



Information Technology Project Management



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The Nature of Information Technology Projects

Chapter 1

Learning Objectives

- ▶ Understand why information technology (IT) projects are organizational investments..
- ▶ Understand why projects are planned organizational change and why they must align with an organization's business strategy.
- ▶ Define what a project is and describe the attributes of a project.
- ▶ Define the discipline called project management.
- ▶ Understand the relationship among project portfolios, programs, and projects.
- ▶ Understand how the disciplines of information technology and project management have evolved together and have led to how we manage projects today
- ▶ Understand the current state of IT project management.
- ▶ Understand why some projects fail and how to improve the likelihood of success.

Introduction

- ▶ Information Technology (IT) projects are organizational investments that require
 - ▶ Time
 - ▶ Money
 - ▶ And other resources such as people, technology, facilities, etc.
- ▶ Organizations expect some type of value in return for this investment
- ▶ IT projects enable the integration of technology in new products, services, or processes that can change existing relationships between an organization and its customers and suppliers as well as among the people within the organization.

The PMBOK® Guide's Definitions for ...

- A project is a temporary endeavor undertaken to create a unique product, service, or result.
- A project manager is the person assigned by the performing organization to achieve the project objectives.

Project Attributes

- ▶ Time Frame
- ▶ Purpose (to provide value!)
- ▶ Ownership
- ▶ Resources (the triple constraint)
- ▶ Roles
 - ▶ Project Manager
 - ▶ Project Sponsor
 - ▶ Subject Matter Expert (SME)
 - ▶ Technical Expert (TE)
- ▶ Risk & Assumptions
- ▶ Interdependent Tasks
 - ▶ *progressive elaboration* – steps & increments
- ▶ Planned Organizational Change
- ▶ Operate in Environments Larger than the Project Itself

What is Project Management?

- ▶ *Project Management* is the application of knowledge, skills, tools and techniques to project activities to meet project requirements.
- ▶ *Project Portfolio* – a collection of diverse projects managed collectively to align with the organization's strategy and overall plan to achieve competitive advantage.
- ▶ *Program* – a collection of projects within a project portfolio whose activities are coordinated so that the benefits of the program are great than the sum of the benefits of the individual projects.

Project Management and Information Technology



First
Electronic
Computer

EDP
Era

PC
Era

Network
Era

Globalization

The State of IT Project Management

- ▶ The Standish Group (the CHAOS studies) and others have studied IT project success and failure.
- ▶ In general, a successful project is defined as one that is completed on time, within budget, and including all of the features or requirements envisioned.
- ▶ The bottom line is that, on a percentage basis, failed or challenged projects greatly exceed successful projects.

Why Many Projects Fail: Project Failure can be grouped into four categories –

- ▶ People – The stakeholders of a project with varied roles and interests in the project's success or failure.
- ▶ Processes – This includes having a set of project management and product management processes.
- ▶ Technology – Only three percent of IT project failures can be attributed to technical challenges but this percentage can be increased if obsolete, unproven, or incompatible technologies are used.
- ▶ Organization – Organizational issues can lead to project failure. A lack of clear direction, improper strategy, rapidly changing business environment and/or customer needs can create a moving target for the product's product or service.

Why Many Projects Fail: Project Failure can be grouped into four categories – Examples

People	Processes	Technology	Organization
<ul style="list-style-type: none">• Lack of Top Management Support• Ineffective User Involvement• Lack of Skills• Lack of Experience• Poor Communication• Poorly Defined Roles and Responsibilities• Lack of Accountability• Unrealistic Expectations• Conflicting Stakeholder Goals• Poor Decisions	<ul style="list-style-type: none">• Poorly Defined Goals & Objectives• Poor Planning• Lack of Controls• Poorly Defined Requirements• Changing Requirements• Inadequate Testing• Project Management & Product Development Processes Nonexistent or Not Followed• Poor Execution	<ul style="list-style-type: none">• Obsolete• Unproven• Incompatible	<ul style="list-style-type: none">• Lack of Direction• Changing Priorities• Lack of Funding• Competition for Funding• Organizational Politics• Bureaucracy• Lack of Oversight• Poor Change Management

Improving the likelihood of success

- ▶ **A Value-Driven Approach**
 - ▶ Plain & Simple: IT Projects must provide value to the organization
- ▶ **Socio-technical Approach**
 - ▶ It's not just about the technology or building a better mouse trap
- ▶ **Project Management Approach**
 - ▶ processes and infrastructure (Methodology)
 - ▶ resources
 - ▶ expectations
 - ▶ competition
 - ▶ efficiency and effectiveness
- ▶ **Knowledge Management Approach**
 - ▶ lessons learned, best practices & shared knowledge

Project Methodologies and Processes

Chapter 2

Learning Objectives

- ▶ Define what a methodology is and describe the role it serves in IT projects.
- ▶ Describe the project life cycle (PLC).
- ▶ Describe the Project Management Body of Knowledge (PMBOK®) and be familiar with its knowledge areas and process groups.
- ▶ Describe the Systems Development Life Cycle (SDLC).
- ▶ Describe the Waterfall method for developing the project's product or system.
- ▶ Describe the Agile approach for developing the project's product or system as well as two commonly used approaches called eXtreme Programming (XP) and Scrum..
- ▶ Describe and apply the concept of Learning Cycles and lessons learned.

Introduction

- ▶ **Project Methodology**
 - ▶ A strategic-level plan for managing and controlling the project
 - ▶ Game plan for implementing project and product lifecycles
 - ▶ Recommends phases, processes, tools, and techniques for supporting an IT project
 - ▶ Must be flexible and include “best practices” learned from experiences over time.
- ▶ **Can be**
 - ▶ Traditional (e.g., Waterfall)
 - ▶ Agile (e.g., XPM, SCRUM)

The Project Life Cycle

Collection of logical stages or phases that

- ▶ maps the life of a project
- ▶ from its beginning, through its middle, to its end,
- ▶ to define, build, and deliver the product.

Project Phases

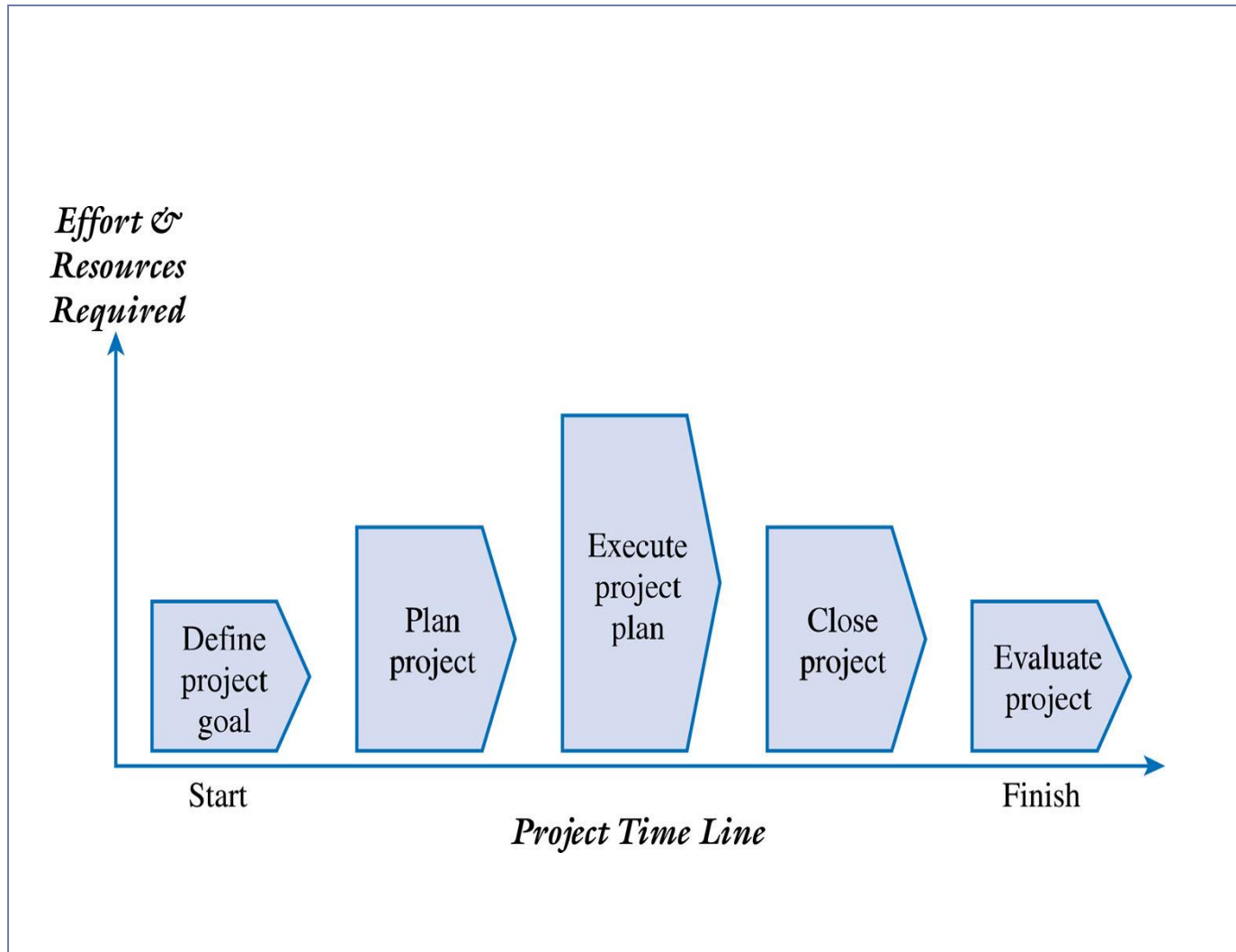
▶ Phase Exits, Stage Gates, Kill Points

- ▶ These are the phase-end review of key deliverables
- ▶ Allows the organization to evaluate project performance and take immediate action to correct errors or problems

▶ Fast Tracking

- ▶ Starting the next phase of a project before approval is obtained for the current phase
- ▶ Can be used to reduce the project schedule
- ▶ Can be risky and should only be done when the risk is acceptable

Figure 2.1 – A Generic Project Life Cycle



Project Life Cycle – Define and Plan

▶ Define Project Goal

- ▶ The project goal should be focused on providing business value to the organization
- ▶ Provides a clear focus and drives the other phases of the project
- ▶ How will we know if this project is successful given the time, money, and resources invested?

▶ Plan Project

- ▶ Project Objectives
- ▶ Resources
- ▶ Controls

Project Life Cycle – Execute, Close, and Evaluate

▶ Execute Project Plan

- ▶ Manage the project scope, schedule, budget, and people to ensure the project achieves its goal
- ▶ Progress must be documented and compared to the baseline plan
- ▶ Project performance must be communicated to all of the stakeholders

▶ Close and Evaluate Project

- ▶ Ensures that all of the work is completed as planned
- ▶ Final project report and presentation to the client
- ▶ Postmortem review
- ▶ Lessons learned and best practices documented and shared

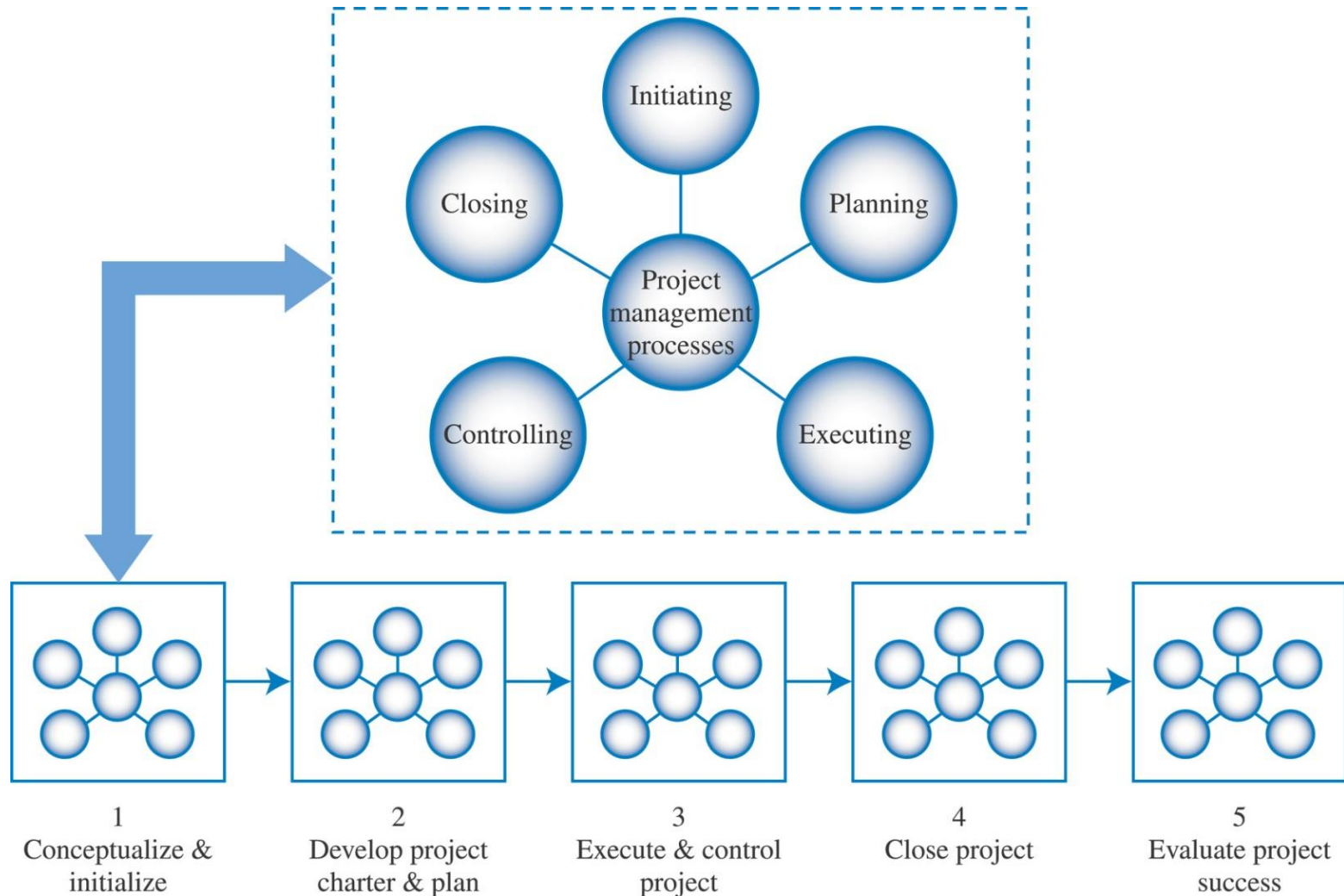
Figure 2.2 – The PMBOK® Guide – The 10 Project Management Knowledge Areas



PMBOK® Guide – The 10 Project Management Knowledge Areas

1. Project integration management
2. Project scope management
3. Project time management
4. Project cost management
5. Project quality management
6. Project human resource management
7. Project communications management
8. Project risk management
9. Project procurement management
10. Project stakeholder management

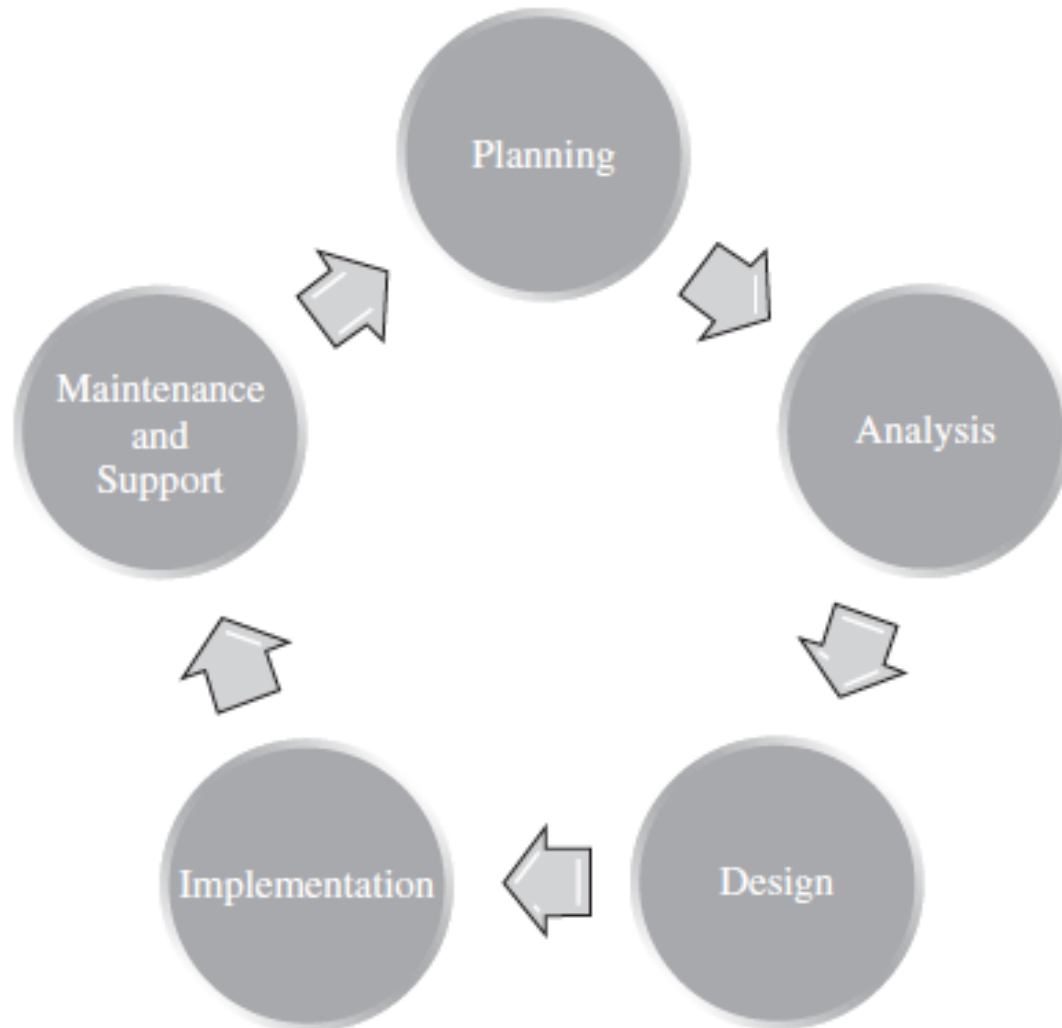
Figure 2.3 – PMBOK® Project Management Process Groups



The Five (5) PMBOK® Project Management Process Groups

1. Initiating
2. Planning
3. Executing
4. Monitoring and Controlling
5. Closing

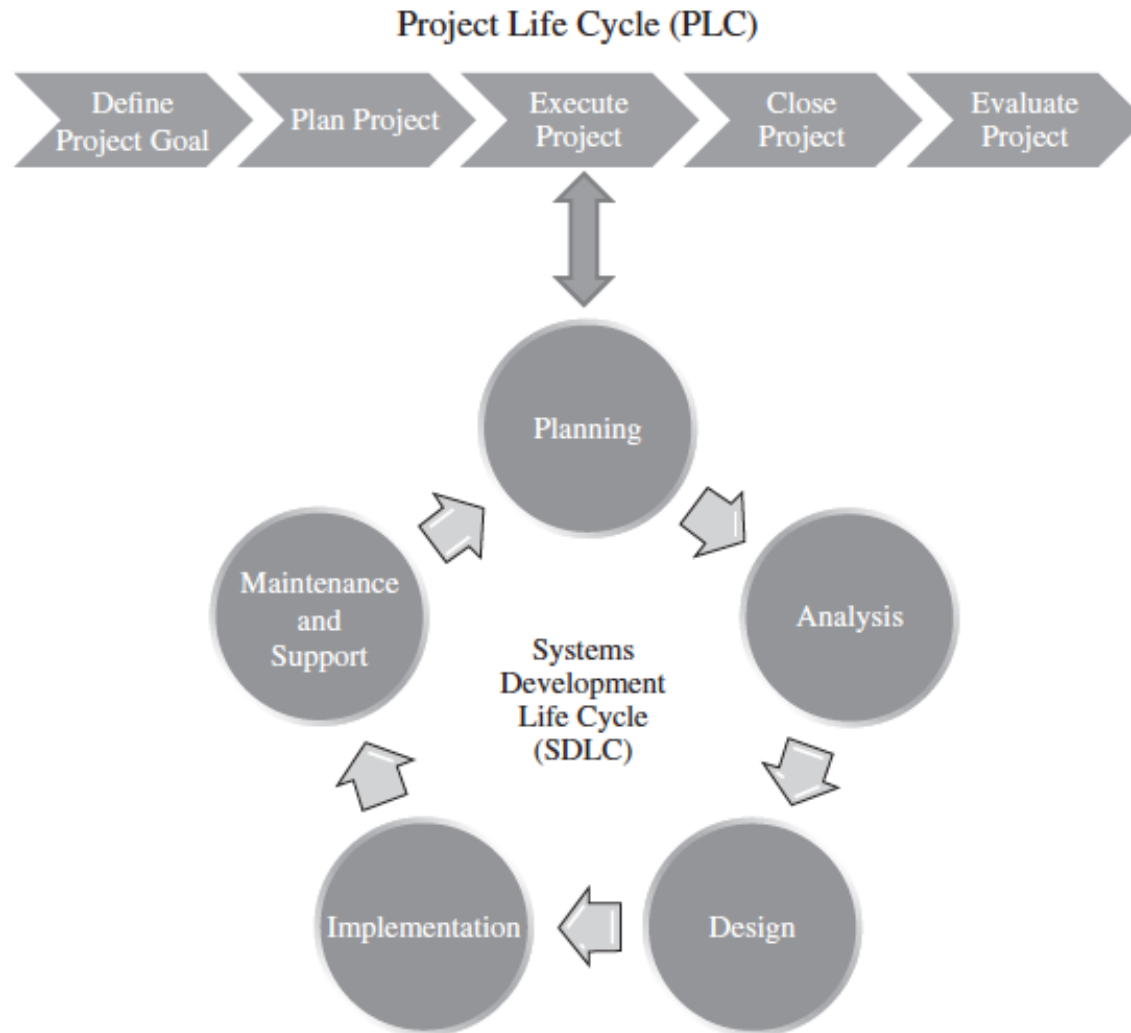
Figure 2.5 The Systems Development Life Cycle



Systems Development Life Cycle (SDLC)

- ▶ Planning
- ▶ Analysis
- ▶ Design
- ▶ Implementation
- ▶ Maintenance and Support

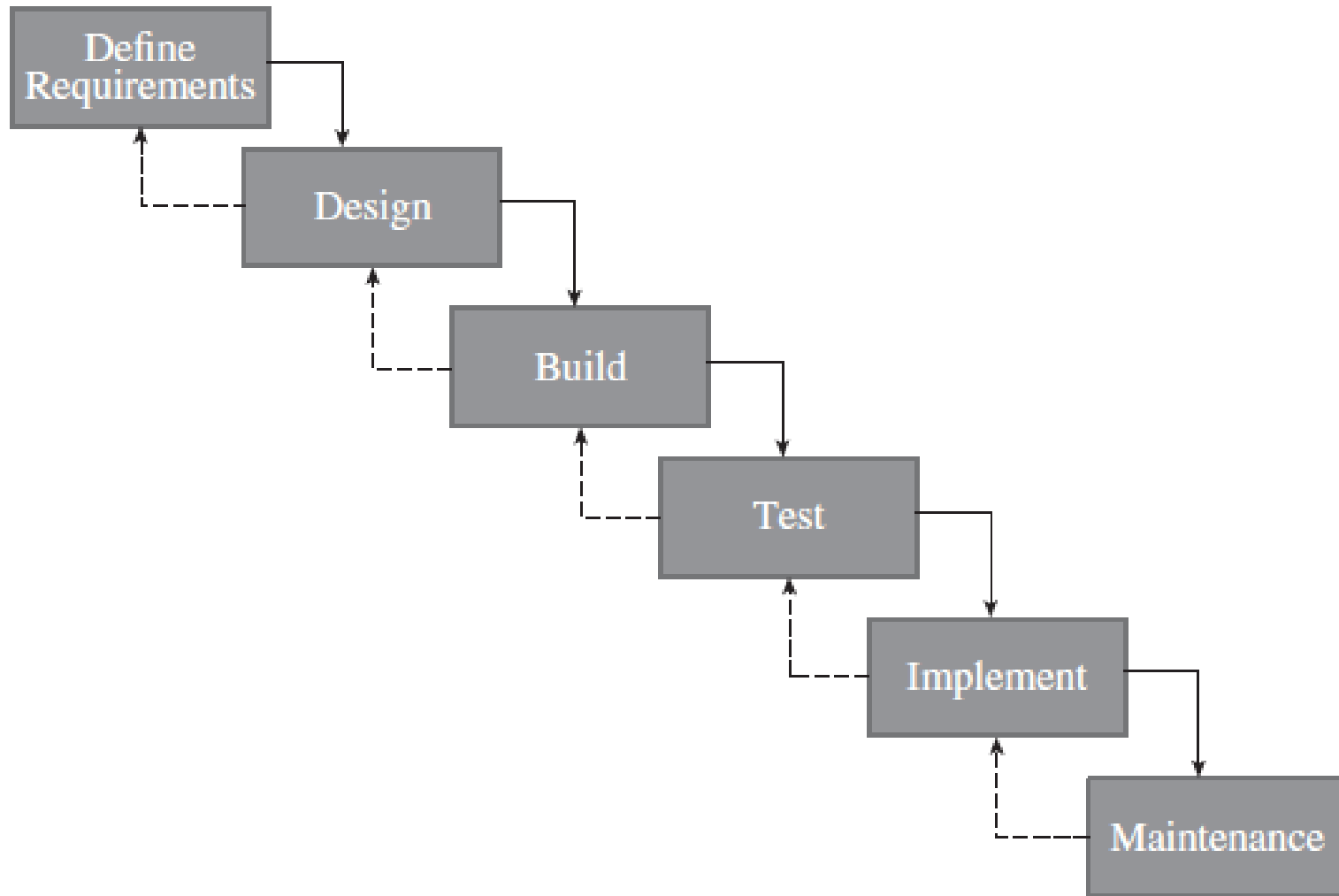
Figure 2.6 – The Project Life Cycle (PLC) and the Systems Development Life Cycle (SDLC)



Implementing the SDLC

- ▶ Defines all of the subphases and deliverables associated with the Execute and Control Project Management Life Cycle phase.
- ▶ Number of Ways to implement the SDLC
 - ▶ Waterfall
 - ▶ Agile

Figure 2.7 – The Waterfall Model



Agile Systems Development – What is Agile?

- ▶ Condenses the SDLC into an iteration or sprint
- ▶ Users and developers work closely together to define and prioritize important (“must have”) features
- ▶ Emphasize working software to measure progress and rely heavily on face-to-face communication
- ▶ Umbrella term that includes a number of approaches or methods

Figure 2.8 – The Agile Manifesto

Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

Kent Beck
Mike Beedle
Arie van Bennekum
Alistair Cockburn
Ward Cunningham
Martin Fowler

James Grenning
Jim Highsmith
Andrew Hunt
Ron Jeffries
Jon Kern
Brian Marick

Robert C. Martin
Steve Mellor
Ken Schwaber
Jeff Sutherland
Dave Thomas

Agile Systems Development – Four (4) Themes or Categories

- ▶ Customer
- ▶ Product
- ▶ Project Team
- ▶ Performance

Agile Methods: Extreme Programming (XP) and Scrum

- ▶ Methods for project management that are becoming increasingly popular
- ▶ Characterize many of today's projects that exemplify speed, uncertainty, changing requirements, and high risks
- ▶ XP
 - ▶ User requirements first documented as user stories
 - ▶ Document user stories in an object oriented model called a class diagram
 - ▶ Transfers the system in a series of versions called releases
- ▶ Scrum
 - ▶ Three important roles:
 - ▶ Scrum master – similar to project manager
 - ▶ Product owner – represents the business side, ensures the most important features are included
 - ▶ Development team – responsible for delivering a quality product or system
 - ▶ Product backlog – team prioritizes features that need to be developed/delivered
 - ▶ Sprint – iterations lasting a few weeks (usually) and delivers a complete product
 - ▶ Daily scrum – short stand-up meeting

Figure 2.10 – A Learning Cycle

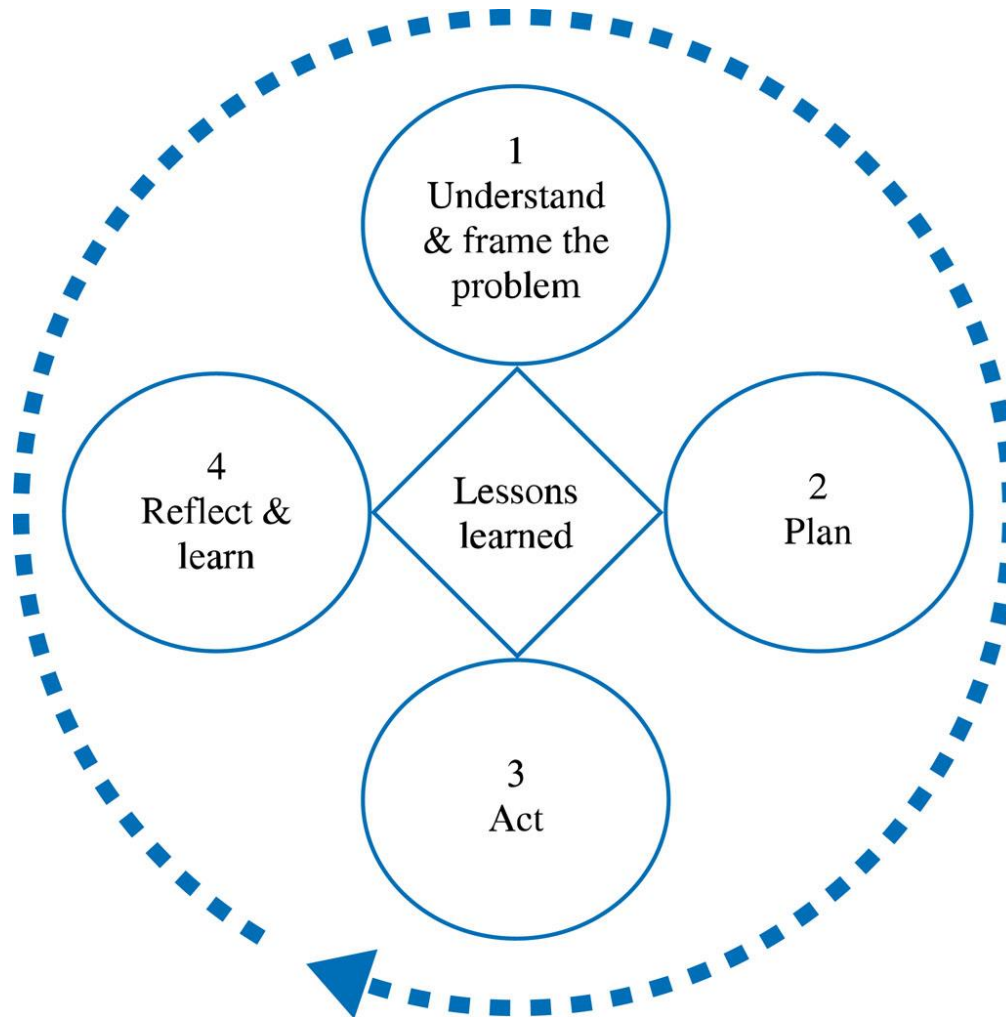
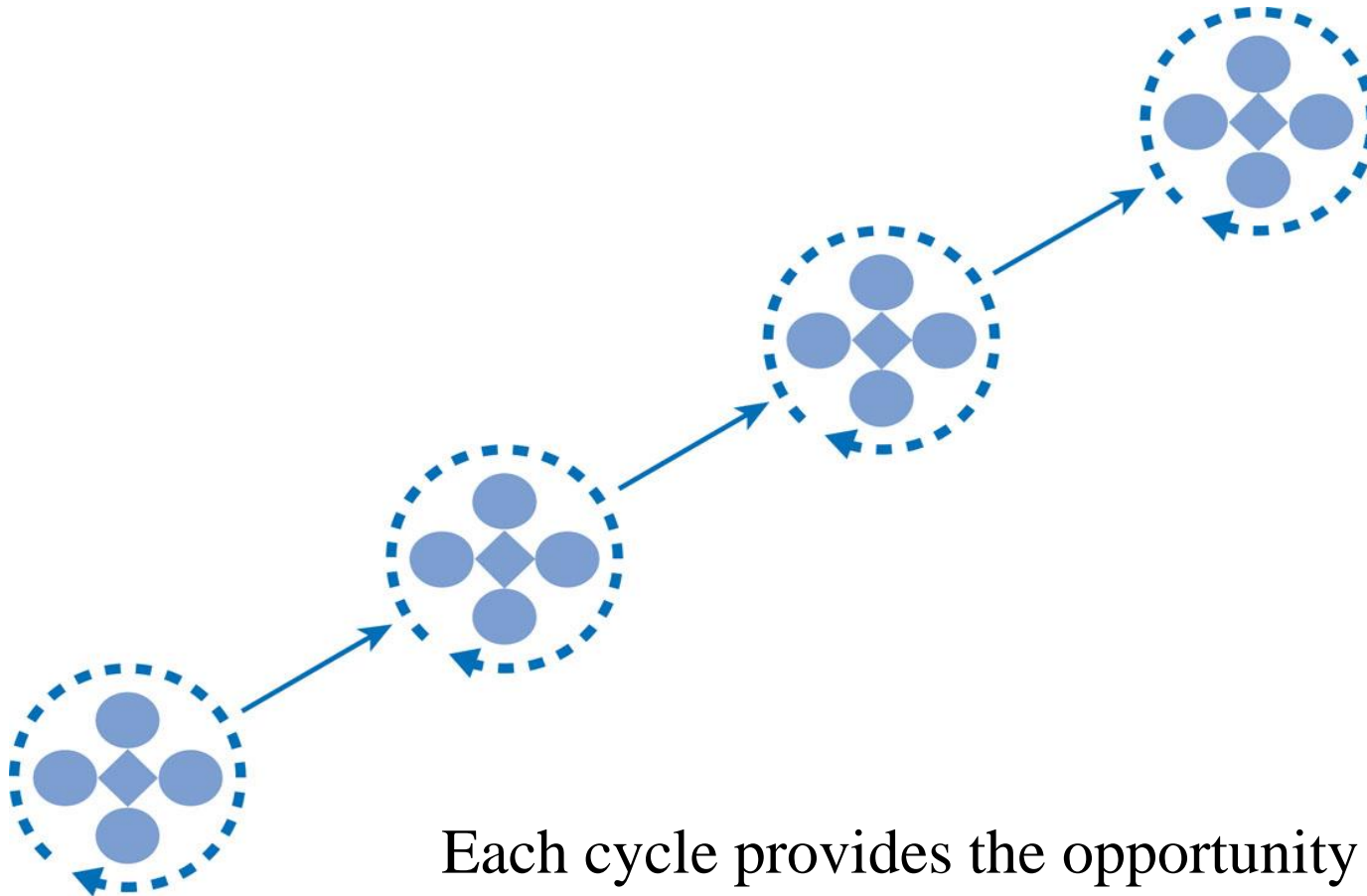


Figure 2.12 – An Example of an Action Plan

Who?	Does What?	By When?
Shedelle and Steve	Interview sales team to understand past, current, and future trends for the company's product.	Tuesday
Myra	Provide a detailed count of the current physical inventory on hand.	Thursday
Corean	Research potential inventory management system commercial packages	Thursday
Steve	Research average inventory levels for the industry	Wednesday

Figure 2.13 – Team Learning Cycles over the Project Life Cycle



Each cycle provides the opportunity to challenge framing assumptions, create new understanding & find radical solutions

Team Learning

