

ABSTRACT

In the digital era, the simultaneous use of dual platforms such as OpenProject for detailed macro planning and Trello for micro Kanban board visualization is often inevitable. However, this combination triggers data redundancy, information silos, and inefficiency due to manual data entry processes that are highly susceptible to human error. To address these constraints, this study develops a cross-platform integration system based on a background service that automatically connects OpenProject and Trello APIs to synchronize task attributes such as title, description, due date, and status. The system is built using .NET 8 technology by utilizing Hangfire as an asynchronous job scheduler encapsulated within a Docker container environment and SQL Server for activity log storage. The efficiency improvement is quantitatively measured through performance testing based on workload variations from 1 to 2500 data items to calculate the total execution time of the Fetch, Transform, and Push processes. Functionality test results indicate that the system successfully synchronizes data accurately with a 100% success rate. Furthermore, performance testing proves that the system exhibits stable linear scalability with an average processing time ranging from 3.01 to 3.71 seconds per item under high workload conditions. This implementation is proven to eliminate manual administrative burdens, automatically maintain data consistency, and enhance team collaboration efficiency by minimizing the risks of duplication and information discrepancies across departments at PT. GS Battery Semarang.

Keywords : *Background service, Hangfire, OpenProject, performance testing, system integration, Trello.*