

## ABSTRAK

Mawaddatul Nabila Rida. Perancangan Sistem Layanan Laboratorium Lingkungan Menggunakan Framework Laravel pada PT Citra Lestari Enviro. Dibimbing oleh Indah Clara Sari, S.Kom., M.Kom. dan Taufiqurrahman, S.T., M.Kom.

PT Citra Lestari Enviro masih mengelola layanan laboratorium lingkungan secara manual, mulai dari penerimaan permohonan pengujian, pencatatan sampel, pelaksanaan uji, hingga penerbitan sertifikat hasil. Proses manual tersebut menimbulkan berbagai kendala, seperti keterlambatan pelayanan, risiko kesalahan pencatatan, kesulitan pelacakan status sampel, serta kurangnya efisiensi koordinasi antarbagian. Penelitian ini bertujuan merancang dan mengembangkan sistem layanan laboratorium berbasis web yang terintegrasi untuk meningkatkan efisiensi dan akurasi proses operasional.

Metode pengembangan yang digunakan adalah *prototyping*, yaitu pendekatan iteratif dengan membangun model awal sistem untuk diuji langsung oleh pengguna guna memperoleh umpan balik perbaikan. Sistem dikembangkan menggunakan *framework Laravel* dengan dukungan Filament v2 untuk membangun antarmuka dan mengelola hak akses berbasis peran (*role-based access control*). Perancangan sistem meliputi analisis kebutuhan fungsional dan nonfungsional, pemodelan alur data menggunakan Flowchart, *Data Flow Diagram* (DFD), *Entity Relationship Diagram* (ERD), serta *Unified Modeling Language* (UML).

Hasil pengujian menggunakan metode *Black Box Testing* menunjukkan bahwa seluruh fungsi utama berjalan sesuai kebutuhan, mencakup manajemen pengguna, penerimaan sampel, penginputan hasil uji, proses verifikasi dan validasi, hingga penerbitan sertifikat digital. Sistem yang dirancang terbukti meningkatkan efisiensi kerja, mempercepat distribusi informasi antarbagian, serta memberikan kemudahan bagi klien dalam memantau status sampel dan mengunduh sertifikat hasil uji secara mandiri dan tepat waktu.

Kata kunci: Sistem Informasi, Laboratorium Lingkungan, Laravel, Filament, Prototyping.

## **ABSTRACT**

Mawaddatul Nabila Rida. Design of Environmental Laboratory Service System Using Laravel Framework at PT Citra Lestari Enviro. Supervised by Indah Clara Sari, S.Kom., M.Kom dan Taufiqurrahman, S.T., M.Kom.

PT Citra Lestari Enviro still operates its environmental laboratory services manually, covering all stages from receiving test requests, recording samples, conducting analyses, to issuing test certificates. This manual process leads to various issues, including service delays, data recording errors, difficulties in tracking sample status, and inefficient coordination among divisions. This study aims to design and develop an integrated web-based laboratory service system to enhance operational efficiency and data accuracy.

The system development employed the prototyping method, which focuses on building an early model of the system that can be directly tested by users to obtain iterative feedback for improvement. The system was developed using the Laravel framework, supported by Filament v2 for building user interfaces and implementing role-based access control. The design process includes the analysis of functional and non-functional requirements and data modeling through Flowcharts, Data Flow Diagrams (DFD), Entity Relationship Diagrams (ERD), and Unified Modeling Language (UML).

Testing was carried out using the Black Box Testing method, which confirmed that all main functions performed as expected, including user management, sample reception, test result input, verification and validation processes, and digital certificate issuance. The developed system successfully improves work efficiency, accelerates information distribution across divisions, and enables clients to independently monitor sample statuses and download test certificates promptly and accurately.

**Keywords:** Information System, Environmental Laboratory, Laravel, Filament, Prototyping.