

Lecture 7: Development Approach and Life Cycle Performance Domain

Topics Covered

- Development Approaches: Predictive, Agile, and Hybrid
- Phases of a Project Life Cycle
- Aligning Delivery Cadence with Development Approach

Learning Objectives:

- Understand different project development approaches and life cycles.
- Learn how to choose the right approach for different project contexts.

Introduction

- The **Development Approach** shapes the entire project process, from planning to execution.
- A well-chosen approach ensures that:
 - Project goals align with stakeholder expectations.
 - Risks are minimized.
 - The team adapts effectively to changes.
- We'll explore the characteristics, advantages, and use cases for Predictive, Agile, and Hybrid approaches.

Development Approaches Overview

- **Development Approach:** The chosen methodology or strategy to manage the life cycle of a project.
- Three primary types:
 - i. **Predictive** (also known as Waterfall)
 - ii. **Agile** (or Adaptive)
 - iii. **Hybrid**
- Each has unique features, strengths, and ideal scenarios.

Development Approach 1: Predictive (Waterfall)

What is Predictive Development?

- **Predictive Approach:** A traditional, sequential approach where all project steps are planned from the start.
- Often called "Waterfall" due to the flow from one phase to the next without revisiting previous phases.
- **Example:** A construction project where design, permits, and building phases follow a strict order.

Key Characteristics of Predictive Approach

- **Fixed Scope:** Requirements are clear and do not change significantly after planning.
- **Phased Execution:** Each phase (design, development, testing) must be completed before moving to the next.
- **Detailed Documentation:** Each phase and deliverable is documented to ensure consistency.

Advantages of Predictive Approach

1. **Clear Structure:** Defined steps and milestones, making it easier to manage and predict timelines.
2. **Stable Requirements:** Best suited for projects where requirements are well-understood and unlikely to change.
3. **High Control:** Project managers can control scope, budget, and time effectively.

Example: In manufacturing, a new product design is finalized before the production phase starts, ensuring consistent quality.

Disadvantages of Predictive Approach

1. **Lack of Flexibility:** Limited ability to adapt to new information or changes.
2. **Higher Risk of Rework:** Any unanticipated changes require revisiting earlier phases, which can be costly.
3. **Stakeholder Involvement:** Stakeholders may only see results at the end, increasing the risk of misalignment with their expectations.

Example: In software development, a predictive approach may delay feedback, leading to product issues only found after completion.

Development Approach 2: Agile

What is Agile Development?

- **Agile Approach:** A flexible, iterative approach where projects are broken down into smaller cycles, or "sprints."
- **Customer-Centric:** Frequent feedback from stakeholders is essential to continuously refine deliverables.
- **Example:** Developing a mobile app with iterative releases for testing and feedback before final deployment.

Key Characteristics of Agile Approach

- **Iterative Development:** Delivers small, usable parts of the project frequently.
- **Flexibility:** Allows scope to evolve based on feedback and new insights.
- **Collaboration:** Requires continuous involvement of stakeholders and team members for feedback and improvement.

Advantages of Agile Approach

1. **Flexibility and Adaptability:** Easily adjusts to new requirements, making it ideal for fast-changing projects.
2. **Increased Stakeholder Engagement:** Stakeholders are regularly involved, reducing the risk of misalignment.
3. **Risk Management:** Regular feedback cycles help detect issues early.

Example: A software project where new features are added in short cycles, allowing testing and refinement.

Disadvantages of Agile Approach

1. **Scope Uncertainty:** Without a fixed end, scope may expand, leading to scope creep.
2. **High Demand on Team:** Agile requires a committed team that is constantly available for quick adjustments.
3. **Potential Cost Overruns:** Continuous changes and iterations may extend timelines and increase costs.

Example: In marketing, an Agile approach to campaign testing may overrun budgets if too many adjustments are made.

Development Approach 3: Hybrid

What is Hybrid Development?

- **Hybrid Approach:** Combines the structured nature of Predictive with the flexibility of Agile.
- Ideal for projects where some parts are stable and others require adaptability.
- **Example:** A website redesign where content is pre-planned, but user interface (UI) design is iterated based on user testing.

Key Characteristics of Hybrid Approach

- **Customizable Methodology:** Project managers can choose Agile for flexible phases and Predictive for fixed elements.
- **Balanced Control and Flexibility:** Allows adaptability without compromising on structured elements.
- **Stakeholder-Centric:** Provides flexibility in responding to feedback while ensuring key deliverables are met.

Advantages of Hybrid Approach

1. **Best of Both Worlds:** Balances the control of Predictive with the flexibility of Agile.
2. **Stakeholder Satisfaction:** Stakeholders get regular updates in Agile phases and milestone clarity in Predictive phases.
3. **Tailored to Project Needs:** Customizable to suit complex projects with varied requirements.

Example: A healthcare project where clinical procedures follow strict guidelines, but patient interface design is tested iteratively.

Disadvantages of Hybrid Approach

1. **Complexity in Management:** Requires careful coordination of both Agile and Predictive elements.
2. **Inconsistent Practices:** Combining methodologies can create confusion if not well-integrated.
3. **Requires Skilled Team:** Effective implementation demands team members understand both approaches.

Project Life Cycle Phases

- **Project Life Cycle:** A structured series of phases that a project goes through from start to finish.
- Common phases:
 - i. Initiation
 - ii. Planning
 - iii. Execution
 - iv. Monitoring & Controlling
 - v. Closing

Phase 1: Initiation

- **Objective:** Establish the project's foundation, including goals, scope, and feasibility.
- Key activities:
 - Feasibility studies
 - Stakeholder identification
 - Project charter creation

Phase 2: Planning

- **Objective:** Outline a roadmap to achieve project goals.
- Key activities:
 - Develop scope, schedule, budget, and resources.
 - Plan for risk, quality, and communication.
- **Deliverables:** Comprehensive project plan.

Phase 3: Execution

- **Objective:** Carry out planned project tasks.
- Key activities:
 - Resource coordination
 - Task management
 - Ongoing communication with stakeholders
- **Deliverables:** Tangible outputs or interim project reports.

Phase 4: Monitoring & Controlling

- **Objective:** Track project performance against the plan.
- Key activities:
 - Progress measurement
 - Risk management and change control
 - Quality assurance
- **Deliverables:** Status reports and performance data.

Phase 5: Closing

- **Objective:** Finalize all project work and formally close.
- Key activities:
 - Deliver final product to stakeholders
 - Document lessons learned
 - Release resources
- **Deliverables:** Final project report and official closure.

Aligning Delivery Cadence with Development Approach

What is Delivery Cadence?

- **Delivery Cadence:** The timing and frequency of deliverables throughout the project.
- Ensures stakeholders receive updates and results in sync with project needs.

Delivery Cadence in Predictive Projects

- **Scheduled Milestones:** Tied to specific project phases.
- **Periodic Updates:** Stakeholders receive regular, pre-scheduled updates.
- **Example:** In a construction project, monthly updates ensure transparency and control.

Delivery Cadence in Agile Projects

- **Frequent Iterations:** Deliverables produced every 2-4 weeks.
- **Continuous Feedback:** Stakeholders provide regular input to guide adjustments.
- **Example:** In software development, delivering features in sprints allows continuous refinement.

Delivery Cadence in Hybrid Projects

- **Customized Schedule:** Mixes Agile iterations with Predictive milestones.
- **Stakeholder Flexibility:** Provides stakeholders regular updates in Agile phases and milestones in Predictive phases.
- **Example:** A retail rollout with fixed logistical milestones and flexible promotional design updates.

Choosing the Right Development Approach

- Consider:
 - **Project Complexity:** Level of detail and uncertainty.
 - **Stakeholder Engagement:** Frequency and level of involvement needed.
 - **Risk Tolerance:** Ability to adapt to changes or uncertainties.

Summary of Development Approaches

Approach	Characteristics	Ideal Use Cases
Predictive	Fixed, structured	Construction, manufacturing
Agile	Iterative, flexible	Software, product design
Hybrid	Combined approach	Healthcare, digital transformation