

Introduction to Project Management

**Information Technology
Project Management,**

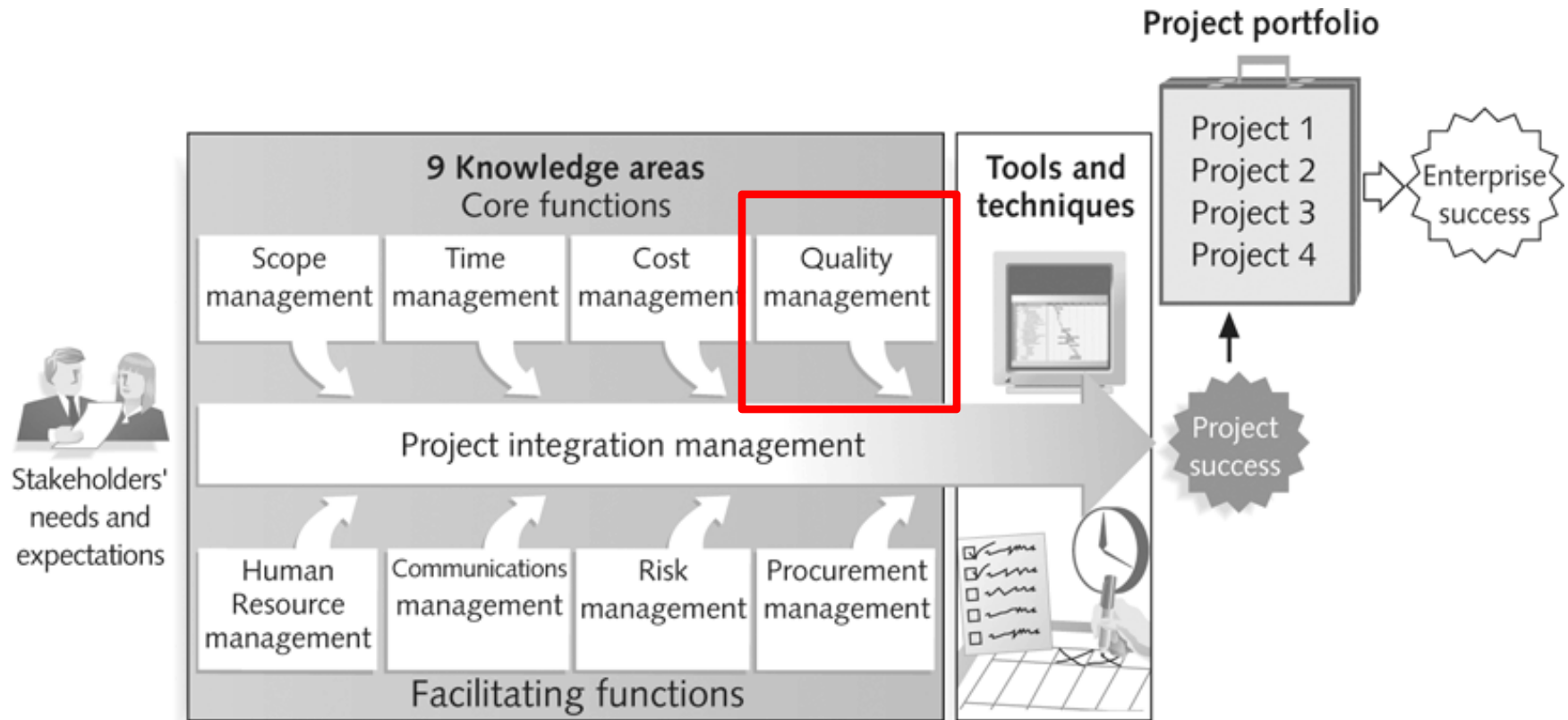
Advantages of Using Formal Project Management

- Better control of financial, physical, and human resources
- Improved customer relations
- Shorter development times
- Lower costs
- Higher quality and increased reliability
- Higher profit margins
- Improved productivity
- Better internal coordination
- Higher worker morale (less stress)

What is Project Management?

- **Project management** is “the application of knowledge, skills, tools and techniques to project activities to meet project requirements” (PMBOK® Guide, Third Edition, 2004, p. 8)
- Project managers strive to meet the **triple constraint** by balancing project scope, time, and cost goals

Figure 1-2: Project Management Framework



Project Stakeholders

- **Stakeholders** are the people involved in or affected by project activities
- Stakeholders include: **Covers PLC and SDLC**
 - The project sponsor
 - The project manager
 - The project team
 - Support staff
 - Customers
 - Users
 - Suppliers
 - Opponents to the project

Nine Project Management Knowledge Areas

- **Knowledge areas** describe the key competencies that project managers must develop
 - Four **core knowledge** areas lead to specific project objectives (scope, time, cost, and **quality**)
 - Four facilitating knowledge areas are the means through which the project objectives are achieved (human resources, communication, risk, and procurement management)
 - One knowledge area (project integration management) affects and is affected by all of the other knowledge areas
 - All knowledge areas are important!

Project Management Tools and Techniques

- **Project management tools and techniques** assist project managers and their teams in various aspects of project management
- Some specific ones include:
 - **Project charter**, **scope statement**, and **WBS** (scope)
 - Gantt charts, network diagrams, critical path analysis, and critical chain scheduling (time)
 - Cost estimates and earned value management (cost)
 - See Table 1-1 for many more

Super Tools

- “Super tools” are those tools that have high use and high potential for improving project success, such as:
 - Software for task scheduling (such as project management software)
 - Scope statements
 - Requirements analyses
 - Lessons-learned reports
- Tools already extensively used that have been found to improve project importance include:
 - Progress reports
 - Kick-off meetings
 - Gantt charts
 - Change requests

Project Success

- There are several ways to define project success
 - The project met scope, time, and cost goals (SPM)
 - The project satisfied the customer/sponsor (SPM & SQA)
 - The results of the project met its main objective, such as making or saving a certain amount of money, providing a good return on investment, or simply making the sponsors happy (SPM & SQA)

Table 1-2: What Helps Projects Succeed?*

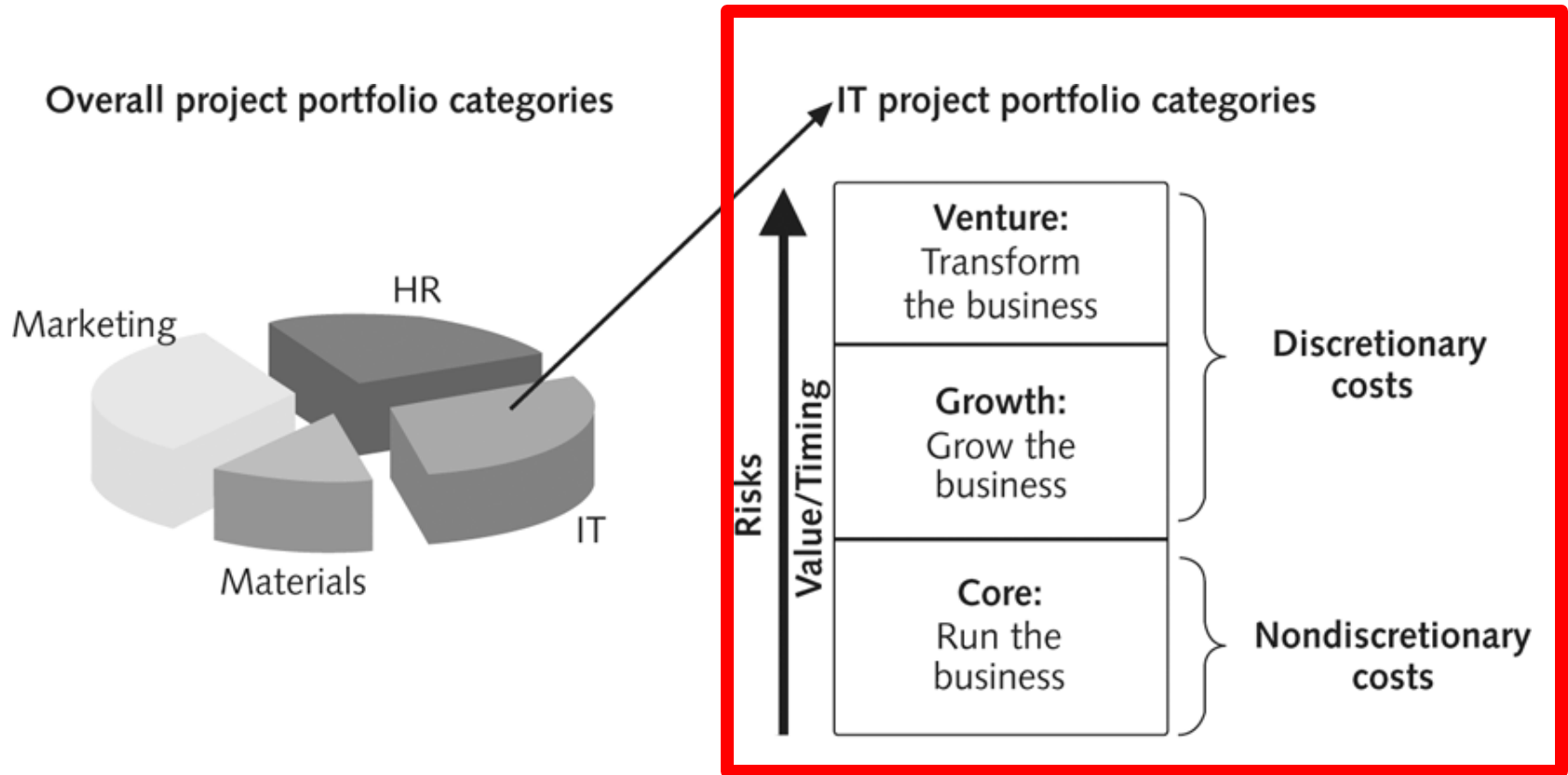
1. Executive support
2. User involvement
3. Experienced project manager
4. Clear business objectives
5. Minimized scope
6. Standard software infrastructure
7. Firm basic requirements
8. **Formal methodology**
9. Reliable estimates
10. Other criteria, such as small milestones, proper planning, competent staff, and ownership

*The Standish Group, “Extreme CHAOS,” (2001).

What the Winners Do

- Recent research findings show that companies that excel in project delivery capability:
 - Use an integrated project management toolbox (use standard/advanced PM tools and lots of templates)
 - Grow project leaders, emphasizing business and soft skills
 - Develop a streamlined project delivery process (SQA)
 - Measure project health using metrics, like customer satisfaction or return on investment (SQA)
 - A **best practice** is “an optimal way recognized by industry to achieve a stated goal or objective”*

Figure 1-4: Sample Project Portfolio Approach



Need for Organizational Standards

- Standards and guidelines help project managers be more effective
- Senior management can encourage:
 - The use of standard forms and software for project management
 - The development and use of guidelines for writing project plans or providing status information
 - The creation of a project management office or center of excellence

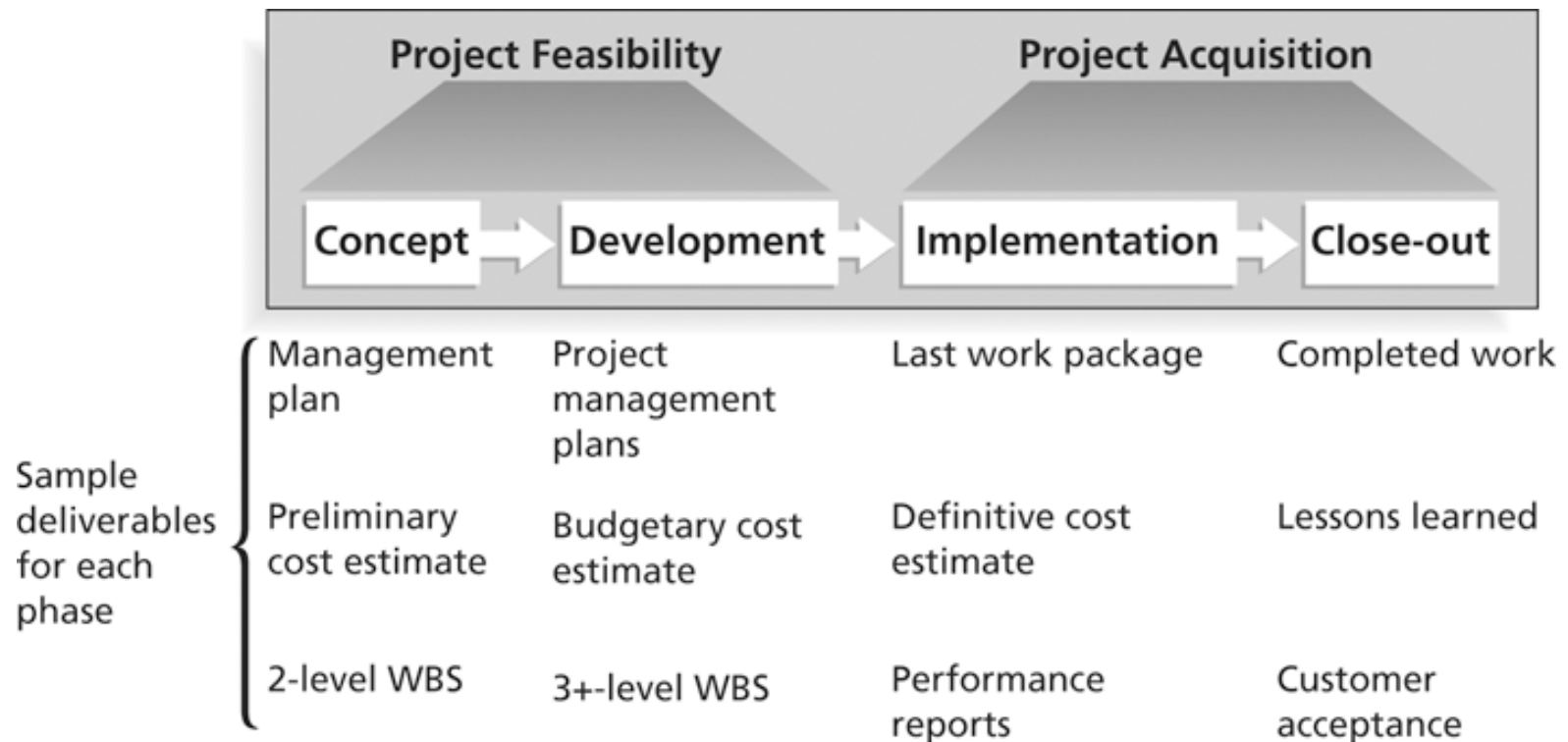
Project Phases and the Project Life Cycle

- A **project life cycle** is a collection of project phases that defines:
 - What **work** will be performed in each phase
 - What **deliverables** will be produced and when
 - **Who** is involved in each phase
 - How management will **control and approve work produced in each phase**
- A **deliverable** is a product or service produced or provided as part of a project

More on Project Phases

- In early phases of a project life cycle:
 - Resource needs are usually lowest
 - The level of uncertainty (risk) is highest
 - Project stakeholders have the greatest opportunity to influence the project
- In middle phases of a project life cycle:
 - The certainty of completing a project improves
 - More resources are needed
- The final phase of a project life cycle focuses on:
 - Ensuring that project requirements were met
 - The sponsor approves completion of the project

Figure 2-3: Phases of the Traditional Project Life Cycle

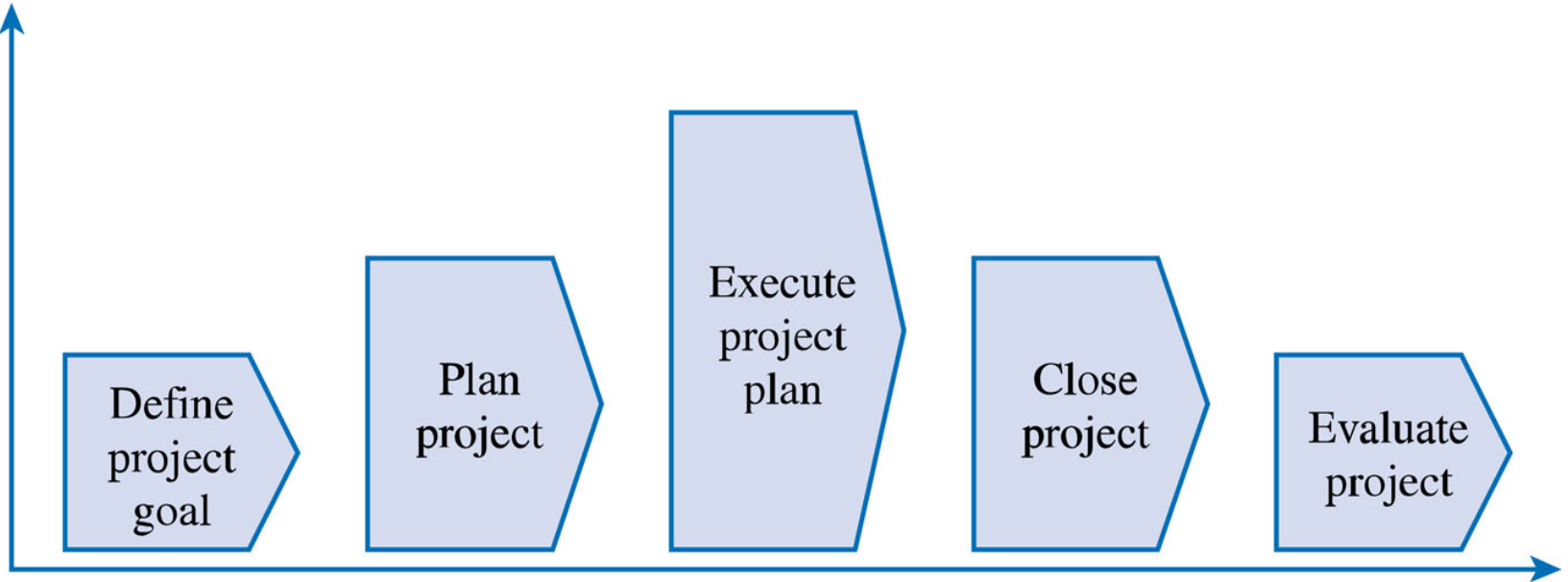


The Project Life Cycle and IT Development

By Jack T. Marchewka

Generic Project Life Cycle

*Effort &
Resources
Required*



Start

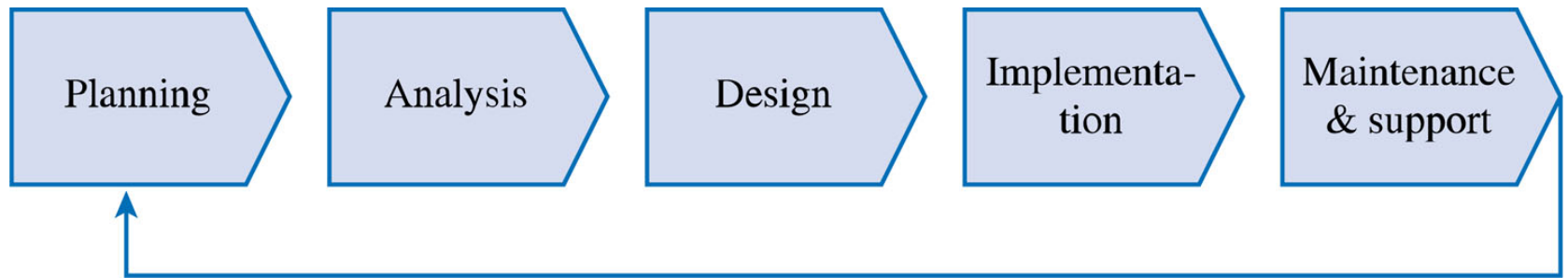
Project Time Line

Finish

Phases/Stages of PLC

- Define project goal
- Plan project
 - Answer questions (What, why, how, who, et al)
 - Baseline plan
- Baseline plan
- Close project
- Evaluate project

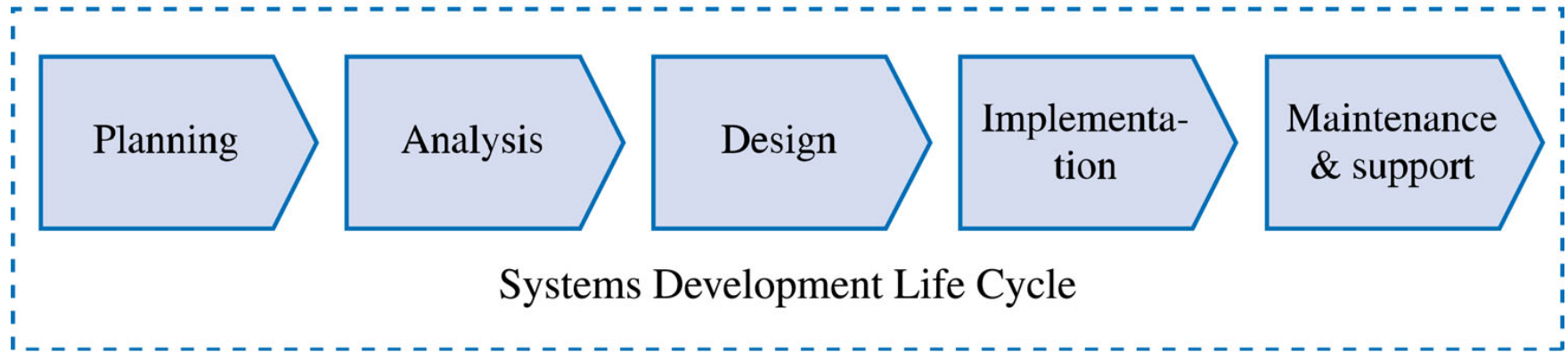
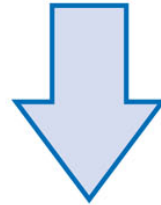
Systems Development Life Cycle



- SDLC: sequential phases or stages an information system follows throughout its useful life.
- Phases/Stages
 - Planning
 - Analysis
 - Design
 - Implementation
 - Maintenance and Support

The PLC vs the SDLC

Project Life Cycle



Product Life Cycles

- Products also have life cycles
- The **Systems Development Life Cycle (SDLC)** is a framework for describing the phases involved in developing and maintaining information systems
- Systems development projects can follow:
 - **Predictive life cycle:** the scope of the project can be clearly articulated and the schedule and cost can be predicted
 - **Adaptive Software Development (ASD) life cycle:** requirements cannot be clearly expressed, projects are mission driven and component based, using time-based cycles to meet target dates

The Importance of Project Phases and Management Reviews

- A project should successfully pass through each of the project phases in order to continue on to the next
- **Management reviews**, also called **phase exits** or **kill points**, **should occur after each phase** to evaluate the project's progress, likely success, and continued compatibility with organizational goals

The Context of IT Projects

- IT projects can be very diverse in terms of size, complexity, products produced, application area, and resource requirements
- IT project team members often have diverse backgrounds and skill sets
- IT projects use diverse technologies that change rapidly; even within one technology area, people must be highly specialized

The Key to Overall Project Success: Good Project Integration Management

- Project managers must coordinate all of the other knowledge areas throughout a project's life cycle
- Many new project managers have trouble looking at the “big picture” and want to focus on too many details (See opening case for a real example)
- Project integration management is *not* the same thing as software integration

Project Integration Management Processes

- **Develop the project charter:** working with stakeholders to create the document that formally authorizes a project—the charter
- **Develop the preliminary project scope statement:** working with stakeholders, especially users of the project's products, services, or results, to develop the high-level scope requirements and create a preliminary project scope statement
- **Develop the project management plan:** coordinating all planning efforts to create a consistent, coherent document—the project management plan

Project Integration Management Processes (continued)

- **Direct and manage project execution:** carrying out the project management plan by performing the activities included in it
- **Monitor and control the project work:** overseeing project work to meet the performance objectives of the project
- **Perform integrated change control:** coordinating changes that affect the project's deliverables and organizational process assets (SQA)
- **Close the project:** finalizing all project activities to formally close the project

Project Execution

- Project execution involves managing and performing the work described in the project management plan
- The majority of time and money is usually spent on execution
- The application area of the project directly affects project execution because the products of the project are produced during execution

Coordinating Planning and Execution

- Project planning and execution are intertwined and inseparable activities
- Those who will do the work should help to plan the work
- Project managers must solicit input from the team to develop realistic plans

Providing Leadership and a Supportive Culture

- Project managers must lead by example to demonstrate the importance of creating and then following good project plans
- Organizational culture can help project execution by:
 - Providing guidelines and templates
 - Tracking performance based on plans
- Project managers may still need to break the rules to meet project goals, and senior managers must support those actions

Important Skills for Project Execution

- General management skills like leadership, communication, and political skills
- Product, business, and application area skills and knowledge
- Use of specialized tools and techniques

Monitoring and Controlling Project Work

- Changes are inevitable on most projects, so it's important to develop and follow a process to monitor and control changes
- Monitoring project work includes collecting, measuring, and disseminating performance information
- Two important outputs of monitoring and controlling project work include recommended corrective and preventive actions

Integrated Change Control

- Three main objectives are:
 - Influencing the factors that create changes to ensure that changes are beneficial
 - Determining that a change has occurred
 - Managing actual changes as they occur
- A **baseline** is the approved project management plan plus approved changes

Change Control System

- A formal, documented process that describes when and how official project documents and work may be changed
- Describes who is authorized to make changes and how to make them

Change Control Board (CCB)

- A formal group of people responsible for approving or rejecting changes on a project
- CCBs provide guidelines for preparing change requests, evaluate change requests, and manage the implementation of approved changes
- Includes stakeholders from the entire organization

Making Timely Changes

- Some CCBs only meet occasionally, so it may take too long for changes to occur
- Some organizations have policies in place for time-sensitive changes
 - “48-hour policy” allows project team members to make decisions, then they have 48 hours to reverse the decision pending senior management approval
 - Delegate changes to the lowest level possible, but keep everyone informed of changes

Configuration Management

- Ensures that the descriptions of the project's products are correct and complete
- Involves identifying and controlling the functional and physical design characteristics of products and their support documentation
- Configuration management specialists identify and document configuration requirements, control changes, record and report changes, and audit the products to verify conformance to requirements
- See www.icmhq.com for more information

Closing Projects

- To close a project, you must finalize all activities and transfer the completed or cancelled work to the appropriate people
- Main outputs include:
 - Administrative closure procedures
 - Contract closure procedures
 - Final products, services, or results
 - Organizational process asset updates

What Is Project Quality?

- The International Organization for Standardization (ISO) defines **quality** as “the degree to which a set of inherent characteristics fulfills requirements” (ISO9000:2000)
- Other experts define quality based on:
 - **Conformance to requirements**: the project's processes and products meet written specifications
 - **Fitness for use**: a product can be used as it was intended

What Is Project Quality Management?

- **Project quality management** ensures that the project will satisfy the needs for which it was undertaken
- Processes include:
 - **Quality planning**: identifying which quality standards are relevant to the project and how to satisfy them
 - **Quality assurance**: periodically evaluating overall project performance to ensure the project will satisfy the relevant quality standards
 - **Quality control**: monitoring specific project results to ensure that they comply with the relevant quality standards

Quality Planning

- Implies the ability to anticipate situations and prepare actions to bring about the desired outcome
- Important to prevent defects by:
 - Selecting proper materials
 - Training and indoctrinating people in quality
 - Planning a process that ensures the appropriate outcome

Design of Experiments

- **Design of experiments** is a quality planning technique that helps identify which variables have the most influence on the overall outcome of a process
- Also applies to project management issues, such as cost and schedule trade-offs
- Involves documenting important factors that directly contribute to meeting customer requirements

Scope Aspects of IT Projects

- **Functionality** is the degree to which a system performs its intended function
- **Features** are the system's special characteristics that appeal to users
- **System outputs** are the screens and reports the system generates
- **Performance** addresses how well a product or service performs the customer's intended use
- **Reliability** is the ability of a product or service to perform as expected under normal conditions
- **Maintainability** addresses the ease of performing maintenance on a product

Quality Assurance

- **Quality assurance** includes all the activities related to satisfying the relevant quality standards for a project
- Another goal of quality assurance is continuous quality improvement
- **Benchmarking** generates ideas for quality improvements by comparing specific project practices or product characteristics to those of other projects or products within or outside the performing organization
- A **quality audit** is a structured review of specific quality management activities that help identify lessons learned that could improve performance on current or future projects

Quality Control

- The main outputs of quality control are:
 - Acceptance decisions
 - Rework
 - Process adjustments
- There are Seven Basic Tools of Quality that help in performing quality control