Chapter 9
Algorithmic Project Mastery:
AI in Action for Scrum and HERMES

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ABSTRACT

This chapter explores the use of Artificial Intelligence (AI) in project management, focusing on Scrum and HERMES. It examines three AI applications: sprint and backlog optimization, digital project coaching, and automated lessons learned analysis. Using historical data, machine learning, and natural language processing, AI enhances planning, decision-making, and organizational learning. In Scrum, it improves sprint predictability and task prioritization; in HERMES, it supports phase monitoring, risk mitigation, and compliance. Digital coaching provides real-time guidance while maintaining human oversight. Lessons learned analysis extracts insights from documentation and communication to foster continuous improvement. The chapter also addresses data quality, ethics, human-AI collaboration, and organizational readiness, illustrating measurable gains in efficiency, risk management, and knowledge retention. Future directions include conversational AI, predictive analytics, and AI-driven collaboration, providing actionable strategies for adaptive, data-driven projects.

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INTRODUCTION

Project management is a central discipline for ensuring that complex initiatives are executed efficiently, on time, and within budget. Organizations across industries increasingly rely on structured methodologies such as Scrum and HERMES to provide frameworks for planning, coordination, and continuous improvement. Scrum, as an agile methodology, emphasizes iterative development, adaptive planning, and collaborative team engagement, while HERMES, widely used in Switzerland, offers a process-oriented approach for project governance, risk management, and deliverable-focused project execution (Sutherland & Schwaber, 2013; HERMES Foundation, 2022). Despite the strengths of these methodologies, modern project environments are characterized by growing complexity, dynamic requirements, and large volumes of data. Traditional management approaches often struggle to efficiently process and interpret this information, leaving opportunities for errors, delays, and suboptimal decision-making.

In recent years, AI has emerged as a promising approach to augment project management processes by providing data-driven insights, predictive analytics, and automation of repetitive tasks (Kumari et al., 2023). AI can analyze historical project data, identify patterns, forecast risks, and recommend actions, thereby supporting project teams in making informed, timely, and objective decisions. Recent studies on AI maturity models and project readiness frameworks indicate that organizational preparedness significantly influences the effectiveness of AI interventions (Ellefsen et al., 2019; Felemban et al., 2024). By integrating AI into project management frameworks such as Scrum and HERMES, organizations can enhance both operational efficiency and strategic decision-making, while maintaining transparency and accountability. The convergence of AI and project management represents a transformative opportunity for both practice and research, offering a pathway to more adaptive, resilient, and data-driven project execution (Pérez-Castillo et al., 2024).

This chapter focuses on three primary AI-supported functionalities within project management. First, sprint and backlog optimization: AI tools can evaluate historical project performance, predict team velocity, and propose optimal task prioritization strategies. By automating the analysis of backlog items and dependencies, AI allows Product Owners (POs) and project managers to make more informed decisions, reduce planning time, and mitigate bottlenecks. Second, the chapter addresses the role of a digital project coach: AI can act as a virtual advisor that monitors ongoing projects, provides real-time alerts for potential risks, recommends corrective actions, and supports teams in adhering to project governance frameworks. This approach enhances proactive management, improves resource allocation, and ensures compliance with organizational standards. Third, the chapter examines automated lessons learned analyses: by leveraging natural language processing (NLP) and machine