# STRATEGY TO DEVELOP PROJECT BY USING HYBRID APPROACH

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*Abstract*

*A project is undertaken to create unique product, result, or services by executing set of activities to meet project objective. The success of project is measured towards achievement of project objective, project quality, timelines, budget compliance and degree of customer satisfaction. Currently, in competitive business environment product development is more dynamic and changing very frequently. The common challenges observed with failed project which has experienced overrun & schedule delays as compared to successful project are related to project planning, estimation, Accepting/Managing changes in requirements and quality management. Today in era of frequently changing technology and requirement, an adaptive approach is much needed for the product development. At present for the most complex and highly unstable projects, the Agile methodologies are implemented to increase the efficiency of the project and to exceed the customers satisfaction. This research will provide an insight on the challenges that management and team face after transitioned to Agile Project Management. Outcome of this research would be useful for project managers who has transitioned to Agile Project Management but are unaware of the difficulties. It will also help department in the organization who recently transitioned to Agile Project Management and revolutionize the workflow from within. Finally, team will get useful insights on how to handle this change, if they do not have any previous agile project management experience. In addition, it will propose a new conceptual framework i.e., hybrid framework that comprises of Agile and DevSecOps methodologies to enhance the predictability and efficiency of project.*

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# 1. Introduction

Agile project management is gaining popularity nowadays due to its ability to offer early and frequent iterations. This is in contrast to the traditional project management approach, which follows a sequential phase of planning, designing, creating, and testing. Designers collect feedback only at the final phase. In the aerospace business, where projects are complex and rely on an ever-changing world of digital technology, rapid adaptation and response are critical. As previously said, aerospace projects are already difficult; moving to agile methodology adds an additional degree of complexity that could jeopardize the project's success. However, with the correct tools and insights, these risks can be reduced.

After analyzing the outcome of few projects in detail where Agile methodology (AM) was used for Software Development Life Cycle (SDLC), it is found that AM provides flexibility to change, quickly adapt to new approach, improve, and scale the product but there is a scope to improve predictability of result. Agile methodology will work for short to medium term project but for long term project along with adaptability and flexibility, predictable project performance is must to have.

In summary, there is a need for a better understanding of challenges that are faced by the team and management after transitioning to Agile Project Management, concept of predictable result for any project, constraints and dependency that can hinder project outcome, mitigation plan which can make project result predictable and way to optimize project delivery process to provide value to customer frequently. In Aerospace industry for any projects that can hinder predictable performance, its recommended to have structured approach which can pave path for "Predictive Agile Delivery" along with optimized delivery process to ensure value delivery to customer more often with defined standard.

# 2. Primary Research Method: Literature Review and Conceptual Modeling

This research primarily utilized a **literature review** and **conceptual modeling** approach to investigate the challenges in Agile Project Management and to develop a new framework that combines Agile and DevSecOps methodologies.

**Literature Review**

The literature review focused on exploring existing studies related to Agile Project Management (APM), its benefits, and its limitations in complex and dynamic environments. The goal was to understand common issues such as predictability, project delays, and scope creep that teams and managers face when transitioning to

Agile methodologies. Sources included peer-reviewed journals, industry reports, and case studies that provided insight into Agile practices, stakeholder management, and hybrid frameworks. The literature review helped identify key themes and knowledge gaps in existing research, including:

- Challenges faced by team and management after transitioning to Agile Project Management (Fitzgerald et al., 2006).
- The challenges of implementing Agile project management in large, distributed teams and industries requiring strong compliance and security measures (Drury et al., 2012).

Additionally, the review examined how DevSecOps complements Agile methodologies by embedding security practices early in the development process, ensuring continuous and secure delivery (Ahmed & Francis, 2019). The literature also emphasized the need for a structured approach that blends the flexibility of Agile with the predictability of traditional project management, suggesting that a hybrid model could address these issues (Shahin et al., 2017).

**Conceptual Modeling**

Building on insights from the literature review, the research employed **conceptual modeling** to develop a new framework—Predictive Agile Delivery. Conceptual modeling involves creating an abstract model that represents key components of a complex system or process. In this study, the process involved defining the core components of both Agile and DevSecOps methodologies and integrating them into a unified approach.

The conceptual modeling approach followed these steps:
- **Identifying Key Agile Components:** Based on the literature review, core Agile practices such as iterative development, continuous feedback, and flexibility were identified. These practices were analyzed for their strengths (e.g., adaptability to change) and weaknesses (e.g., lack of predictability).
- **Integrating DevSecOps:** The next step was to explore how DevSecOps practices—such as continuous integration, automated testing, and security integration—could complement Agile to enhance predictability, efficiency, and security. DevSecOps' focus on embedding security from the beginning of the development process was identified as a solution to the challenge of integrating security in Agile environments.
- **Developing a Hybrid Model:** Finally, a hybrid model, termed "Predictive Agile Delivery," was conceptualized by combining Agile's flexibility with DevSecOps' security-oriented approach. This model introduces structured processes for more predictable project outcomes, emphasizing continuous delivery and integrated security checks without sacrificing Agile's adaptability.

- **Defining Predictive Components:** To ensure the model improves project predictability, elements such as clear deliverables, defined timelines, and security checkpoints were integrated into the framework. The result is a conceptual model that balances Agile's iterative cycles with the predictability needed in complex, regulated environments.

The **conceptual model** developed through this research provides a structured yet adaptable approach that addresses the pain points identified in the literature review. It offers project managers a framework to enhance predictability, optimize delivery processes, and manage security in an Agile environment.

By employing both literature review and conceptual modeling, the research delivers a comprehensive understanding of Agile Project Management's challenges and proposes an innovative hybrid framework that can be applied in real-world projects.

# 3. Research Methodology

The research employs a multi-phase approach, including literature review, surveys, focus groups, and interviews. This combination of qualitative and quantitative methods allows for a comprehensive understanding of the challenges faced during the transition to Agile Project Management.

**Phase 1: Survey and Focus Group Method**: A survey was distributed to project managers and team members (who recently transitioned to Agile) to identify the main challenges they encountered. Focus group discussions were also conducted to explore these issues in greater depth and to propose potential solutions (Morgan, 1997).

**Phase 2: Interview Method**: Interviews were conducted with senior project leaders to understand how Agile Project Management impacts the predictability of project performance. These interviews provided insight into the importance of predictability for overall project success and how it can be improved through a structured Agile approach (Silverman, 2013).

**Phase 3: Conceptual Framework Development**: Based on the research findings, a new conceptual framework was developed, combining Agile methodologies with DevSecOps. This hybrid approach, called "Predictive Agile Delivery," focuses on improving predictability by introducing structured delivery processes and incorporating continuous security practices (Shahin et al., 2017).

# 4. Results

**Phase#1 Result:** A survey was conducted with the Managers, Product Owner, Scrum Master and Development Team to find out the challenges that faced by team and management after transitioning to Agile Project Management to draw solution.

Following are the ways to overcome agile transition challenges:

- **Better Agile Understanding:** Emphasize adaptability, learning, and quick recovery, focusing on long-term development rather than just productivity.
- **Top Management Involvement:** Management support is crucial to establish vision, values, and guide mindset shifts for business growth.
- **Organizational Culture:** Build a culture of commitment, trust, and teamwork, evolving from old mindsets.
- **Customer Independence:** Educate customers on agile principles to empower them for self-sufficiency.
- **Custom Agile Techniques:** Develop internal agile coaches and practices for continuous learning and transformation.
- **Collaboration and Communication:** Foster teamwork and allocate time for collaboration in agile processes.
- **Middle Management Support:** Appoint managers to serve as visionaries, architects, coaches, and catalysts.
- **Transparency and Trust:** Share knowledge openly and provide constructive feedback to improve practices.
- **Valid Agile Justification:** Understand customer context and maturity and focus on their actual needs.
- **Self-Organizing Teams:** Encourage teams to manage their tasks and priorities independently, supported by mentors.

**Phase#2 Result:** According to the findings of the Leader's interview, Agile will significantly improve the predictability of project performance. Nevertheless, predictability may suffer if an Agile Team is unable to implement Agile as planned, making it more challenging to reap the benefits of Agile. Though there have been numerous instances in a release train where the team has not performed up to the standards required of them, leaders observed that overall, there has been a noticeable increase in predictability; the predictions simply suggest that the work will not be completed as quickly or inexpensively as the business would like.

**Phase#3 Result:** Predictive Agile delivery with DevSecOps is a methodology that blends the automation-driven, security-focused practices of DevSecOps with the flexibility and iterative nature of Agile approaches. Below is an explanation of how these ideas relate to each other:

**Predictive Agile Delivery:**

1. **Hybrid Model:** Predictive Agile combines the iterative and adaptable methods of Agile with some aspects of traditional predictive planning. This implies that even with preliminary planning and forecasting, the project is still adaptable and may be changed in response to changing needs and input.

2. **Forecasting:** Predictive Agile use data-driven forecasting techniques to anticipate project results, deadlines, and resource requirements. Traditional Agile development methods concentrate on iterative development. This entails using performance measurements, trends, and historical data to forecast next releases and sprints with confidence.
3. **Continuous Improvement:** Using data to forecast and fine-tune Agile methods, the predictive component concentrates on streamlining operations via continuous improvement.

DevSecOps Integration with Agile:
1. **Security Integrated into the Pipeline:** By including security procedures into each phase of the software delivery lifecycle, DevSecOps builds upon DevOps. This guarantees that security is integrated from the beginning of planning through development, testing, and deployment in a Predictive Agile framework.
2. **Automation and Compliance:** To guarantee that security procedures are regularly followed without impeding the Agile delivery process, DevSecOps encourages automation in security checks, code analysis, vulnerability scanning, and compliance.
3. **Continuous Monitoring:** Predictive Agile in conjunction with DevSecOps entails keeping an eye out for performance problems, compliance infractions, and security vulnerabilities in pipelines, environments, and apps. This aids in anticipating possible security threats and taking proactive measures to mitigate them.

Advantages of Using DevSecOps and Predictive Agile Together:
1. **Enhanced Protection:** The team may produce secure code more quickly and with fewer vulnerabilities by including security into the Agile process, assuring adherence to rules and specifications.
2. **Better Predictability:** Agile's predictive feature makes it possible to plan, allocate resources, and estimate timelines more accurately, all of which contribute to more dependable delivery results.
3. A quicker time to market DevSecOps methods such as automation and continuous integration/continuous deployment (CI/CD) speed up releases by streamlining the delivery process and minimizing manual interventions.
4. **Resilience and Scalability:** Agile's flexibility combined with DevSecOps' emphasis on automation and security results in a software delivery process that is both more scalable and resilient.

# 5. Discussion

After understanding concept of Agile methodology (AM) for couple projects, it is found out that AM provides flexibility to change, quickly adapt to new approach, improve, and scale the product. But Agile methodology approach still have scope for improvement i.e. predictable project performance along with agility. The concept of "Predictable Project Performance" refers to the ability to forecast and anticipate the

outcomes of a project with a high degree of accuracy. In the realm of project management, achieving predictable project performance is a crucial goal, as it enables organizations to plan effectively, allocate resources efficiently, and mitigate potential risks. This research would be paving path for predictable project performance along with optimized delivery process by using DevOps. Additionally, strategies and insights find out from this research would empower project managers to forecast project outcomes with precision, ensuring efficient resource utilization, timely delivery, and customer satisfaction.

# 6. Conclusions

It is observed from the survey that roles and responsibilities within Agile are clearly defined. When considered as a whole, it seems to address a number of issues with the software development process in general. Agile doesn't address situations where team members aren't performing up to par with their roles. What occurs if a Scrum Master is unable to effectively lead a Scrum team. What takes place when a PO fails to fulfill their obligations? Significantly, Agile presupposes (and this is the main reason for its application) that the development team is made up entirely of experts who are the "best" people to decide on matters such as the length of a story and the technical solution, and that they will naturally want to fulfill their obligations. Additionally in conclusion, enterprises may produce high-quality, secure software more quickly by combining Predictive Agile delivery with DevSecOps to improve traditional Agile methods. This is achieved by making these practices more automated, predictable, and secure.

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