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DEVELOPMENT OF THE INFORMATION SYSTEM ARCHITECTURE FOR THE IMPLEMENTATION OF AN INTEGRATED INFORMATION TECHNOLOGY FOR CALCULATING THE HEALTH STATUS OF AN IT PROJECT PORTFOLIO

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Abstract. *In the context of high market uncertainty, traditional project management approaches are losing effectiveness. In response, the authors previously developed an integrated method for calculating the Health Status (HS), which synthesizes operational, technical, and financial metrics into a single quantitative index. However, the lack of a practical implementation tool limits its application. This work aims to design an information system (IS) architecture capable of automating the HS calculation process. The IS architecture is based on the integration of data from heterogeneous corporate systems: Jira, Tempo, GitLab/GitHub, and SonarQube. The collected data is systematized across four domains: planning, quality, process efficiency, and financial control. The architecture is designed based on the principles of scalability ("N projects = N threads"), modularity, transparency, and configurability. The result of this work is a comprehensive IS architecture that serves as a practical tool for implementing the Health Status calculation methodology. It ensures the automation, scalability, and reliability of the process, creating a foundation for transitioning to data-driven management of IT project portfolios.*

Key words: *Health Status, information system, project portfolio management, IS architecture, data integration, SPI, CPI.*

Introduction.

In the context of high market uncertainty, traditional project management approaches are losing effectiveness. In response, the authors previously developed an integrated method for calculating the Health Status (HS), which synthesizes operational, technical, and financial metrics into a single quantitative index [1]. However, the lack of a practical implementation tool limits its application. This work aims to design an information system (IS) architecture capable of automating the HS calculation process.

Main text

The IS architecture is based on the integration of data from heterogeneous corporate systems: Jira (task management), Tempo (financial control, SPI/CPI calculation), GitLab/GitHub (engineering and DevOps metrics, e.g., Lead Time), and SonarQube (code quality, CFR) [2]. To aggregate disparate metrics, a normalization procedure is applied, followed by the calculation of three integral indices: Project Health Status (Hi), Portfolio Health Status (Pi), and Portfolio Risk (Rportf).

The architecture is designed based on the principles of scalability, modularity, transparency, and configurability. Scalability is achieved through the "N projects = N threads" approach, ensuring parallel data processing. Modularity is implemented through loosely coupled functional blocks: Project Configurations, Sync History, Scheduler, Project Sync Threads, Data Storage, Metric Calculator, Portfolio Calculator, and an Analytics Interface [3].

The process is cyclical and fully automated (Figure 1). The Scheduler initiates a daily run. For each project, a separate Project Sync Thread is created, which sequentially collects data from all sources using Sync History for incremental loading. After data collection, the Metric Calculator computes Hi for the project. Once all threads are complete, the Portfolio Calculator aggregates the Pi and Rportf indicators.

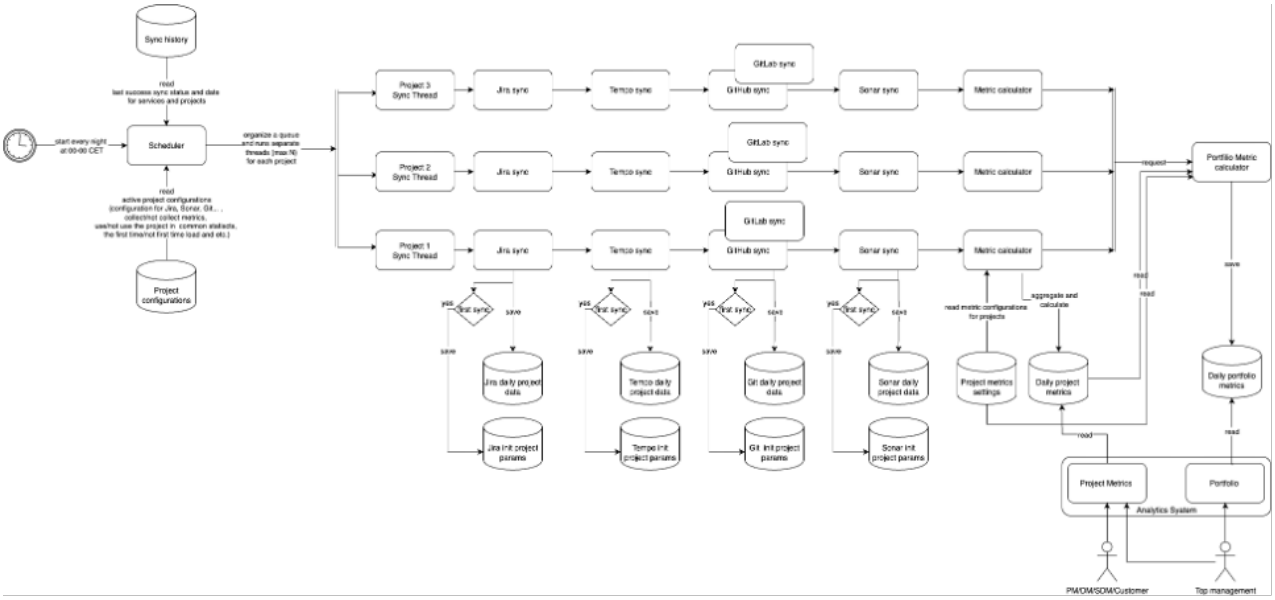

Figure 1 - Integration Architectural Diagram

Summary and conclusions.

A comprehensive IS architecture has been developed, serving as a practical tool for implementing the Health Status calculation methodology. The architecture ensures the automation, scalability, and reliability of the process, creating a foundation for transitioning to data-driven management of IT project portfolios. Unlike "black box" models, the proposed architecture is fully transparent and interpretable [4].

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