

ABSTRACT

Laboratory room scheduling and mapping is a complex and challenging process, especially in meeting various needs and constraints of involved entities. The Faculty of Industrial Engineering Laboratories (FRI) at Telkom University faces issues in scheduling and mapping practical room usage, resulting in scheduling inconsistencies and inefficient room utilization. To address these challenges, this research develops a web-based practical scheduling and room mapping application using iterative incremental methodology. The application development adopts an agile approach, allowing for gradual and iterative development to adapt each stage according to user needs.

To resolve the scheduling and room mapping issues, genetic algorithms are employed for automation and optimization purposes. Technologies such as TypeScript and Next.JS are utilized to develop the frontend of the application, ensuring responsiveness and intuitiveness across various devices, and providing information regarding application processes. Research findings indicate that the application significantly enhances efficiency and accuracy in practical room scheduling and mapping. Features such as user-friendly navigation, practical data search, and clear presentation of practical details and schedules mitigate scheduling conflicts and promote even room utilization.

User feedback underscores that the application is not only functional but also responsive and informative. With error handling mechanisms and informative status updates on application processes, the application is ready for implementation at the Faculty of Industrial Engineering. It is expected to positively contribute to optimizing room management and practical scheduling.

Keywords: Agile Software Development, Iterative and Incremental Method, Frontend, Practical Scheduling, Room Mapping, Web-Based Application.