



Project Life Cycle and Methodologies

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Objectives

At the end of the discussion, each students will be able to:

- Explain the key phases of the IT project lifecycle and describe how each phase contributes to successful project delivery.
- Compare and contrast traditional (Waterfall), Agile, and Hybrid methodologies, highlighting their applications, strengths, and limitations in IT project environments.
- Identify the structure and roles within the Scrum framework, and analyze how Scrum facilitates iterative development and continuous stakeholder engagement.

Overview of IT Project Lifecycle



What is Project Lifecycle?

- A Project Lifecycle defines the phases a project passes through from start to finish.
- Common Phases (PMBOK and real-world IT practices):
 - Initiation – Define objectives, feasibility, and stakeholders
 - Planning – Scope, budget, scheduling, risk management
 - Execution – Development, design, coding, configuration
 - Monitoring & Control – Track KPIs, quality, timeline
 - Closure – Deployment, documentation, handover

[Cont..]

Overview of IT Project Lifecycle

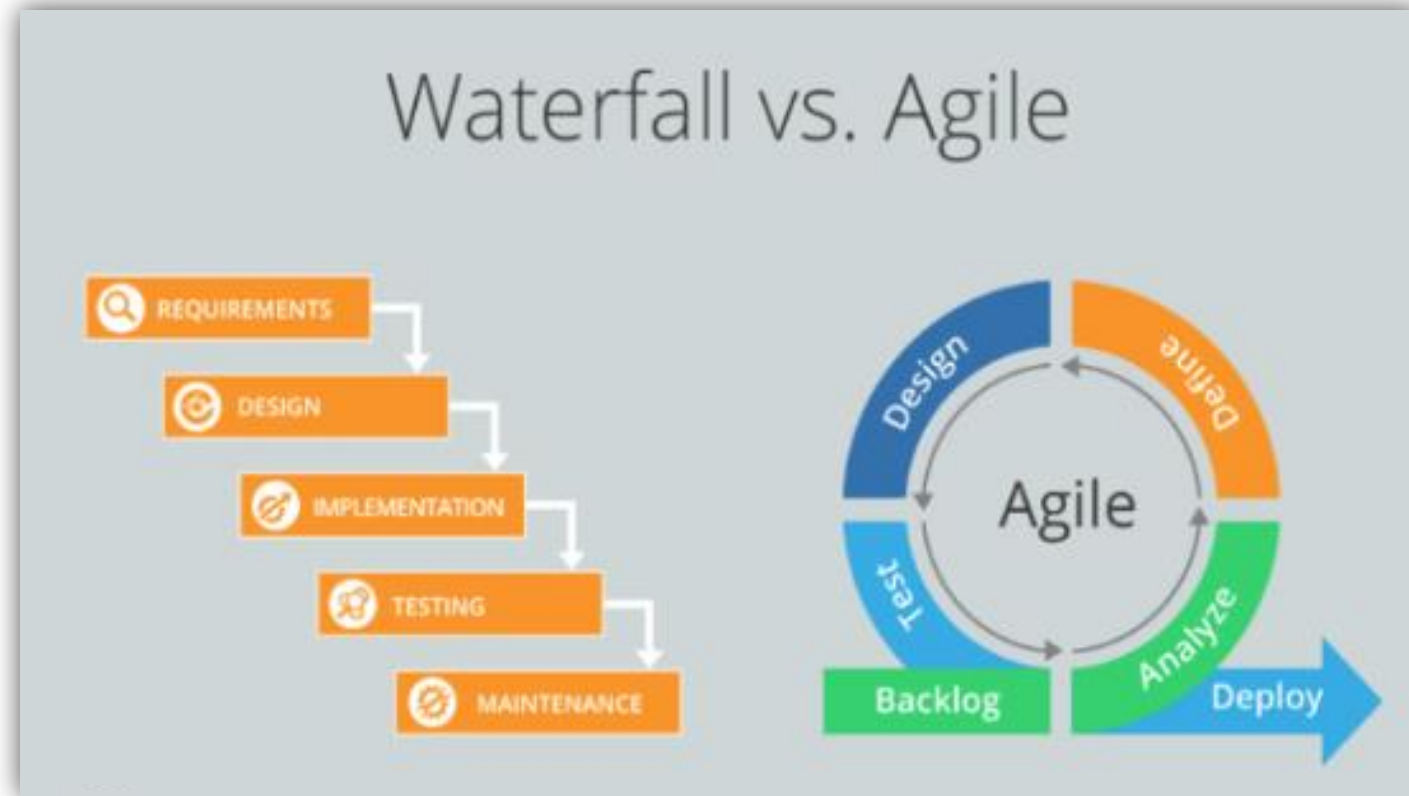
Example:

Developing a University E-Learning Portal

- Initiation: Identify the need to digitize instruction
- Planning: Allocate budget, choose LMS tools
- Execution: Develop frontend/backend
- Monitoring: Track testing feedback
- Closure: Final deployment and user training

 *Nizhebetyski (2022) emphasizes tailoring lifecycle stages to project size and complexity for maximum control.*

Traditional (Waterfall) vs. Agile Methodologies



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Traditional (Waterfall) vs. Agile Methodologies




Traditional – Waterfall Approach:

- Linear & Sequential: Each phase must be completed before moving to the next.
- Well-suited for predictable and structured projects.
- Minimal stakeholder feedback until final stages.

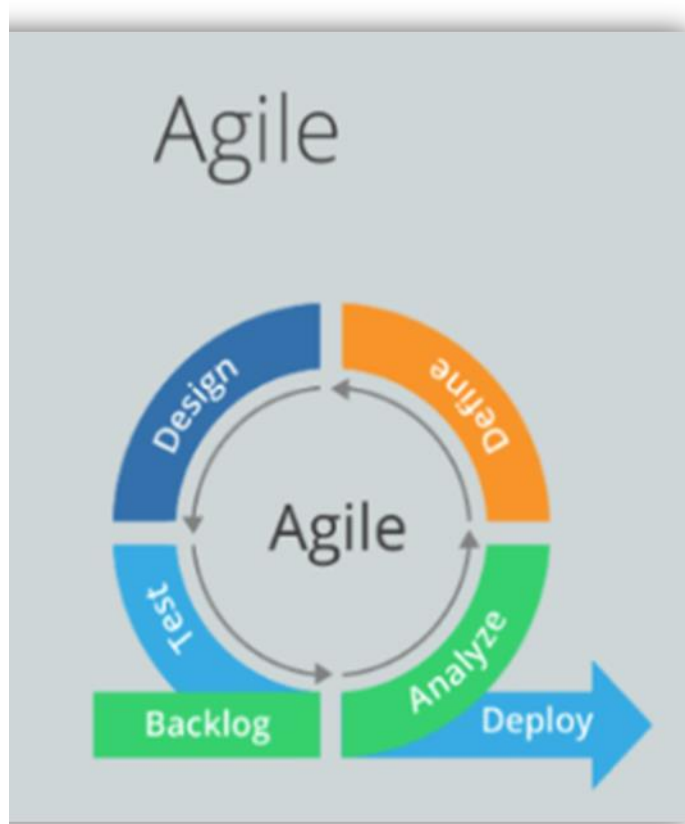
Example:

- Migrating a database to a new on-premise server.
 - Step-by-step planning and execution needed, minimal change midstream.

 *Dumitrascu (2021) notes that Waterfall is ideal when scope and requirements are stable from the start.*

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Traditional (Waterfall) vs. Agile Methodologies




Agile Approach:

- Iterative & Incremental: Focuses on adaptability and collaboration.
- Involves continuous stakeholder feedback.
- Prioritizes working software over documentation.

Example:

- Building a mobile app where user needs evolve.
 - Frequent releases allow for user feedback and quick pivots.

 *Layton & Ostermiller (2020)* stress that Agile excels in environments with fast-changing needs (like IT, mobile apps, startups).

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Introduction to Hybrid and Scrum Frameworks

Hybrid Methodologies:

- Combines Waterfall's structure with Agile's flexibility.
- Planning and architecture follow traditional methods.
- Execution adapts Agile iterations.

Example:

- Government IT system: Procurement and legal steps (Waterfall), followed by Agile development of modules.



Portny (2020) notes that hybrid models are common in regulated industries that require documentation but benefit from Agile speed.

[Cont..]

Introduction to Hybrid and Scrum Frameworks

Scrum Framework:


- A lightweight Agile framework using fixed-length sprints (2–4 weeks)
- Key roles:
 - Product Owner: Manages product backlog and stakeholder needs
 - Scrum Master: Facilitates process and removes blockers
 - Team: Self-organizing and cross-functional

Scrum Events:

- Sprint Planning
- Daily Scrum (stand-ups)
- Sprint Review
- Sprint Retrospective

Example:

- A team building a student portal in 3-month sprints:
 - Sprint 1: Login system
 - Sprint 2: Grade dashboard
 - Sprint 3: Feedback modules

 *Schmidt (2021)* notes that Scrum empowers decentralized decision-making and motivates collaborative teams.

Comparison Table

Feature	Waterfall	Agile	Hybrid	Scrum
Flexibility	Low	High	Medium	High
Feedback	Late	Continuous	Balanced	Continuous
Project Type	Stable scope	Evolving scope	Mixed	Dynamic software dev
Documentation	Extensive	Minimal	Moderate	Moderate
Speed	Slower	Faster	Moderate	Fast (sprint-based)

Summary

- The IT Project Lifecycle provides structured guidance from start to finish.
- Waterfall is great for stable, well-defined projects.
- Agile is ideal for projects with evolving requirements.
- Hybrid combines both for more nuanced delivery.
- Scrum provides a team-based, iterative delivery method that emphasizes adaptability.

Group Activity

Activity: Capstone Project Methodology Design

1. Form groups of 3–5 members (if the Capstone is team-based) or work individually if the project is solo.
2. Review your proposed Project topic. Consider its scope, complexity, timeline, and expected deliverables.
3. Design a project methodology suited to your project management using one of the following approaches:
 - Traditional (Waterfall)
 - Agile (e.g., Scrum, Kanban)
 - Hybrid (combination of Waterfall and Agile)
 - Any custom methodology with clear justification
4. Your design must include:
 - Project lifecycle stages tailored to your project
 - Rationale for chosen methodology (Why it fits your Capstone?)
 - Roles and responsibilities within your team (if applicable)
 - Tools or techniques you plan to use (e.g., Gantt chart, backlog, sprints)
5. Output Format:
 - A 1–2-page methodology plan (typed)
 - Accompanied by a visual diagram or flowchart
6. Submission Deadline: [**Insert Date Here**]. Upload your work to [MS Teams]

References:

- Nizhebetskyi, D. (2022). Practical project management: Proven framework that great project managers use in the real world. Dmytro Nizhebetskyi.
- Dumitrascu, S. (2021). IT Project Management Essentials: A Practical Guide. Independently published.
- Schmidt, T. (2021). Strategic project management made simple: Solution tools for leaders and teams. John Wiley & Sons.
- Layton, M. C., & Ostermiller, S. J. (2020). Agile project management for dummies. John Wiley & Sons.
- Portny, S. E. (2020). Project management all-in-one for dummies. John Wiley & Sons.



Thank you!