

IS 120 || INFORMATION SYSTEMS STRATEGY
AND ACQUISITION
TOPIC 16

INFORMATION SYSTEMS PROJECT MANAGEMENT

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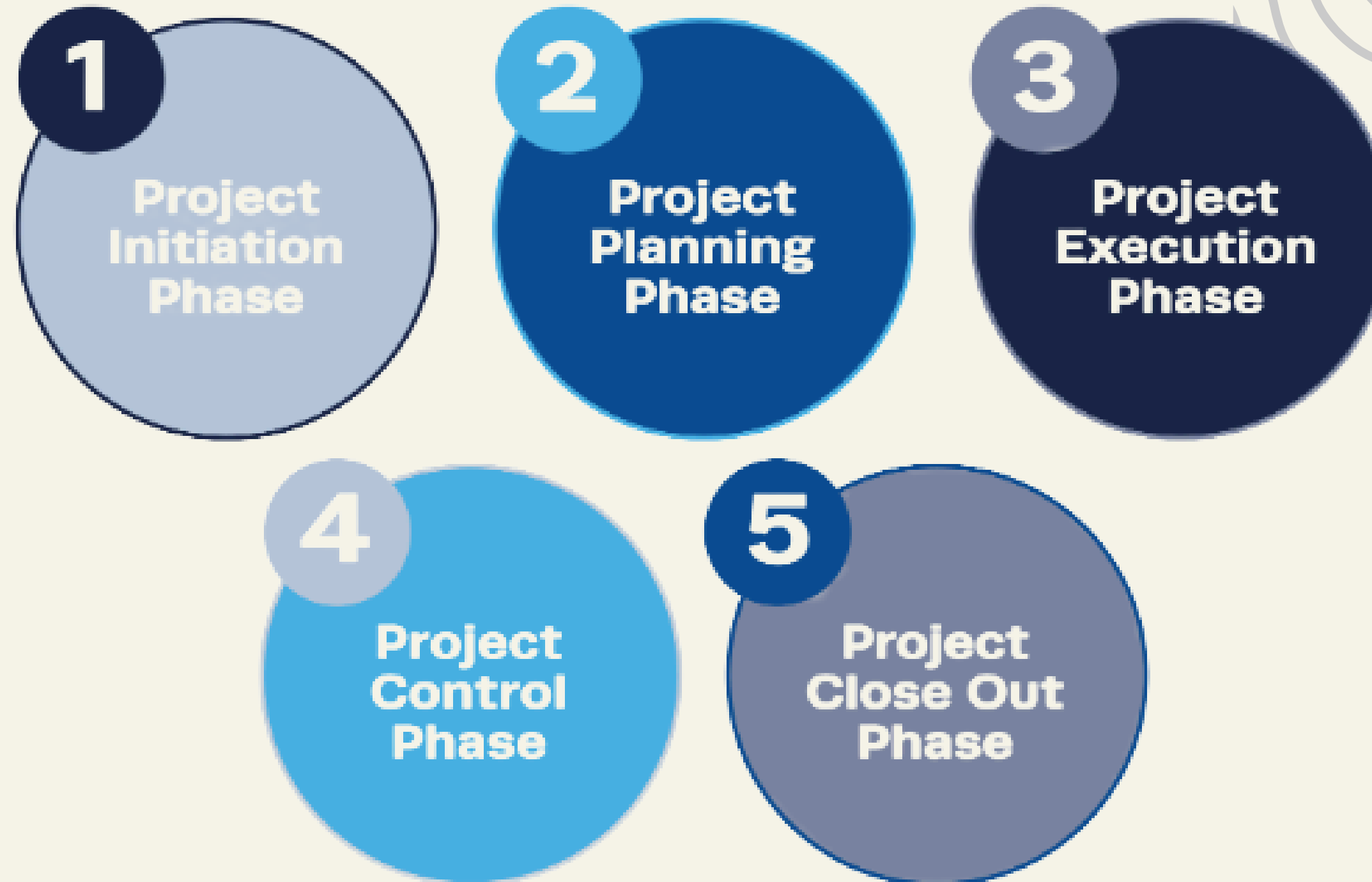
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PROJECT MANAGEMENT LIFE CYCLE



1. PROJECT INITIATION PHASE

The initiation phase is the first step in the project management life cycle, where the project's objectives and feasibility are determined. Key steps include identifying the problem, defining the project scope, and identifying stakeholders. Two critical documents are created: the business case, which evaluates costs and benefits to decide if the project proceeds, and the statement of work, which outlines objectives, deliverables, and scope details. Clear goal-setting during this phase is essential for team alignment and success, as it drives achievement and reduces stress.

» PROJECT DEFINITION AND SCOPE IDENTIFICATION

» PRELIMINARY STAKEHOLDER ANALYSIS

» INITIAL FEASIBILITY ASSESSMENT

2. PROJECT PLANNING PHASE

The planning phase establishes the roadmap for the project, answering key questions like timeline, cost, and tasks. It involves breaking large tasks into smaller, manageable chunks to create a realistic schedule and avoid "ground rush" (unexpected last-minute challenges). Risk assessment is critical to identify and mitigate potential issues, ensuring quality and timelines are maintained. Proactive planning, including contingency plans, helps address problems effectively. Techniques like the 80:20 rule prioritize significant issues, preventing distractions by irrelevant matters.

➤ **ESTIMATE THE BUDGET TO MAXIMIZE ROI, GATHER NECESSARY RESOURCES, AND ASSEMBLE THE TEAM TO EXECUTE THE PROJECT EFFECTIVELY.**

➤ **"GROUND RUSH" OCCURS WHEN POOR PLANNING LEADS TO LAST-MINUTE PANIC, CAUSING MISTAKES AND FORGOTTEN BASICS. TO AVOID THIS, BREAK THE PROJECT TIMELINE INTO PHASES WITH SPECIFIC TASKS. PROPER PLANNING ENSURES PRIORITIES ARE SET, ENERGY IS DISTRIBUTED, AND THE PROJECT STAYS ON TRACK.**

3. PROJECT EXECUTION PHASE

The execution phase involves putting the project plan into action promptly, as procrastination wastes time. Teamwork is essential, and delegation demonstrates trust, builds loyalty, and encourages ownership. Project managers must assign tasks, provide guidance, and maintain clear communication with team members, clients, and stakeholders to keep everyone updated on progress.

▶▶ TASK EXECUTION AND PROJECT DELIVERABLES PRODUCTION

▶▶ TEAM COLLABORATION AND COMMUNICATION

▶▶ ONGOING MONITORING OF PROJECT PROGRESS

4. PROJECT CONTROL PHASE

The monitoring and control phase focuses on tracking project performance to ensure tasks meet time, quality, and budget goals. Project managers assess progress, manage costs, and review documents like change management records and QA checklists to identify bottlenecks and improve processes. Setting milestones allows for corrective actions or rewards. Regular feedback to stakeholders, supported by data, is crucial to maintain trust and justify requests for additional time or resources if needed.

- ▶ **REAL-TIME MONITORING OF PROJECT ACTIVITIES**
- ▶ **IDENTIFICATION AND RESOLUTION OF ISSUES**
- ▶ **ADJUSTMENTS TO PROJECT PLANS IF NECESSARY**

5. PROJECT CLOSE OUT PHASE

The project closure phase is the learning stage, where successes and shortcomings are documented to avoid repeating mistakes. It ensures all tasks are completed, deliverables are handed to the client, and resources are released. A project assessment report captures lessons learned, best practices, and knowledge for future initiatives, emphasizing the value of formal project management and benefiting the organization. This phase prepares teams to apply insights to future projects, fostering continuous improvement.

» FINAL PROJECT EVALUATION AND ASSESSMENT

» FORMAL ACCEPTANCE OF DELIVERABLES

» PROJECT CLOSURE DOCUMENTATION

AGILE METHODOLOGIES FOR IS DEVELOPMENT

Agile development methodologies are iterative, focusing on collaboration, flexibility, and feedback. Projects are broken into smaller sprints, with regular reviews and adjustments to adapt to changing requirements.

- ▶ **ENABLES FASTER DELIVERY AND HELPS ADAPT TO CHANGES QUICKLY**

- ▶ **ENHANCES COLLABORATION AMONG TEAM MEMBERS AND STAKEHOLDERS**

- ▶ **INCREASES PRODUCT RELEVANCE BY FOCUSING ON USER-CENTRIC DEVELOPMENT**

- ▶ **PREVENTS COST OVERRUNS AND ENSURES FASTER TIME TO MARKET**



WHAT IS AGILE DEVELOPMENT AND AGILE TESTING?

➤ **AGILE DEVELOPMENT** IS A SOFTWARE DEVELOPMENT APPROACH THAT PRIORITIZES ITERATIVE PROGRESS, TEAMWORK, ADAPTABILITY, AND ONGOING FEEDBACK. IT ORGANIZES WORK INTO SMALL, MANAGEABLE TASKS AND DELIVERS FUNCTIONAL SOFTWARE IN REGULAR INCREMENTS, ENABLING RAPID ADAPTATION TO CHANGES. THIS LEADS TO QUICKER DELIVERY, ENHANCED PRODUCT QUALITY, AND GREATER CUSTOMER SATISFACTION.

➤ **AGILE TESTING** INVOLVES TESTING APPLICATIONS CONTINUOUSLY DURING THE DEVELOPMENT PROCESS. IT EMPHASIZES EARLY FEEDBACK, ONGOING COLLABORATION BETWEEN DEVELOPERS AND TESTERS, AND ADJUSTING TEST STRATEGIES AS REQUIREMENTS EVOLVE. THIS APPROACH HELPS IDENTIFY ISSUES SOONER, REDUCE DEFECTS, AND IMPROVE OVERALL SOFTWARE RELIABILITY.



WHAT IS AGILE METHODOLOGY?

Agile development methodologies are project management techniques that involve breaking down projects into smaller, manageable tasks, called sprints. Teams can quickly adapt to changes, gather regular feedback, and deliver higher-quality products in shorter timeframes.



 FOR EXAMPLE, TEAMS MIGHT RELEASE A NEW FEATURE IN ONE SPRINT WHILE SIMULTANEOUSLY REFINING EXISTING FEATURES BASED ON USER FEEDBACK FROM PREVIOUS SPRINTS.

KEY AGILE METHODOLOGIES

» SCRUM

» EXTREME PROGRAMMING (XP)

» ADAPTIVE SOFTWARE DEVELOPMENT (ASD)

» DYNAMIC SYSTEMS DEVELOPMENT METHOD (DSDM)

» FEATURE-DRIVEN DEVELOPMENT (FDD)

» KANBAN

» BEHAVIOR DRIVEN DEVELOPMENT (BDD)

1. SCRUM



Scrum is an agile methodology focused on team-based task management, inspired by rugby teamwork. It emphasizes small, empowered teams (typically 7-9 members) and defines three key roles with specific responsibilities to guide the development process.

➤ **SCRUM LEAD** The scrum master is in charge of organizing the team, the sprint meeting, and removing roadblocks.

➤ **PRODUCT CREATOR** The product owner builds the product backlog, organizes it by priority, and is in charge of delivering features at each iteration.

➤ **AGILE TEAM** Team coordinates and oversees its own work to finish the sprint or cycle.



2. EXTREME PROGRAMMING (XP)



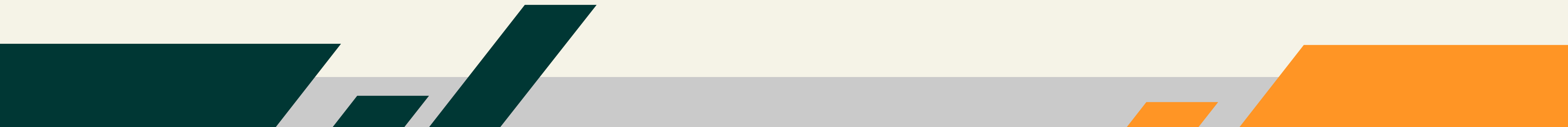
The Agile framework most similar to XP (Extreme Programming) focuses on creating high-quality software and streamlining the development process. XP emphasizes feedback, communication, simplicity, courage, and respect as core values.

➤ **THE CRITERIA ARE ALWAYS SHIFTING**

➤ **TEAM DEADLINES ARE CONSTRAINED**

➤ **STAKEHOLDERS DESIRE TO LOWER RISK WHILE MEETING TIMELINES**

➤ **UNIT AND FUNCTIONAL TESTING CAN BE AUTOMATED BY TEAMS**



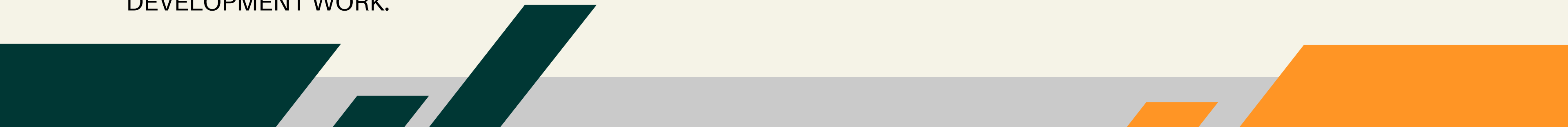
3. ADAPTIVE SOFTWARE DEVELOPMENT (ASD)



Adaptive Software Development (ASD), created by Sam Bayer and Jim Highsmith in the 1990s, focuses on embracing change through continuous adaptation. It follows a non-linear, iterative life cycle centered on learning, collaboration, and speculation. ASD emphasizes close customer-developer interaction, rapid development, and ongoing learning to deliver high-quality, low-maintenance products. Unlike traditional static methods (Plan-Design-Build), ASD allows processes to iterate and adapt simultaneously, prioritizing speed and user involvement.

» THE **SPECULATE PHASE** FOCUSES ON DEFINING THE PROJECT'S OBJECTIVES AND UNDERSTANDING CONSTRAINTS (RISK AREAS). IT ENSURES COORDINATION BETWEEN TEAMS, SHARING KNOWLEDGE TO AVOID REDUNDANT EFFORTS. THIS PHASE CONCENTRATES THE MAJORITY OF DEVELOPMENT WORK.

» THE **LEARN PHASE** INVOLVES COLLABORATION CYCLES TO DOCUMENT LESSONS LEARNED, BOTH POSITIVE AND NEGATIVE. THIS STAGE IS CRITICAL TO THE PROJECT'S SUCCESS.



4. DYNAMIC SOFTWARE DEVELOPMENT METHOD (DSDM)



The **Dynamic Software Development Method (DSDM)**, created in 1994 by software development experts, focuses on delivering software within tight budgets and schedules. It emphasizes iterative, incremental development and regular product delivery. DSDM enables continuous, early deliveries, allowing for adaptive solutions based on feedback and ensuring expected benefits are achieved. As an agile model, it helps organizations shift their mindset to increase value creation and reduce time to market.



5. FEATURE DRIVEN DEVELOPMENT (FDD)



The key component of this methodology is “designing & creating” features. FDD, in contrast to other Agile development techniques in software engineering, outlines very precise and condensed work phases that must be completed separately for each feature. Domain walkthrough, design review, promotion to build, code review, and design are all included. FDD creates products with the target market in mind.

➤ **VISIBILITY OF PROGRESS AND RESULTS**

➤ **FEATURE TEAMS**

➤ **REGULAR BUILDS**

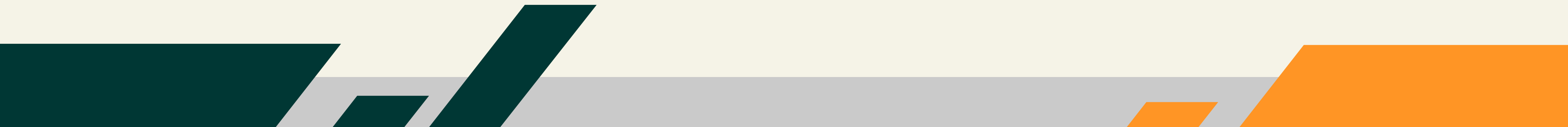
➤ **COMPONENT/ CLASS OWNERSHIP**

➤ **CONFIGURATION MANAGEMENT**

➤ **DEVELOPMENT BY FEATURE**

➤ **INSPECTIONS**

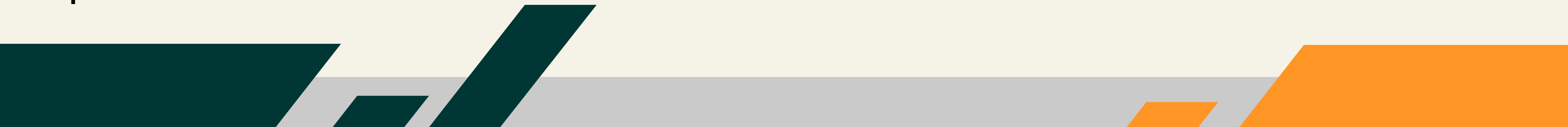
➤ **DOMAIN OBJECT MODELING**



6. KANBAN



Kanban is a visual workflow management method that helps teams manage product development with a focus on continuous delivery, without adding stress to the software development lifecycle (SDLC). Popular in Lean software development, it emphasizes visualizing workflows, limiting work in progress, and improving work flow. Like Scrum, Kanban enhances team collaboration, fosters continuous learning, and aims to optimize processes for ongoing improvement.



7. BEHAVIOR DRIVEN DEVELOPMENT (BDD)



Behavior-Driven Development (BDD), created by Dan North in 2003, extends TDD by involving non-technical stakeholders in defining system functionality. It uses universal language to bridge communication gaps between technical and non-technical team members. BDD focuses on writing test cases and features that outline system behavior, ensuring clear requirements, faster bug detection, and durable software. This approach minimizes errors and aligns development with business goals.



RISK MANAGEMENT IN IS PROJECTS




INTRODUCTION

Risk management in information systems is a structured process aimed at identifying, assessing, and mitigating risks that could compromise the confidentiality, integrity, and availability of an organization's data and IT infrastructure. Effective risk management ensures that information systems operate securely and reliably, supporting organizational objectives and compliance requirements.

Understanding Risk Management in IS

Information systems are integral to modern organizations, facilitating data processing, storage, and communication. However, their pervasive use introduces various risks, including cyber threats, data breaches, system failures, and compliance violations. Risk management in this context involves systematic practices to identify potential threats, evaluate their impact, and implement controls to mitigate adverse effects. Key components include organizational planning, continuity planning, and fraud detection policy development.

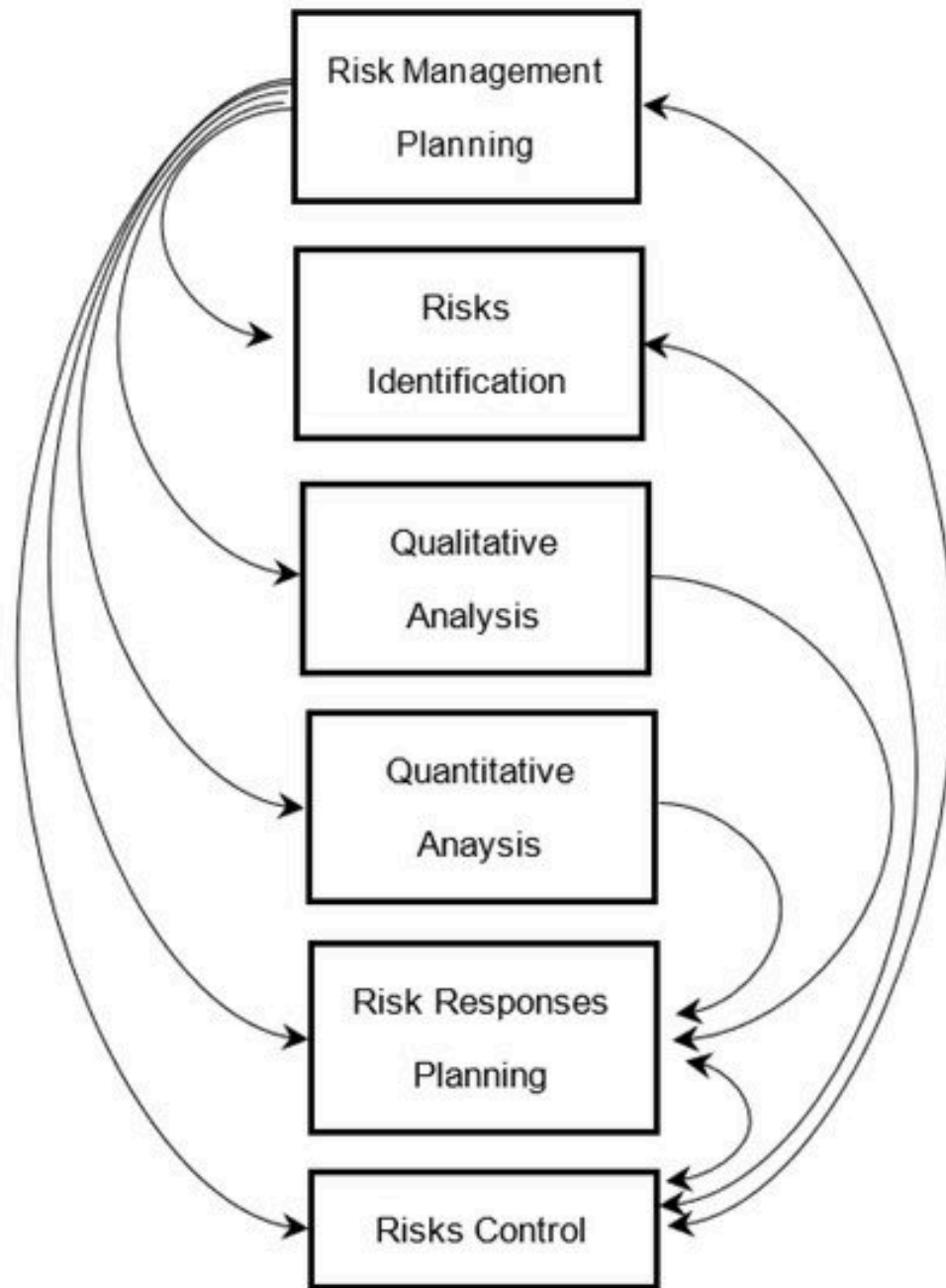


FRAMEWORKS AND STANDARDS

Several frameworks and standards guide organizations in managing information system risks:

- ISO/IEC 27005: This international standard provides guidelines for information security risk management. It outlines processes for identifying, assessing, evaluating, and treating information security risks, ensuring that organizations implement appropriate controls based on their specific risk landscape. The standard emphasizes a systematic approach to managing risks to protect information assets.
- NIST Risk Management Framework (RMF): Developed by the National Institute of Standards and Technology, the RMF offers a structured process integrating security, privacy, and risk management activities into the system development life cycle. It includes steps such as preparing for risk management, categorizing information systems, selecting and implementing controls, assessing control effectiveness, authorizing system operation, and continuous monitoring.

RISK MANAGEMENT PROCESS



- **Risk Management Planning**- This step sets the goals and guidelines for managing risks in a project. It includes identifying the risk environment, defining processes, and integrating risk policies. Each organization customizes its risk management plan to fit its needs.
- **Identifying Risks**- This involves finding potential risks that may affect the project. It includes identifying risk sources (e.g., system vulnerabilities, human errors) and using tools like SWOT analysis, checklists, and documentation reviews to gather information.
- **Qualitative Analysis**- Risks are categorized based on their likelihood and impact. This helps prioritize which risks need immediate attention. Common techniques include the Delphi method (expert opinions), SWIFT (scenario-based analysis), decision trees (mapping possible outcomes), and bow-tie analysis (examining causes and effects).
- **Quantitative Analysis**- This step assigns numerical values to risks using statistical methods. Tools like Monte Carlo simulations, decision trees, and Expected Monetary Value (EMV) help measure risks accurately and determine financial impact.
- **Planning Risk Response**- This step develops strategies to handle identified risks, such as avoiding, mitigating, transferring, or accepting them. It ensures that effective actions are taken to minimize negative impacts on the project.
- **Risk Monitoring & Control** - This involves continuously tracking risks, evaluating response effectiveness, and updating strategies as needed. It ensures risks remain manageable and new threats are identified throughout the project.

Figure 1. Main structures attributed to risk management

PROJECT SCHEDULING AND RESOURCE ALLOCATION IN PROJECT MANAGEMENT

Introduction

Project management involves multiple processes that ensure the successful completion of a project within time and budget constraints. Among these processes, project scheduling and resource allocation play a crucial role. Proper resource allocation ensures that the right resources are assigned efficiently, while effective scheduling helps in organizing tasks to meet deadlines and project goals. This report explores the importance of project scheduling and resource allocation, their impact on project management, and best practices for achieving optimal results.

RESOURCE ALLOCATION IN PROJECT MANAGEMENT

Resource allocation is the process of assigning and scheduling available resources in an effective and economical way. Since resources are often scarce, project managers must determine the best way to allocate them within the project schedule to maximize productivity and efficiency.

TYPES OF RESOURCES

Projects require different types of resources, which can be categorized into four main types:

1. **Financial Resources** - The budget and funding required to acquire other resources and complete the project.
2. **Physical Resources** - Tangible assets such as equipment, materials, and workspaces necessary for project execution.
3. **People Resources** - Team members, contractors, and consultants responsible for carrying out the project tasks.
4. **Technological Resources** - Software, tools, and communication systems that facilitate project management.

IMPACTS OF RESOURCE ALLOCATION

Effective resource allocation leads to:

- **Higher efficiency** - Properly assigned resources ensure tasks are completed within deadlines.
- **Better team performance** - Clearly defined roles and sufficient support improve morale and productivity.
- **Financial savings** - Strategic resource use prevents waste and keeps the project within budget.
- **Informed decision-making** - Clear resource distribution enables teams to make quick and effective decisions.

RESOURCE ALLOCATION IN PROJECT MANAGEMENT



CHALLENGES IN RESOURCE ALLOCATION

Despite its benefits, resource allocation comes with challenges, including:

- **Changes in project scope** - Project modifications require adjustments in resource allocation.
- **Skills alignment** - Ensuring that team members are assigned tasks matching their expertise.
- **Miscommunication** - Poor coordination can lead to resource mismanagement and delays.
- **Task prioritization** - Managing multiple tasks and adjusting resources based on urgency.
- **Balancing cost and availability** - Assigning resources while considering financial and time constraints.

STEPS FOR EFFECTIVE RESOURCE ALLOCATION

To ensure efficient resource distribution, project managers follow these five key steps:

1. **Assess Resource Needs** - Identify the project's objectives and required resources.
2. **Prioritize Resource Requirements** - Determine essential and flexible resources.
3. **Strategically Allocate Resources** - Match resources with project needs while considering availability and budget.
4. **Monitor and Adjust Resources** - Continuously track usage and make necessary modifications.
5. **Evaluate and Optimize** - Review resource usage post-project to improve future allocations.



PROJECT SCHEDULING IN PROJECT MANAGEMENT

Project scheduling involves listing activities, deliverables, and milestones with planned start and finish dates. It ensures tasks are executed in a structured manner, leading to efficient time management.

PROCESSES OF TIME MANAGEMENT

Project scheduling consists of six key processes:

1. **Plan Schedule Management** - Define how the schedule will be developed and controlled.
2. **Define Project Activities** - Break down the project into manageable tasks.
3. **Sequence Activities** - Determine the order of tasks based on dependencies.
4. **Estimate Resources** - Identify the resources needed for each task.
5. **Estimate Durations** - Determine how long each task will take.
6. **Develop the Project Schedule** - Create a timeline for execution.

TYPES OF PROJECT SCHEDULES

There are three main types of project schedules:

1. **Master Project Schedule** - A high-level summary of tasks with a timeline.
2. **Milestone Schedule** - Tracks key deliverables and major project milestones.
3. **Detailed Project Schedule** - A comprehensive list of all tasks, deadlines, and dependencies.

PROJECT SCHEDULING IN PROJECT MANAGEMENT



PROJECT SCHEDULING TECHNIQUES

- Gantt Charts - A visual representation of tasks, deadlines, and progress.
- Critical Path Method (CPM) - Identifies the sequence of essential tasks that determine the project's duration.
- Program Evaluation and Review Technique (PERT) - Uses a visual mapping tool to estimate project timelines.

BENEFITS OF PROJECT SCHEDULING

- Helps track progress - Ensures teams stay on schedule.
- Improves communication - Keeps stakeholders aligned.
- Identifies risks early - Helps in proactive risk management.
- Optimizes resource use - Ensures resources are used efficiently.

BEST PRACTICES FOR SCHEDULING


- Gather input from stakeholders to create a realistic schedule.
- Refer to past projects to estimate timelines accurately.
- Consider potential risks that may affect scheduling.
- Account for non-working days like holidays and vacations.
- Identify the project's critical path to prioritize essential tasks.
- Document scheduling assumptions for future reference.
- Include milestones to track key achievements.



CONCLUSION



Successful IS project management requires a structured approach from initiation to closure. Agile methodologies enhance flexibility, while risk management frameworks ensure data security and compliance. Efficient scheduling and resource allocation optimize productivity, helping teams meet deadlines and adapt to challenges. By applying these best practices, organizations can improve project outcomes and maintain stability in IS development.



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