

## SOFTWARE DEVELOPMENT PROJECT MANAGEMENT EFFICIENCY IMPROVEMENT BASED ON ARTIFICIAL INTELLIGENCE METHODS

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The complexity and dynamism of modern software development projects create new challenges for project management. Traditional methods often fail to ensure accurate forecasting, optimal resource allocation, and adaptability to changes in the Software Development Lifecycle (SDLC). Meanwhile, the integration of Artificial Intelligence (AI) into software development significantly increases the efficiency of tasks within the SDLC, in particular by automating code generation, reviewing, and predicting errors [1].

This study resolves a task of selecting AI tools in software project management. It introduces a mathematical optimization model designed to minimize AI tool costs while meeting quality standards in integration, support, features, and pricing. The model uses normalized expert evaluations from sources like Gartner Peer Insights to support decision-making for specific project tasks. Binary decision variables determine the optimal set of AI tools for distinct project activities.

The practical implementation of the model is realized through an information technology framework, supporting the systematic and adaptive selection of AI-based solutions. As a result, AI tools integrated into development environments (IDEs) help speed up software development processes, increase code quality and improve developer interaction with systems [2]. For example, Fig. 1 shows the IDEF-0 diagram illustrating how AI tools can be embedded into a project lifecycle.

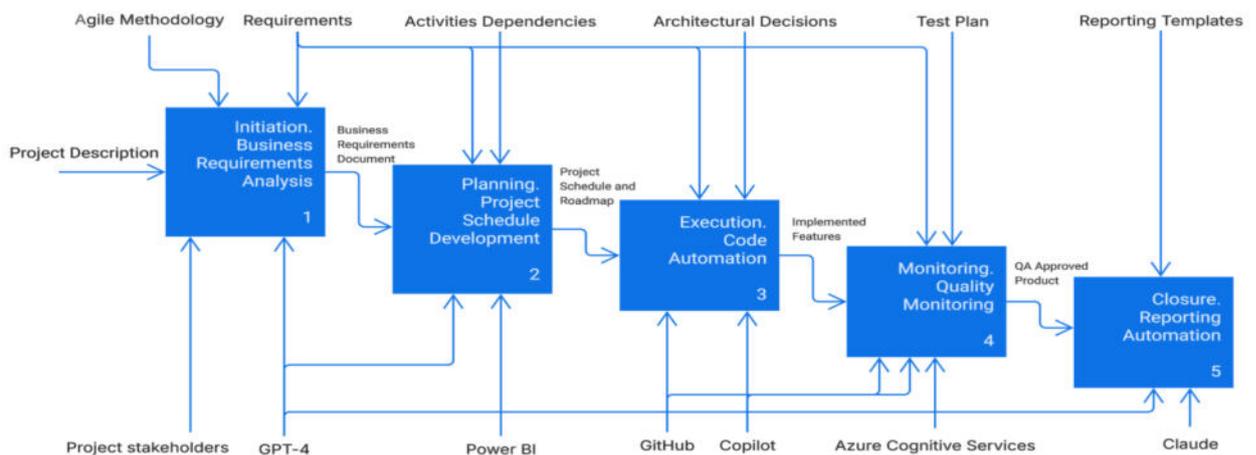


Fig. 1. – The Application of AI-tools in project process groups

### References:

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2. Pawan Kumar Goel, Km Komal, & Nitish Vashishth. (2024). *AI-Driven Software Development Lifecycle Optimization*. Advances in Systems Analysis, Software Engineering, and High Performance Computing Book Series, 70–86. <https://doi.org/10.4018/979-8-3693-3502-4.ch005>.