1. Introduction

A. Background

Innovation and research play an important role in determining the competitiveness and quality of an educational institution. Universities play an important role in implementing education, developing science and technology [1]. In Indonesia, lecturers as one of the academic community members of universities, are not only required to be active in teaching, but also have an obligation to be involved in the concept of the tridharma of higher education [2].

One of the points in the tridharma of higher education is research activities that must be carried out by lecturers. Research must be carried out in a certain period, which can then be measured into credit units. These credit units can be calculated and accumulated into one of the assessments for the proposal of academic functional positions of lecturers [3]. Therefore, the lecturer research management information system can be considered important. Effective management can have a direct impact on improving the lecturer's career, which will then have a positive impact on the reputation and quality of the university as an educational institution.

Telkom University, as one of the universities in Indonesia, is committed to continuing to encourage the development of innovation and research in various fields as part of efforts to improve the quality of education in Indonesia. However, the current system for recording and archiving lecturers' research is still carried out separately without an integrated platform. Thus, it hinders the effectiveness of data management and is at high risk of losing or having difficulty finding the information needed. This condition emphasizes the importance of developing an integrated information system that can facilitate more efficient recording and archiving of research. In addition, this information system can also act as a portfolio platform to display lecturers' research results, increase transparency, and strengthen Telkom University's reputation and credibility in the eyes of the general public and the academic world.

Based on the existing problems, this study was conducted to build and test the design of the backend system on the Telkom University research and innovation information system, especially on the user and article modules. This information system was built using the PHP Laravel framework and RESTful web service. RESTful web service is another name for an information system that implements the Representational State Transfer (REST) architecture [4]. The application of this technology makes it easy for the client to make requests to the server using Hyper Text Transfer Protocol (HTTP) and send the responses in the form of Javascript Object Notation (JSON) [5]. So data and information can be easily distributed from one server to various client integrated within one information system and not spread across different department or faculty systems [11].

B. Topics and Problem Limitations

This research focuses on the development of a research and innovation management information system at Telkom University using PHP Laravel by implementing RESTful API to support optimal integration. Development will focus only on the user module and article module, while the testing techniques used are limited to Unit Testing and Stress Testing.

C. Objective

This study aims to implement the development and testing of the user and article modules of the Telkom University Innovation Dashboard Backend system.