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NAVIGATING HYBRID AEROSPACE PROJECT MANAGEMENT: AGILE AND WATERFALL METHODOLOGIES IN SPACE TECHNOLOGY DEVELOPMENT

Abstract

Over the past 15 years, the aerospace industry has undergone a significant transformation, fueled by the entrance of new players and the introduction of methodologies from other sectors, alongside changes in regulation. This influx has profoundly altered the industry's landscape, catalyzing a period of vigorous experimentation not only in technical realms but also across supporting functions such as recruitment, supply chain logistics, financial planning, regulatory compliance, and corporate alignment.

This paper investigates the application and integration of Agile philosophies and traditional Waterfall methodologies within the aerospace sector, through the lens of return of experience from diverse stakeholders. It aims to illuminate how different entities within the aerospace industry decide on the most suitable project management approach, considering the intricate balance of risk tolerance, resource availability, team dynamics, and project expectations. By gathering and analyzing firsthand accounts and case studies from project managers, engineers, and executives, this study seeks to uncover the decision-making processes that underlie method selection for aerospace projects.

The narrative is structured around key factors influencing methodological choice: risk posture, which dictates the level of flexibility required to accommodate project uncertainties; resource constraints, which may necessitate leaner, more adaptive approaches; team culture, which influences the adoption and effectiveness of collaborative, iterative work processes; and stakeholder expectations, which mandate varying degrees of rigor in documentation and process formalization. Through the detailed examination of these considerations, the paper presents a nuanced framework for determining the applicability of Agile, Waterfall, or hybrid methodologies to specific aerospace projects.