service, and innovation. The cooperating with various parties in the field of research and community service.

To achieve research outcomes by the Chancellor's contract with the Minister, the university by the RESEARCH AND COMMUNITY SERVICE INSTITUTION carries out research and service with University funds. The implementation of this research and service carries out to obtain research outputs which are reputable scientific publications, the number of Intellectual properties (IP), prototypes, and innovative products. The output is a product that supports the completion of innovation performance, research performance, and community service performance.

The research output accompanied by the adequacy of facilities and infrastructure seen from the up-to-date and relevant included facilities, equipment for learning, research, community service. In addition, the outputs supported are by formal documents in the form of policies and guidelines to integrate research activities and community service into learning. In addition, the availability of valid evidence regarding the implementation, evaluation, control, and continuous quality improvement that integrated research activities and community service into learning.

Formal documents in the form of valid evidence regarding the implementation of the research process cover six aspects, namely the procedure for evaluating reviewers, the legality of appointing reviewers, the results of the assessment of research proposals, the validity of the assignment of researchers' collaboration, minutes of monitoring and evaluation results, and research output documents. Currently, the research and community service institution is developing a research and

community service information system by the needs also will integrate with the system at Universitas Negeri Medan.

2. METHOD

This study uses the Research and Development model. Research and development methods are research methods used to produce determined products and test the effectiveness of these products. The waterfall method uses as the development model of this study. So that, this study is carried out systematically and accounted.
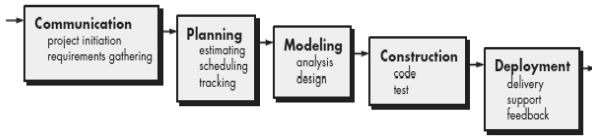

Figure 1. Waterfall Development Model

1. Communication
   The purpose of communication is to obtain an overview of the problems of research and community service. It also includes information about the wishes of the Research and Community Service Institute regarding the system to be built.
2. Planning
   In this stage, an in-depth analysis of the problems faced so far is carried out and determines alternative solutions to these problems.
3. Modeling
   At this stage, modeling the problems found. Design the system to be built.
4. Construction
   The application of the programming language takes place in this step. It bases on the designs created during the modeling stage. After the coding stage, system testing carries out to identify errors that may occur during the programming process. Then, if an error finds, it is corrected.
5. Deployment
   This stage is the distribution stage of a web-based information system, namely the system application in proposing research proposals and community service. So, the system can accommodate proposals submitted by lecturers and monitor implementation carried out by the Research and Community Service Institute.

3. RESULTS

In the analysis and development of research and community service information systems, several problems identify and the processes used to carry out research and community service activities, including the proposal process, implementation of proposal seminars, monitoring, and evaluation, to the final report. The deepening of the analysis found several functional requirements that must be available in application development. The development of research and community service information systems using website-based programming to make it accessible online. So that parties in this system can access it from anywhere and anytime by connecting to an internet connection. The results of the application construction made can describe as explained below:
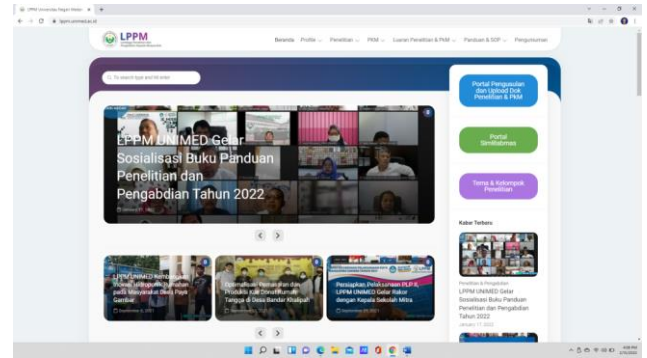

Figure 2. Page View of the Research and Community Service Institute

The process of proposing a proposal is carried out by the lecturer if he has logged into the information system. After that, the lecturer page will appear with menus specially provided for lecturers.
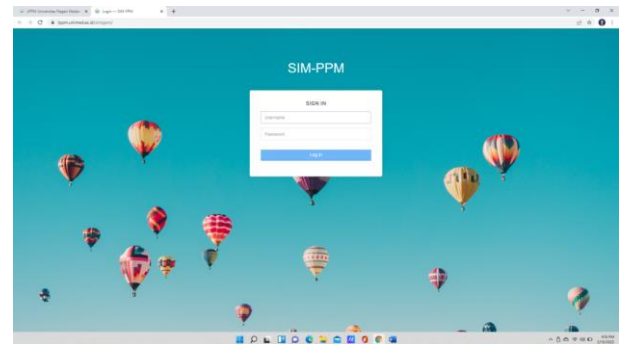

Figure 3. Login Page Display

To record the process of conducting research, SIMPPM will develop it by creating a user portfolio on the profile icon. The portfolio contains the researcher's identity by adding research history, dedication, journal articles, intellectual property rights, proceedings articles, books, and monumental works.
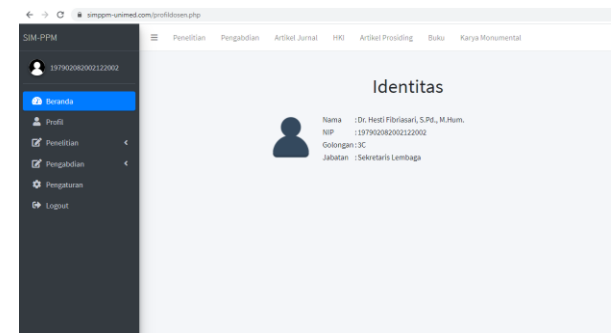

Figure 4. Researcher Profile Page

Proposals are submitted through each menu for research and community service. The proposal process is accessed through the "New proposal" sub-menu found in the navigation menu in the header.
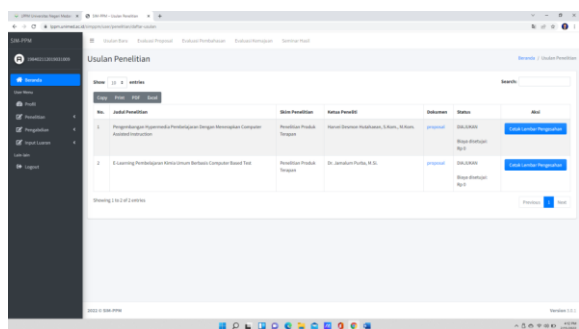
Figure 5. Proposal Page

The development of a research and community service information system at the Institute for Research and Community Service is essential to keep track of research and service funded by the university. In addition, the lecturer can fill in the results of the lecturer's work as curriculum vitae that will record in the system.

4. CONCLUSION

Based on the results obtained from the system analysis stage, the system design stage, the implementation stage to the testing stage, the development of Research Information Systems and services provides convenience in the process of submitting proposals because the submission process in the research information system has features that are tailored to the needs and by regulatory standards. The process of submitting research originally long can shorten by the existence of a research information system. Research and service information systems make the research process easy, fast, and structured.

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