

Chapter 11

Project Management

Rural Payments Agency Case

- What were the recurring problems with the RPA's Single Payment Scheme project between 2006 and 2014?
- What system was rolled out in 2015 to solve the problems? How did it solve the problems?
- What problems occurred in 2015? What was the solution?
- What were the causes of the problems?



Table 1.3 Summary of Factor Rankings for Challenged and Failed (Impaired) Projects

<i>Rank</i>	<i>Factors for Challenged Projects</i>	<i>Factors for Failed (Impaired) Proj</i>
1	Lack of user input	Incomplete requirements
2	Incomplete requirements	Lack of user involvement
3	Changing requirements and specifications	Lack of resources
4	Lack of executive support	Unrealistic expectations
5	Technology incompetence	Lack of executive support
6	Lack of resources	Changing requirements and specificatic
7	Unrealistic expectations	Lack of planning
8	Unclear objectives	Didn't need it any longer
9	Unrealistic time frames	Lack of IT management
10	New technology	Technology illiteracy

Definition of “Project”

- “[A] project is a temporary endeavor undertaken to create a unique product or service.”
- Temporary—every project has a definite beginning and a definite end.
- Unique—the product or service is different in some distinguishing way from all similar products or services.”
 - -Project Management Institute (1996)

Project vs Operations

Characteristics	Operations	Projects
Purpose	Sustain the firm	Reach a goal
When to change	When operations no longer serve the goals	When a goal is reached
Quality control	Formal	Informal
Tasks	Repetitive	Unique
Duration	Ongoing	Temporary

Project Stakeholders

- Anyone (or any firm)
 - Involved
 - With affected interests
- Obvious players:
 - Project manager, project team
 - Project sponsor (general manager funding it)
 - Customers (huge variety)
 - Employees

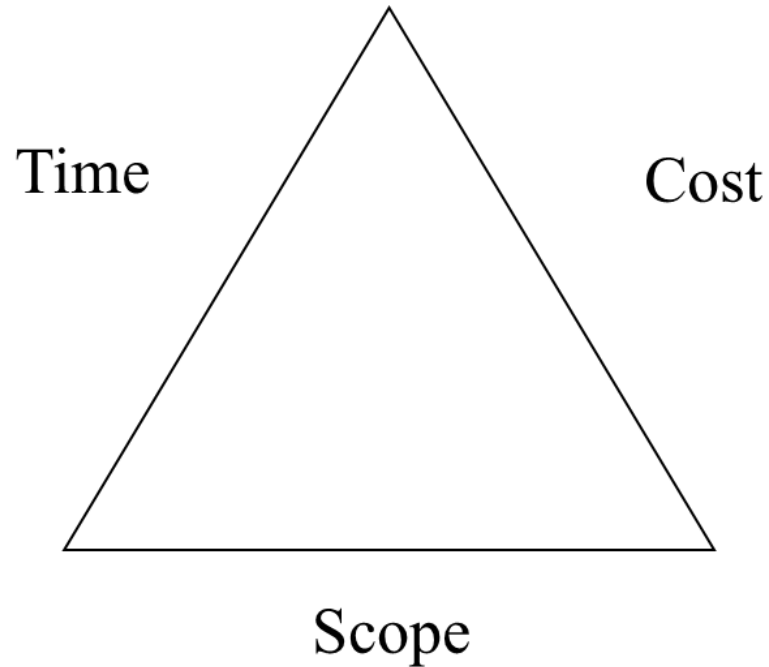
Programs vs Projects

- A *program* is a set of related projects that accomplish a strategic objective
- Examples: TQM; workplace safety

Project Management

- “Application of knowledge, skills, tools, and techniques to project activities in order to meet project requirements.”
- Trade-offs must be made

Project Triangle



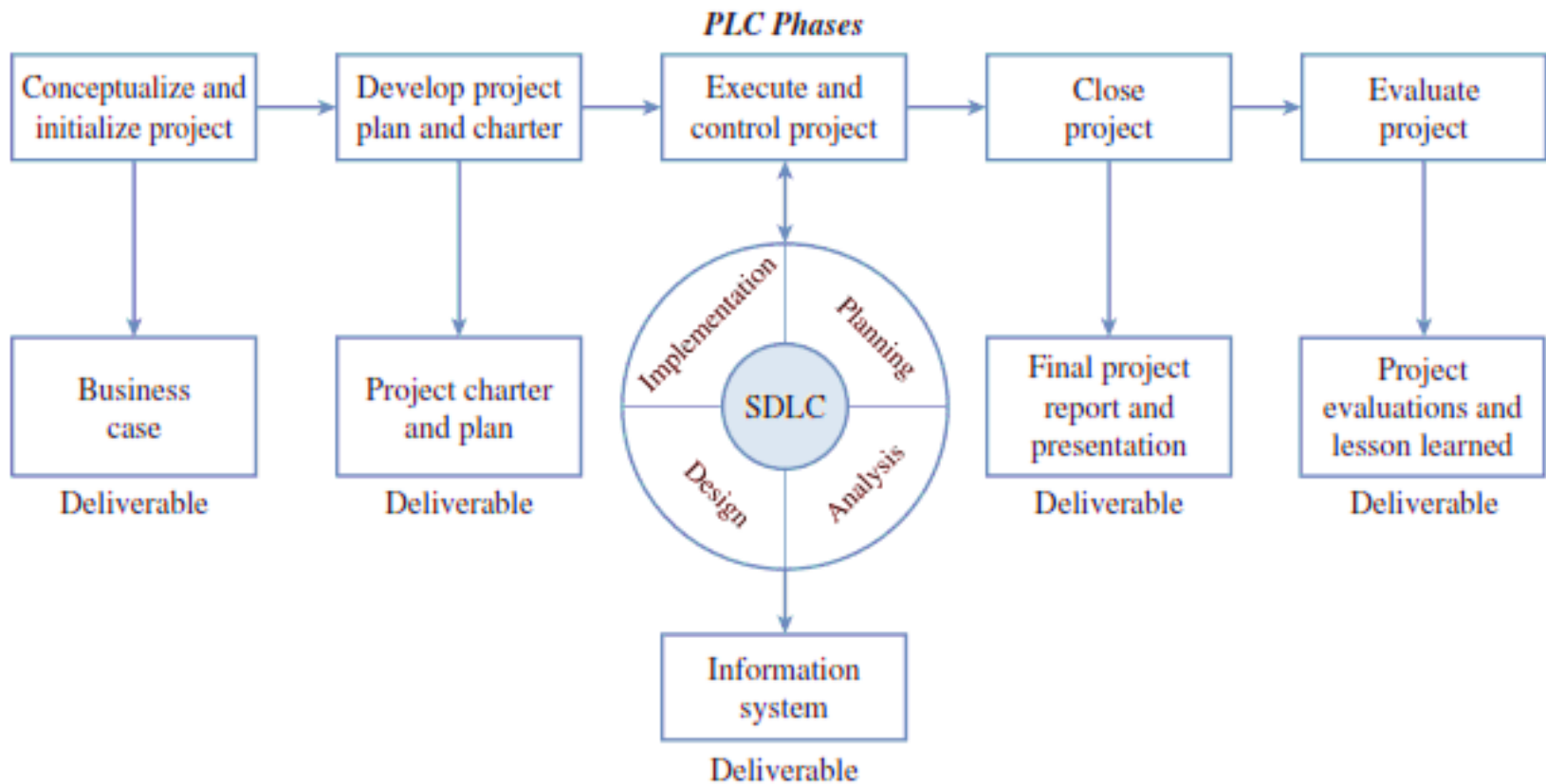
Pick any two!

Picking any two

- Fast and cheap: It won't be good!
 - Slapped together or using interns
- Fast and good: It won't be cheap!
 - Purchase solution/hire “rock star” skilled team
- Cheap and good: It won't be fast!
 - This option is possible if you would wait for open source solution or use

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(مدیریت پروژه فناوری اطلاعات)



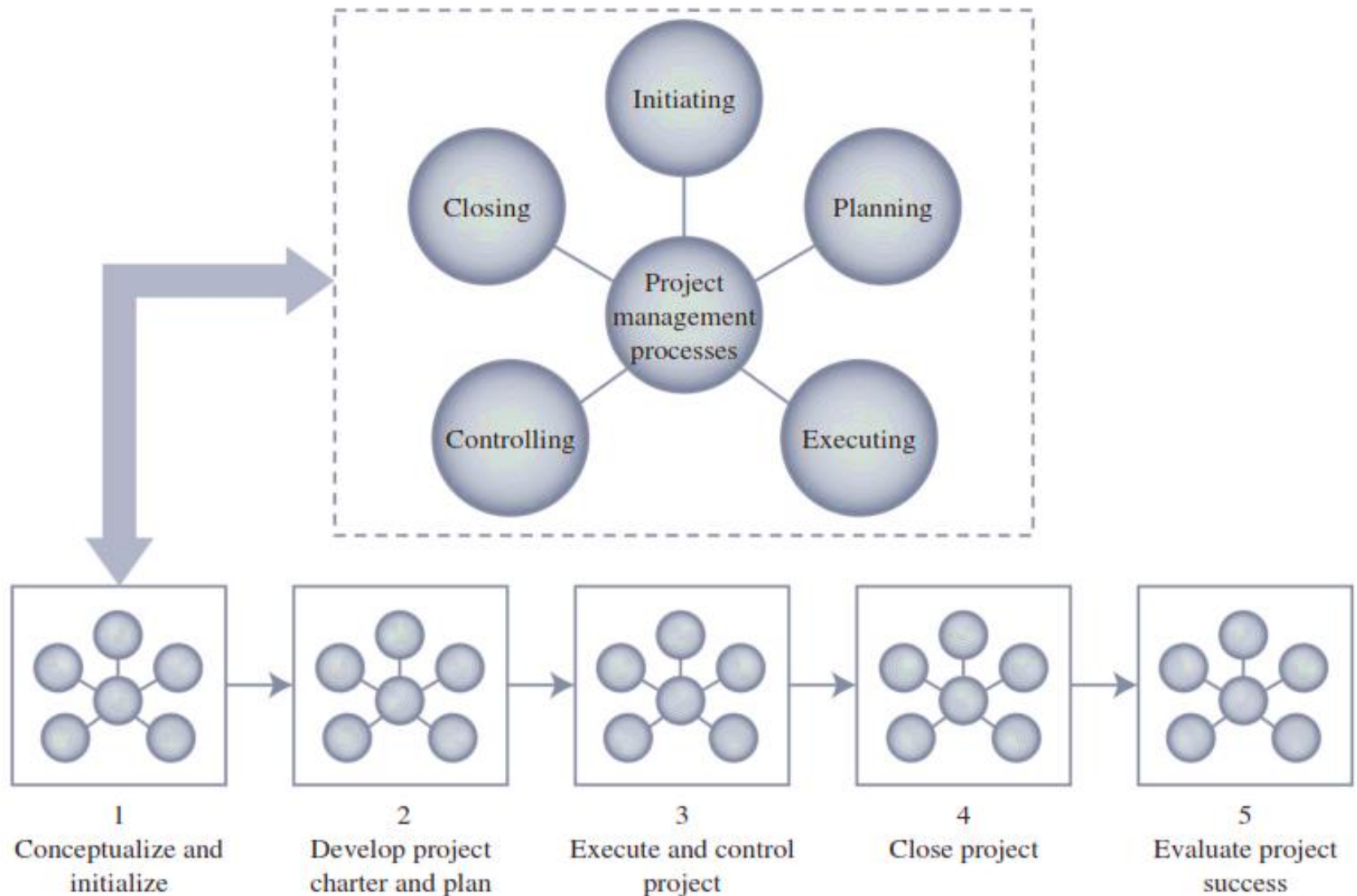


Figure 3.2 Project Management Processes and ITPM Phases

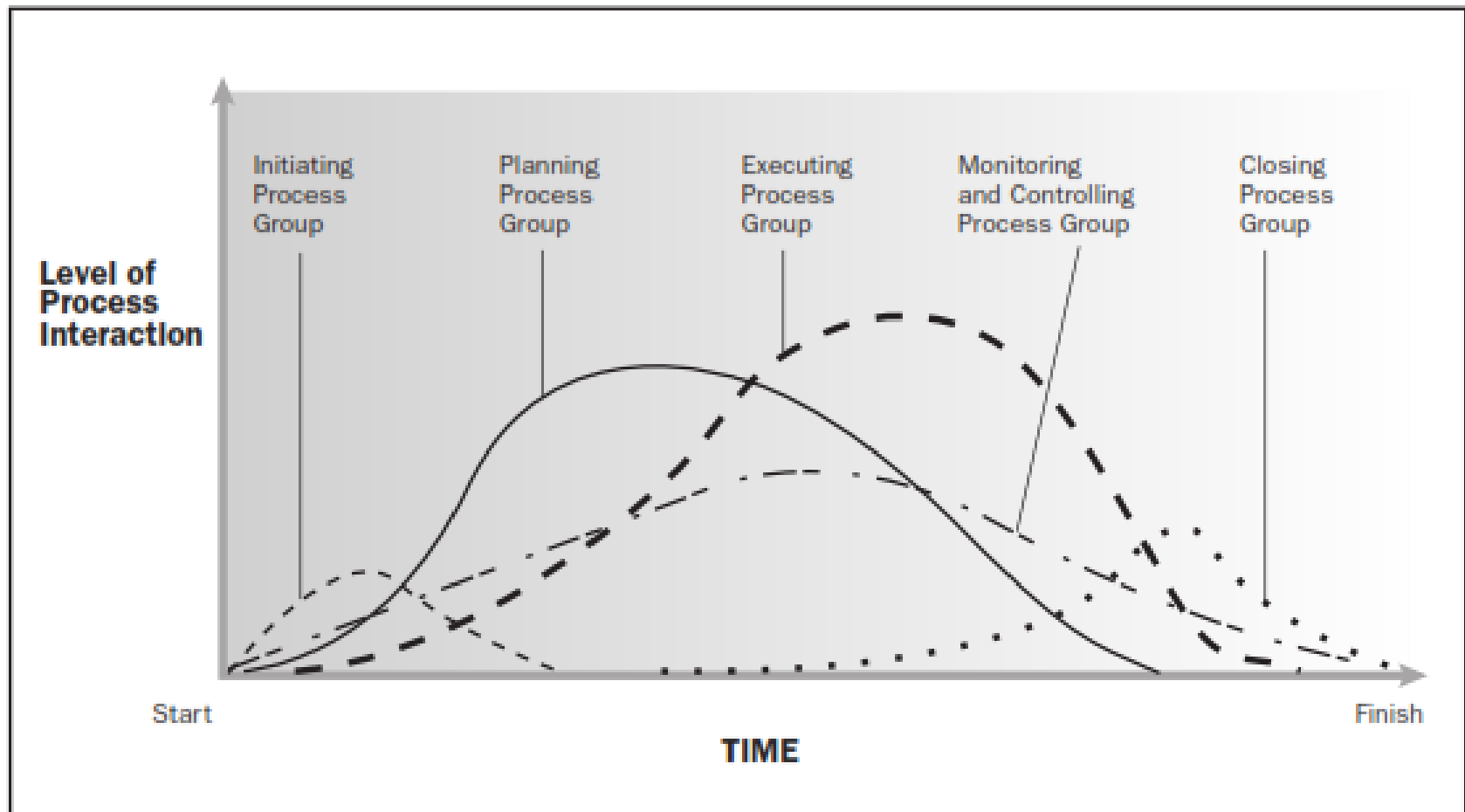
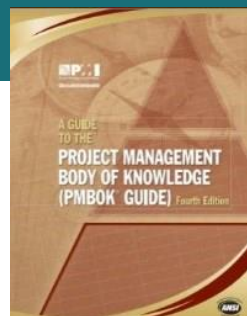
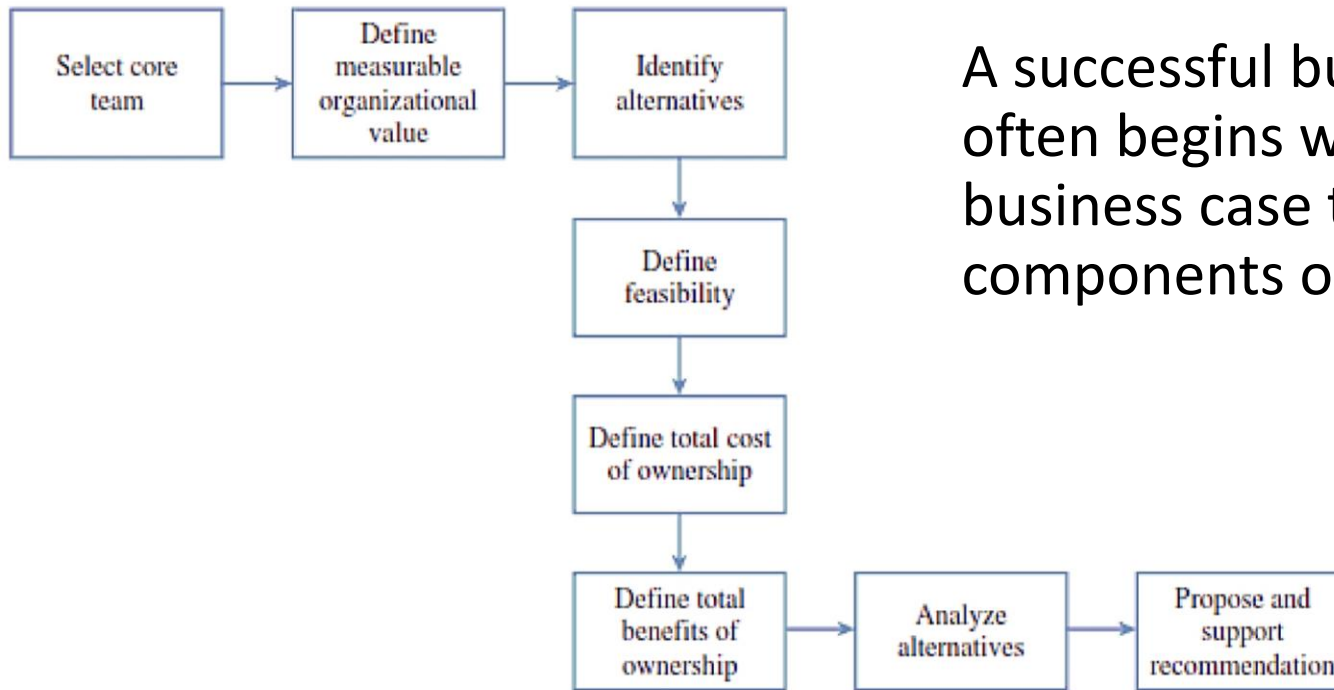


Figure 3-2. Process Groups Interact in a Phase or Project

فرآیند توسعه مدل تجاری



A successful business project often begins with a well-written business case that spells out the components of the project

Figure 2.6 The Process for Developing a Business Case

Project Management Software

- Top five PM systems (according to Captera)
 - Microsoft Project
 - Wrike
 - Atlassian Jira
 - Basecamp
 - Trello

Essential Elements

- Project management
- Project team
- Project plan
- Common project vocabulary

Element 1: Project Management

Require planning

- Identifying requirements
- Defining the team's structure
- Assigning team members

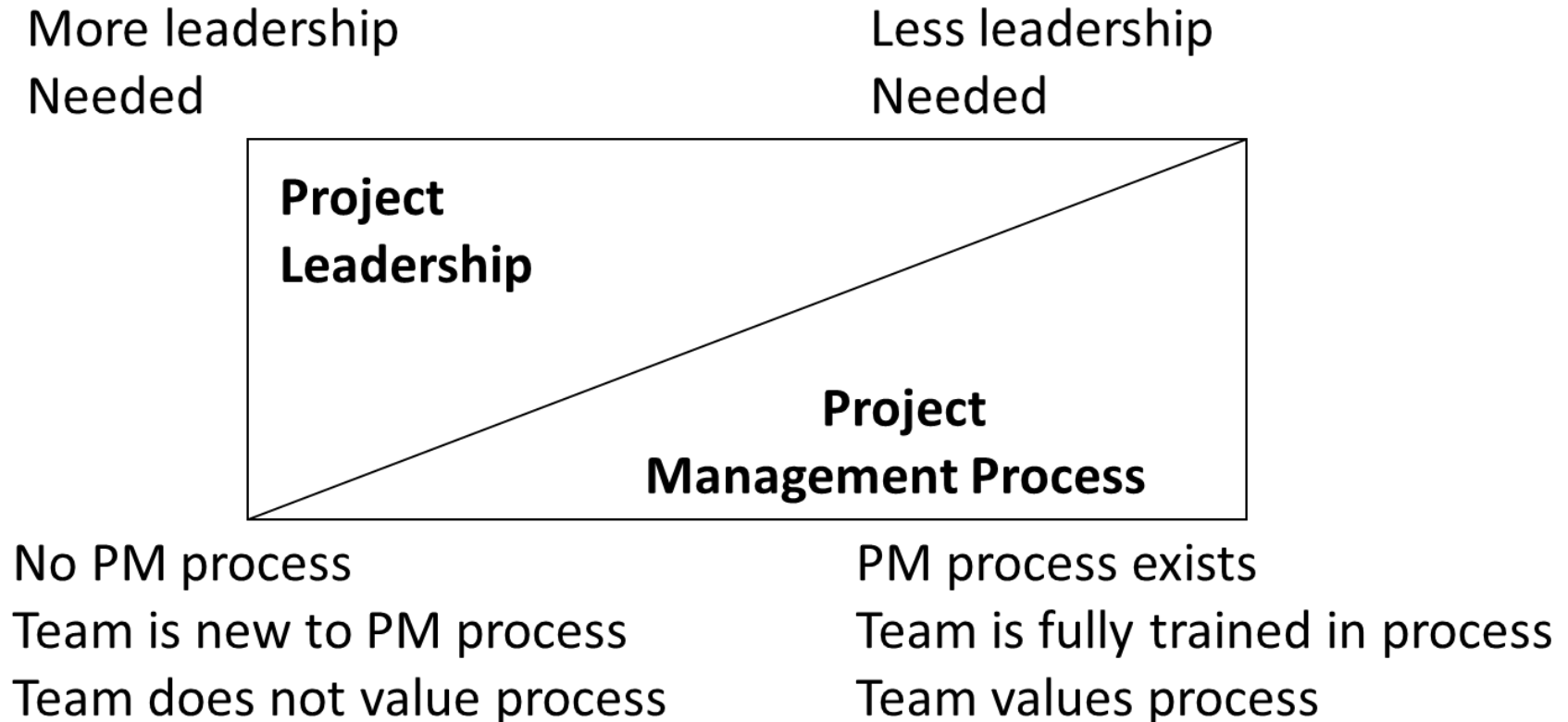
Require taking action

- Managing risks / leveraging opportunities
- Measuring the project's status
- Making the project visible to others
- Comparing project status against plan
- Taking corrective action when necessary
- Providing project leadership

Project Leadership

- Strong project leaders focus, align, and motivate members by managing
 - Team composition
 - Reward systems
- Strong processes trade off against strong leadership (next slide)

Project leadership vs. project management process



Element 2: Project Team

- Helpful: collect a set of people with the needed
 - Skills
 - Knowledge
 - Experiences
 - Capabilities
- They must also represent their departments

Element 3: Project Plan

- Organizes the steps and defines dates
- Breaks work into phases
- End is “go live” date
- “Control gates:” ready to move to next phase?
- Tools include PERT/GANTT

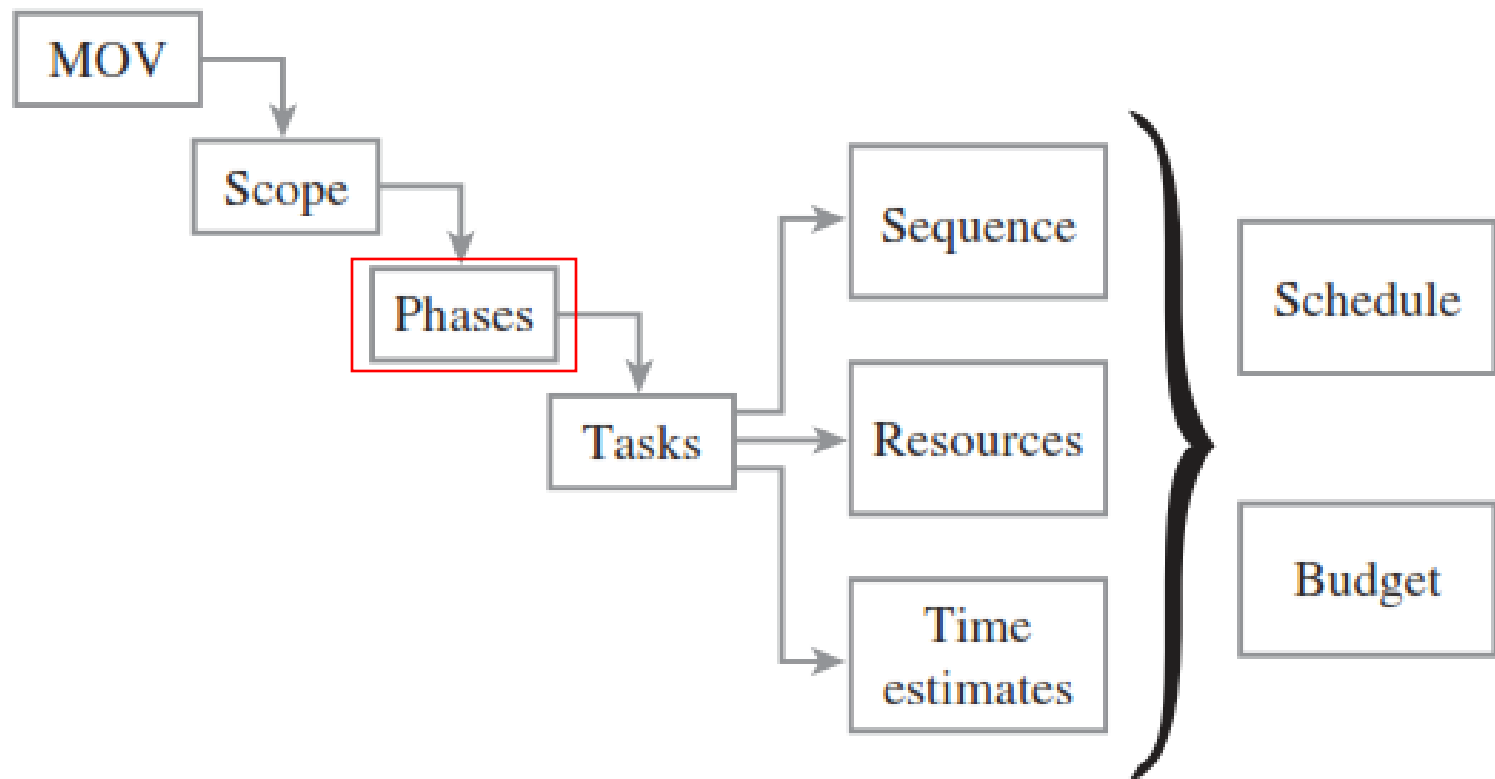


Figure 3.5 The Project Planning Framework—Defining the MOV

PERT

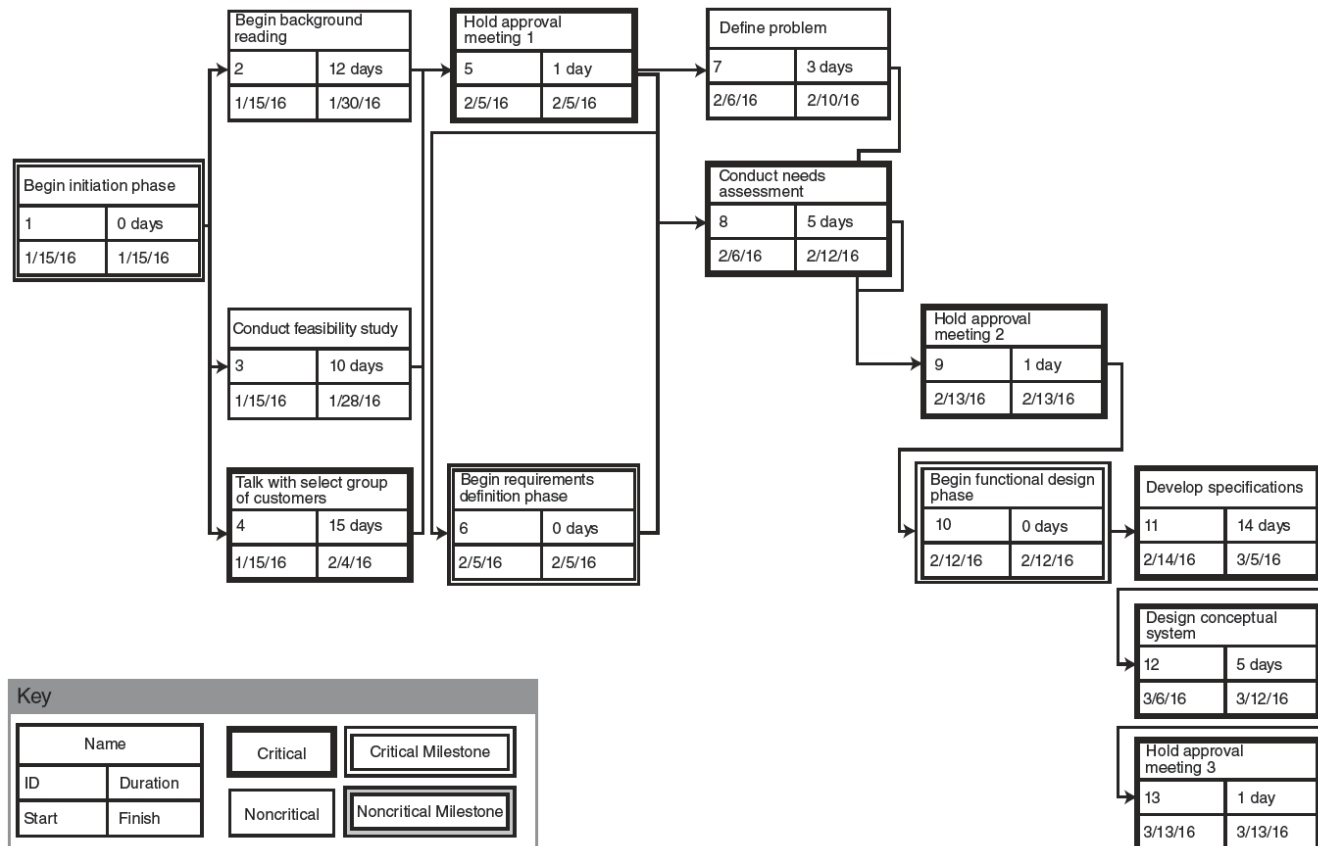


FIGURE 11.5 PERT chart.

Gantt

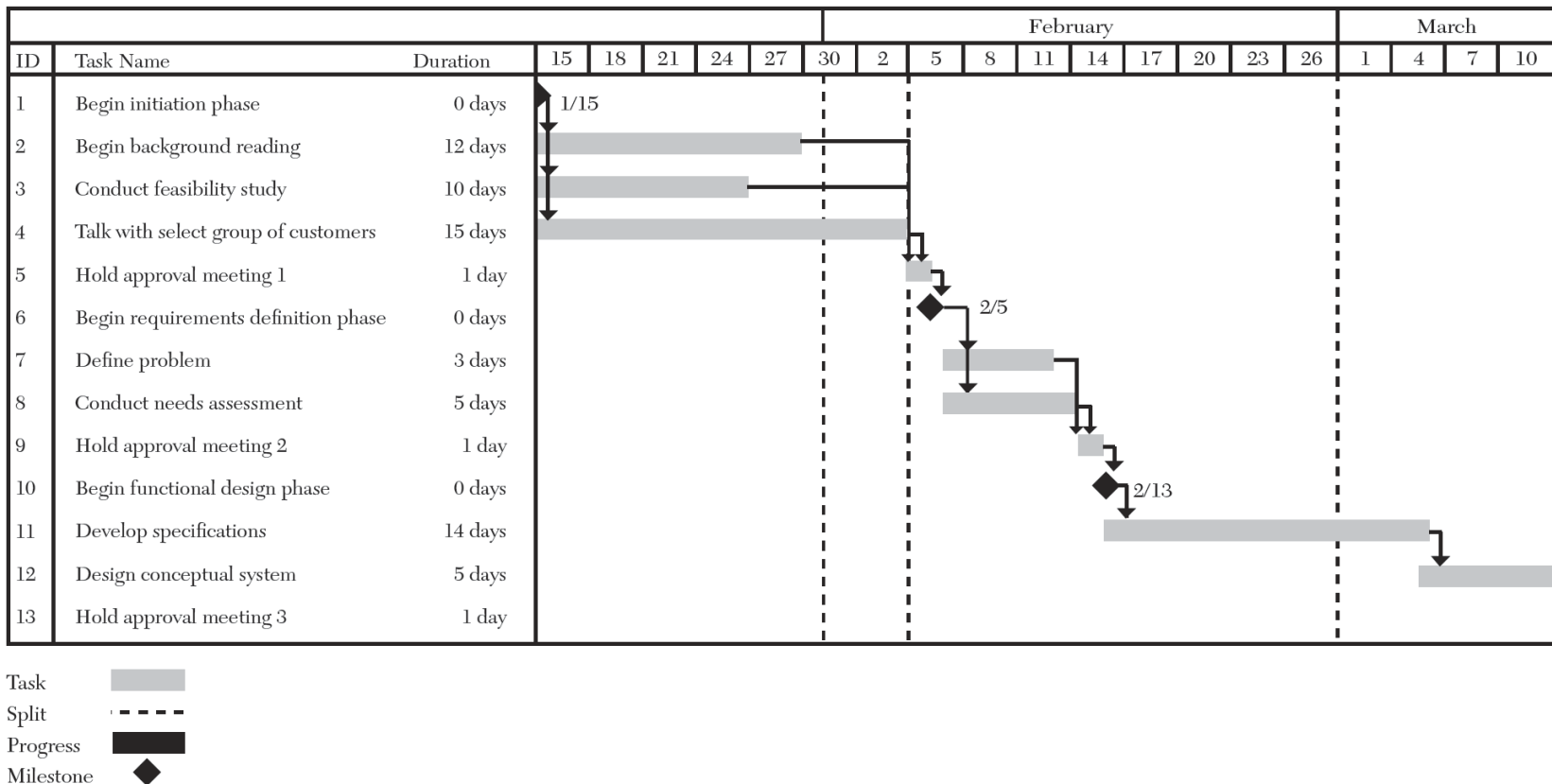


FIGURE 11.5 Gantt chart.

Template – Other Views

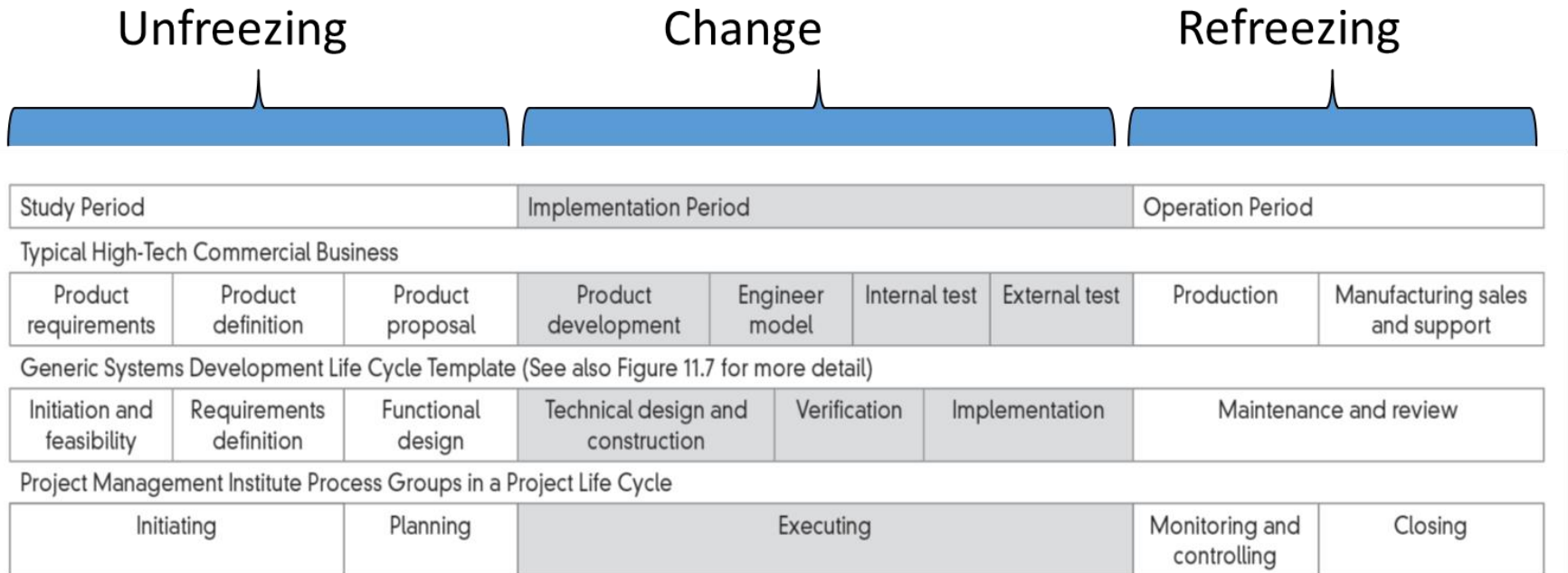


FIGURE 11.6 Project cycle template.

Source: Adapted from K. Forsberg, H. Mooz, and H. Cotterman, *Visualizing Project Management*, 3rd ed. (Hoboken, NJ: John Wiley, 2005). Used with permission.

Difficulties

- IT projects are difficult to estimate and most fail to meet their schedules and budgets
 - Highly interactive, complex sets of tasks
 - Closely interrelated with each other (coupled)
- Most projects cannot be made more efficient simply by adding labor
 - Some are actually slowed down (Brooks' Law)

Systems Development Life Cycle

SDLC typically consists of typical phases such as:

1. Initiation of the project
2. The requirements definition phase
3. The functional design phase
4. The system is actually built
5. Verification phase
6. The “cut over:” The new system is put in operation
7. The maintenance and review phase

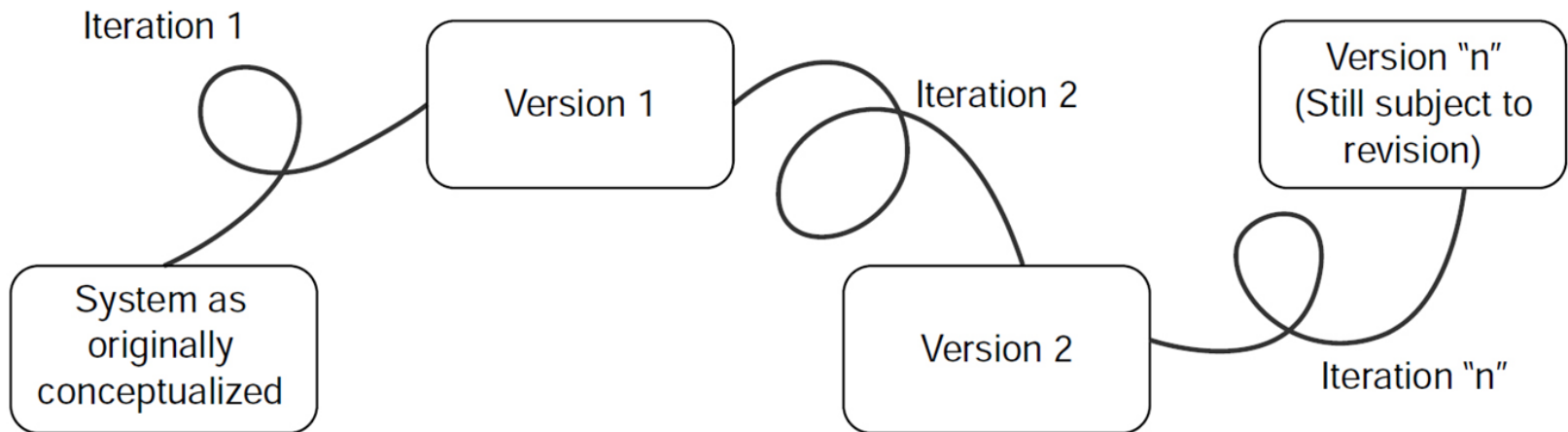
Different models have different numbers of phases

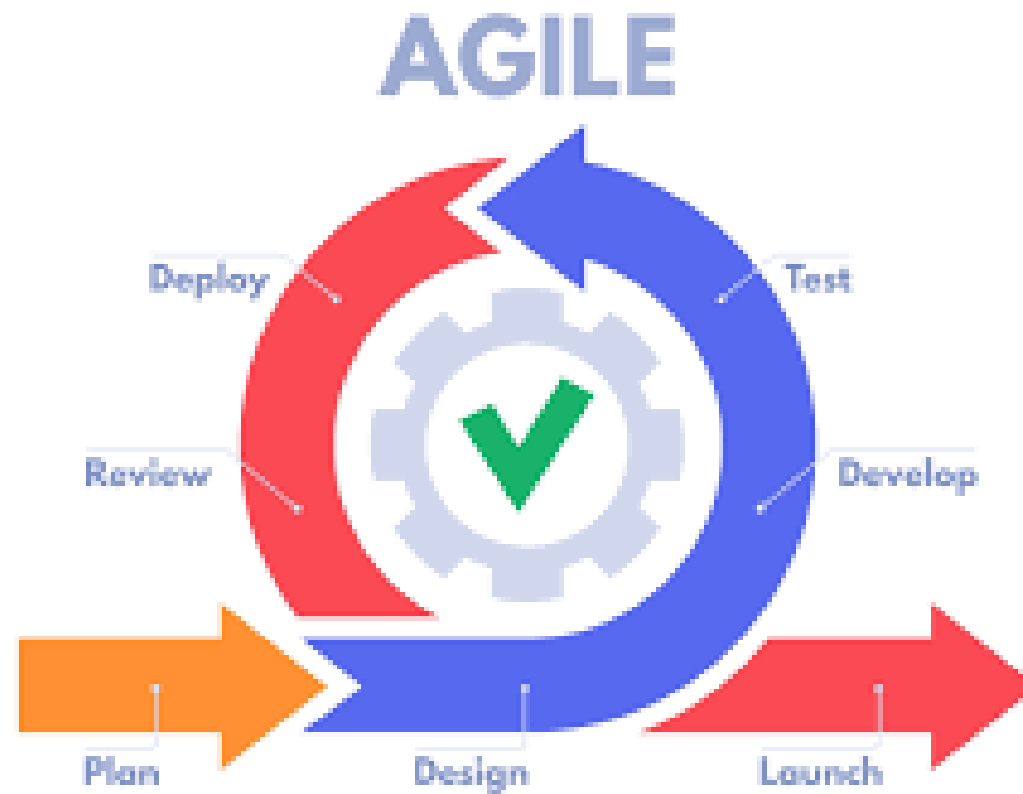
Limitations of SDLC

- Traditional SDLC methodology for current IT projects are not always appropriate:
 - Sometimes **costs** are difficult to estimate
 - Sometimes **uniqueness** makes previous experience hard or impossible to find
 - Objectives may reflect a scope that is
 - Too broad (can't solve it), or
 - Too narrow (not ambitious enough)
 - Might take **too long** when the business environment is very **dynamic**

Alternative Approaches – for speed

- Iterative approaches enable **evolutionary** development





Other Approaches ¹

- Prototyping
 - Build a high-level version of the system **very quickly and get feedback**
 - Advantages:
 - User involvement early and throughout the development process
 - Disadvantages:
 - **Documentation** may be difficult to write
 - **Users** may not have a **realistic scope of the system** while making decisions
- RAD (Rapid Application Development) prototyping + 4-step SDLC
 - Like prototyping, RAD uses iterative development tools to speed up development:
 - GUI, reusable code, code generation, databases, testing, debugging
 - Goal is much faster building of the system

Other Approaches ²

- JAD (Joint Application Development) – IBM
 - Users are involved throughout the process
- “Agile” approaches speed things up
 - XP (Extreme Programming), Scrum, etc.



Other Approaches ³

User-centered design

- Focuses on usability but uses many of the tools of RAD, JAD, Agile, prototyping
- Users participate and continuously evaluate usability
- Usability.gov provides 209 guidelines
- Requires multidisciplinary approach: psychology, graphic art, Internet technologies, business needs, etc.

Other Approaches ⁴

Open source approach

- Uses crowdsourcing
- Code is available for all to see and improve
- Linux: the basis for
 - Android
 - FireFox
 - Some Garmin GPS
 - Some Sony TVs
- BSD and Linux come from Unix



RAD	Agile
Focused on building a working model of an app in the shortest time possible.	Focused on breaking down the development cycle into smaller 'sprints'.
May demonstrate a working model to clients in the middle of development.	Waits till the product or feature is completely built before showcasing it to the client.
Build the easiest parts of the product first so as to showcase the working model as soon as possible.	Addresses the most difficult feature/part of the product first.
Prioritizes functionality over UI/UX.	Considers UI/UX while the product is being built.

Comparison of approaches

Methodology	Advantages	Disadvantages
SDLC	<ul style="list-style-type: none"> • Structured approach • Phase milestones and approvals • Uses system approach • Focuses on goals and trade-offs • Emphasizes documentation • Requires user sign-offs 	<ul style="list-style-type: none"> • Systems often fail to meet objectives • Needed skills are often difficult to obtain • Scope may be defined too broadly or too narrowly • Very time consuming
Agile Development	<ul style="list-style-type: none"> • Good for adapting to changing requirements • Works well when user requirements change continuously • Allows face-to-face communication and continuous inputs from users • Speeds up development process • Users like it 	<ul style="list-style-type: none"> • Hard to estimate system deliverables at start of project • Under-emphasizes designing and documentation • Easy to get project off-track if user goals are unclear
Prototyping	<ul style="list-style-type: none"> • Improved user communications • Users like it • Speeds up development process • Good for eliciting system requirements • Provides a tangible model to serve as basis for production version 	<ul style="list-style-type: none"> • Often under-documented • Not designed to be an operational version • Often creates unrealistic expectations • Difficult-to-manage development process • Integration often difficult • Design flaws more prevalent than in SDLC • Often hard to maintain

What Makes a Project Risky?

- Risk Framework
 - Complexity
 - Many parts? Impacts on rest of system? Global? Unfamiliar hardware/software/databases? Changing requirements?
 - Clarity
 - Hard to define the purpose, input, and output? (Ex:Payment, monitor competitor advertising)
 - Size
 - Cost, staff, duration, team, departments affected, lines of code
- They are geometric, not linear (additive):
 - Having all three of these would be much more than three times as bad as one of these.

Managing Risk from Complexity

- Strategies to deal with complexity:
 - Leverage the Technical Skills of the Team such as having a leader or team members who have had significant experience
 - Rely on Consultants and Vendors – for additional expertise
 - Integrate Within the Organization such as
 - Having frequent team meetings
 - Extensive documentation
 - Regular technical status reviews

Managing Risk from Clarity

- Strategies to deal with low clarity
 - Rely more heavily upon the users to define system requirements
 - Manage stakeholders by balancing the disparate goals
 - Sustain Project Commitment



Project Commitment – Important for project success

Determinant	Description	Examples	More likely for commitment if:
Project	Objective attributes of the project	Cost, benefits, expected difficulty, and duration	There is a large potential payoff.
Psychological	Factors managers use to convince themselves things are not so bad	Previous experience, personal responsibility for outcome, and biases.	There is a previous history of success.
Social	Elements of the various groups involved in the process	Rivalry, norms for consistency, and need for external validation	External stakeholders have been publicly led to believe the project will be successful.
Organizational	Structural attributes of the organization	Political support, and alignment with values and goals	There is strong political support from executive levels.
Cultural	Cultural attributes	Appreciation for teamwork or a focus on technical issues	There is a culture of teamwork.

Pulling the Plug

- Often projects in trouble persist long after they should have been abandoned—Pull the plug!
 - Many projects are 99% complete for 50% of the project!
- People can go to great lengths to sustain a doomed project when there are
 - Sunk costs
 - High penalties for failure
 - Emotional attachment to the project by powerful individuals
 - 20%

Four dimensions of success

- Shenhar, Dvir and Levy's (1998) four dimensions of success:
 - **Resource constraints:** does the project meet the time and budget criteria?
 - **Impact on customers:** how much benefit does the customer receive from the project?
 - **Business success:** how high and long are the profits produced by the project?
 - **Prepare for the future:** has the project enabled future success? Future impact?

Figure 11.11 Success dimensions for various project types.

Success Dimension	Low Tech	Medium Tech	High Tech
	<i>Existing technologies with new features</i>	<i>Most technologies new but available before the project</i>	<i>New, untested technologies</i>
Resource constraint	Important to meet	Overruns acceptable	Overruns most likely
Impact on customers	Added value	Significantly improved capabilities	Quantum leap in effectiveness
Business success	Profit; return on investment	High profits; market share	High profits and market share but may come much later; market leader
Prepare the future	Gain of additional capabilities	New market; new service	Leadership core and future technologies

FIGURE 11.11 Success dimensions for various project types.

Source: Adapted from Aaron Shenhar, Dov Dvir, and Ofer Levy, and Alan C. Maltz "Project Success: A Multidimensional Strategic Concept," *Long Range Planning* 34, no. 6 (2001), 699-725.

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