Chapter. Introduction to Project Management

Introduction

- Until the 1980s, project management primarily focused on providing ***schedule*** and ***resource data*** to top management.

- Today's project management involves ***much more***, and people in every industry and every country manage projects.

- New technologies have become a significant factor in many businesses. Hardware, software, network, and the use of interdisciplinary and global work teams have radically changed the work environment.

- Using project management provides ***advantage*** such as

1. Better control of financial, physical, and human resources
2. Shorter development time
3. Lower costs and improved productivity
4. High quality and increased readability
5. Better internal coordination

What is a project?

- A project is a ***temporary endeavor*** undertaken to create a unique ***product***, ***service***, or ***result***.

(eg) - A technician replaces ten laptops for a small department.
- A company develops a new system to increase sales force productivity and customer relationship management.
- A large group of volunteers from organizations throughout the world develops standards for environmentally friendly or green IT.

- ***Project attributes***: A project
1. has a unique purpose: a well-defined objective.
2. is temporary: a definite beginning and a definite end.
3. is developed using progress elaboration: often defined broadly when they begin, and as time passes, the specific details become clear.

4. requires resources, often from various areas: people, h/w, s/w, and other assets.
5. should have a primary customer or sponsor: usually provides the direction and funding for the project.
6. involves uncertainly: time, cost, unplanned time off, a supplier going out of business.

- The triple constraint
  : Every project is constrained in different ways by its ***scope***, ***time***, and ***cost*** goals. To create a successful project, a project manager must consider scope, time, and cost and ***balance these three*** often-competing goals.

  1. Instead of discrete target goals, it is often more realistic to set a range of goals (because of uncertainty and limited resources)
  2. Managing the triple constraint involves making trade-offs among them for a project. You must decide which aspect of the triple constraint is most important.
  3. The project manager should be communicating with the sponsor throughout the project to make sure the project meets his or her expectations.

What is project management?

- Project management is the application of knowledge, skills, tools, and techniques to project activities ***to meet project requirement***.

- Key elements of project management framework:

  1. Stakeholders: The people involved in or affected by project activities and include the project sponsor, project team, support staff, customers, users, suppliers, and even opponents of the project.

  2. Project management knowledge areas: ***4 core*** and ***4 facilitating*** areas

     Core knowledge areas

     A. ***Scope*** management- involves defining and managing all the work required to complete the project successfully.

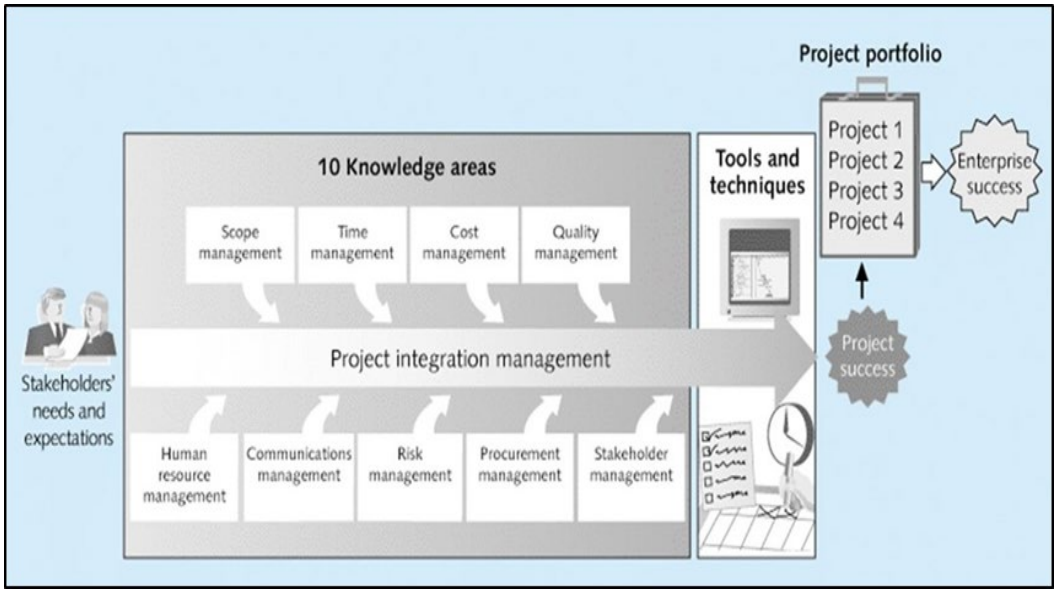


Figure. Project management framework

B. ***Time*** management- includes estimating how long will it take to complete the work, developing an acceptable project schedule, and ensuring timely completion of the project.

C. ***Cost*** management- consists of preparing and managing the budget.

D. ***Quality*** management- ensures that the project will satisfy the stated or implied needs for which it was undertaken.

Facilitating knowledge areas (: processes through which the project objectives are achieved)

E. ***Human resource*** management- is concerned with making effective use of the people involved with the project.

F. ***Communication*** management- involves generating, collecting, disseminating, and storing project information.

G. ***Risk*** management- includes identifying, analyzing, and responding to risks related to the project.

H. ***Procurement*** management- involves acquiring or procuring goods and services for a project from outside the performing organization.

Program and Project Portfolio Management

- A ***program*** is ***a group of related projects managed in a coordinated way*** to obtain benefits and control not available from managing them individually. It is often ***more economical to group projects together*** to help streamline management, staffing, purchasing, and other work.

  (eg) - Infrastructure: A program for IT infrastructure could include several projects such as providing more wireless Internet access, updating h/w and s/w, and developing and maintaining corporate standards for IT.

  - Application development: Under this program, there could be several projects such as updating an enterprise resource planning (ERP) system, purchasing a new off-the-shelf billing system, or developing a new capability for a customer relationship management system.

  - User support: There could be a project to provide a better e-mail system or one to develop technical training for users.

- ***A program manager provides leadership and direction for the project managers*** heading the projects within a program. Program managers also coordinate the efforts of project teams, functional groups, suppliers, and operations staff supporting the projects to ensure that project products and processes are implemented to maximize benefits.

- ***Portfolio management***: Organizations group and manage ***projects and programs as a portfolio of investments*** that contribute to the entire enterprise's success. Portfolio managers ***help their organizations make wise investment decision*** by helping to select and analyze projects from a strategic perspective.

- ***Project Management***	V.S.	***Portfolio Management***
- More specific and short-term		- Emphasize long-term goals for an organization
- Tactical goals		- Strategic goals
- Are we carry out project well?		- Are we working on the right project?
- Are projects on time and on budget?		- Are we investing in the right areas?
- Do project stakeholders know what they should be doing?		- Do we have right resources to be competitive?

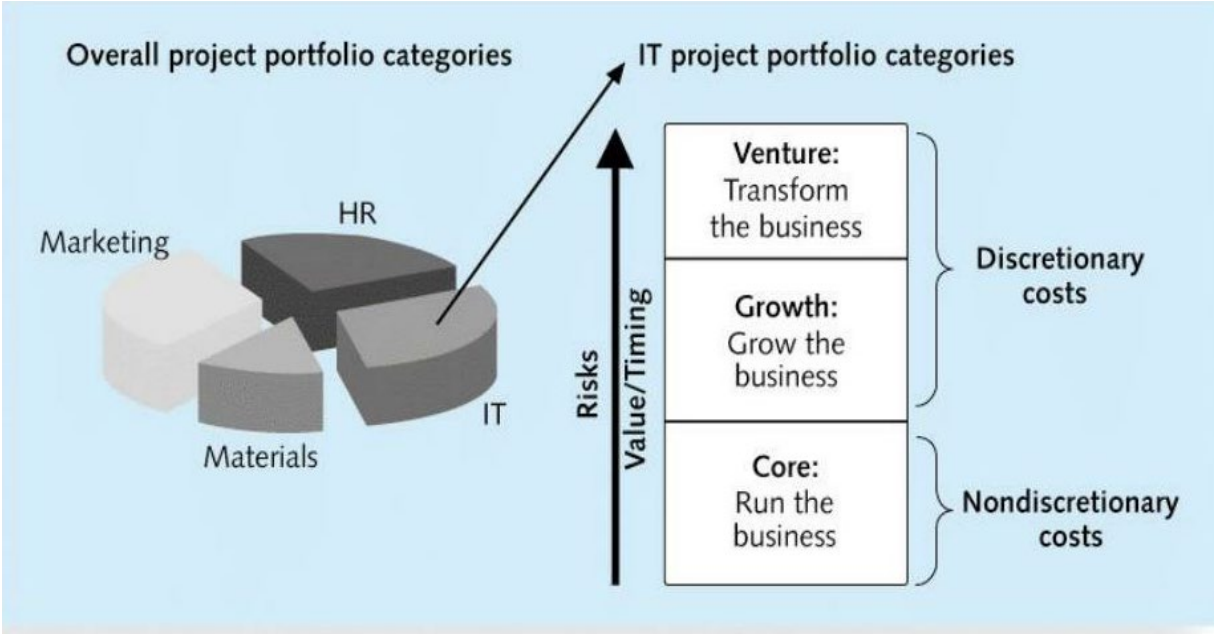
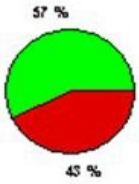


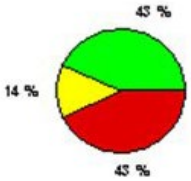
Figure. Sample project portfolio approach

PLANVIEW

Project Health (Effort Based)



Schedule Variance	Project Count
On Target	4
In Trouble	3



Cost Variance	Project Count
On Target	3
At Risk	1
In Trouble	3

Work Id	Project	% Complete	Schedule Variance	Cost Variance	Budget Variance	Risk Pct
0000051	Upgrade Sales Staff Laptop PC's	100.0 %	✓ 0.0	▲ -74.0	▲ -74.0	✓ -
CAW-035	CRM Website	75.8 %	✓ 8.0	✓ 18.0	✓ 18.0	● 39.7 %
CW-2002	MyMystic.com Customer Website	97.0 %	● -120.0	● -343.0	● -263.0	✓ -
PARMS-0	PARMS Implementation	50.4 %	● -440.0	● -192.0	✓ -8.0	✓ 3.9 %
POS-2002	PlanView and SAP Financial Integration	98.6 %	✓ 0.0	● -221.0	● -221.0	✓ -
SSR-012	Strategic Systems Review	0.0 %	✓ 0.0	✓ 0.0	▲ -72.0	▲ 15.9 %
TAU-2002	Tax Accounting Update 2002	24.9 %	● -119.0	✓ -15.0	✓ 33.0	✓ 0

Figure. Sample project portfolio management screen showing project health

History of Project Management

- The modern concept of project management began with the "Manhattan Project", which the U.S. military led to develop the atomic bomb in World War II (1943~1946).

- The Manhattan Project ***involved many people with different skill at several different locations***. It also clearly separated the ***overall management*** of the project's mission, schedule, and budget under military and the ***technical management*** of the project under scientists.

- Project management was recognized as a distinct discipline requiring people with special skills and, more importantly, the desire to lead project teams.

- In 1917, Henry Gantt developed the famous ***Gantt chart for schedule work*** in factories. ***A Gantt chart is a standard format for displaying project schedule information by listing project activities and their corresponding start and finish dates in a calendar format***. Today's project managers still use the Gantt chart as the primary tool to communicate project schedule information.

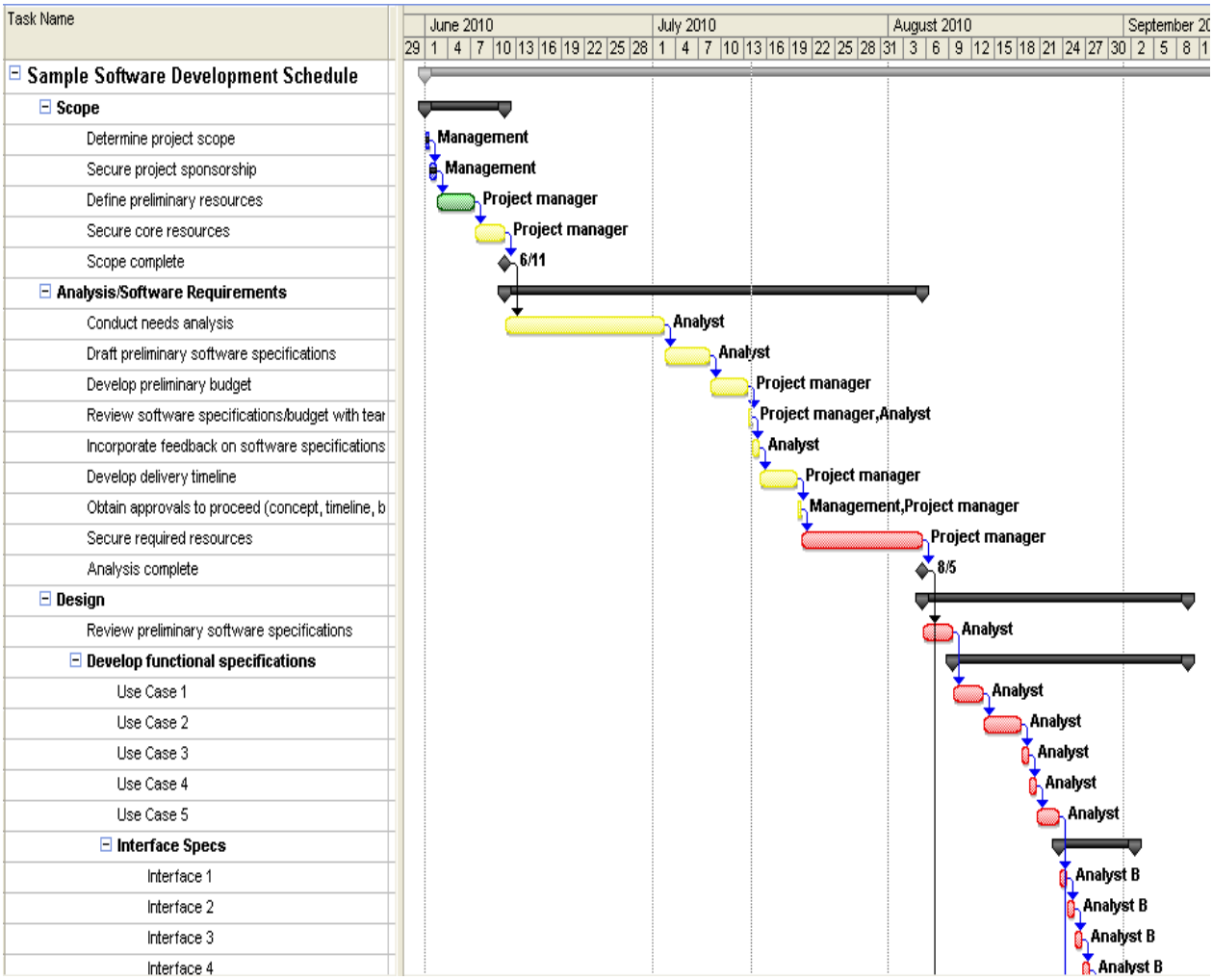


Figure. Sample Gantt chart created with Project 2007

- Members of the U.S. Navy Polaris missile/submarine project first used ***network diagrams*** in 1958. These diagrams helped managers ***model the relationship among project tasks, which allowed them to create schedules that were more realistic***.

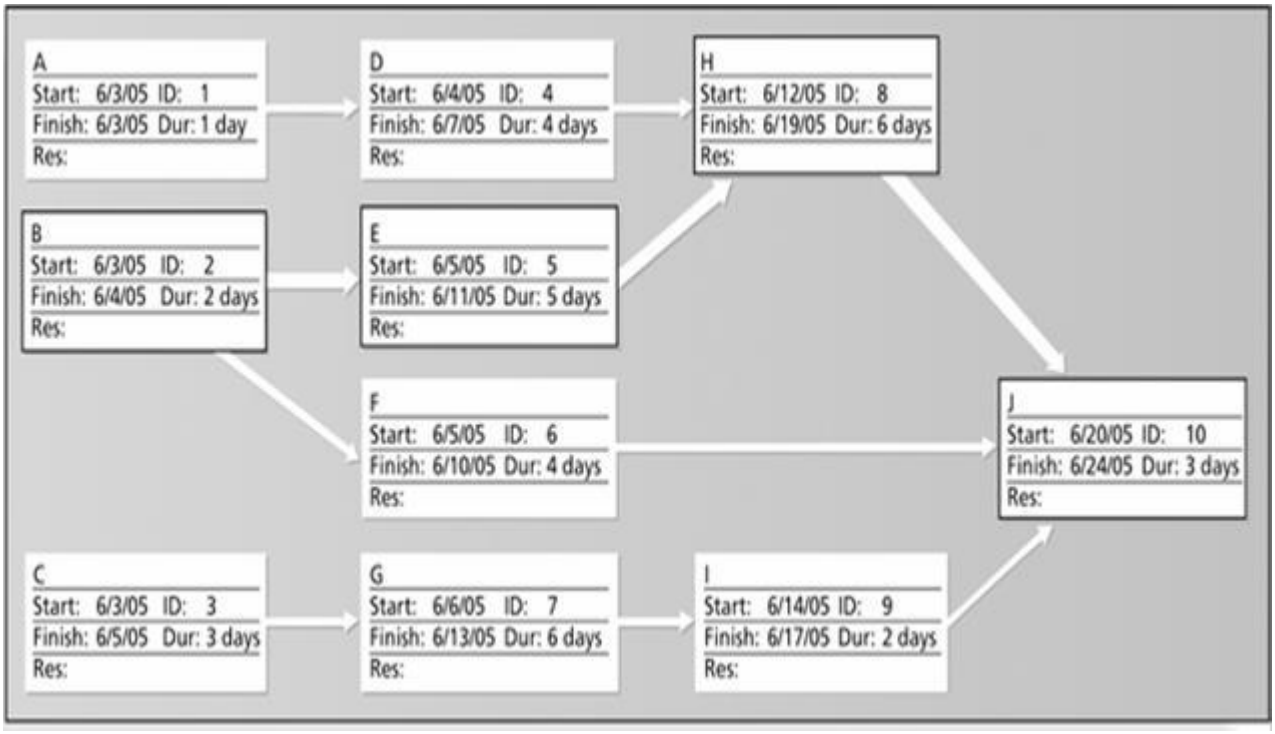


Figure. Sample network diagram in Microsoft Project
: PERT (Program Evaluation & Review Technique) chart

(Note) The diagram includes arrows that show which tasks are related and the sequence in which team members must perform the tasks. This concept allows you to fine and monitor the ***critical path-the longest path through a network diagram that determines the earliest completion a project***.

Chapter. The Project Management and Information Technology Context

- Many of the theories and concepts of project management are not difficult to understand. What is difficult is ***implementing them in various environments***. Project managers must consider many different issues when managing project. Just as each project is unique, so is its environment.

A System View of Project Management

- Even though projects are temporary and to provide a unique product or service, you cannot run projects in isolation. Therefore, ***project must operate in a broad organizational environment***, and project managers need to ***consider projects within the greater organizational context***.

- The term ***systems approach*** emerged in the 1950s to describe a holistic and analytical approach to solve complex problems. System approach uses ***systems philosophy***, ***systems analysis***, and ***systems management***.

- A ***system philosophy*** is an overall model for thinking about ***things as system***. System are ***sets of interacting components working within an environment*** to fulfill some purpose (e.g. human body= nervous system + skeletal system + circulatory system + digestive system +…).

- ***System analysis*** is a problem-solving approach that requires ***defining the scope of system, dividing it into its components***, and then ***identifying and evaluating its problems, opportunities, constraints, and needs***.

- ***System management*** addresses the ***business***, ***technological***, and ***organizational*** issues associated with creating, maintaining, and making changes to a system.

- Using a systems approach is critical to successful project management. Top management and project managers must follow a ***systems philosophy to understand how projects related to the whole organization***. They must use ***systems analysis to address needs with a problem-solving approach***. They must use ***systems management to identify key business, technological, and organizational issues related to each project*** in order to identify and satisfy key stakeholders and do what are the best for the entire organization.

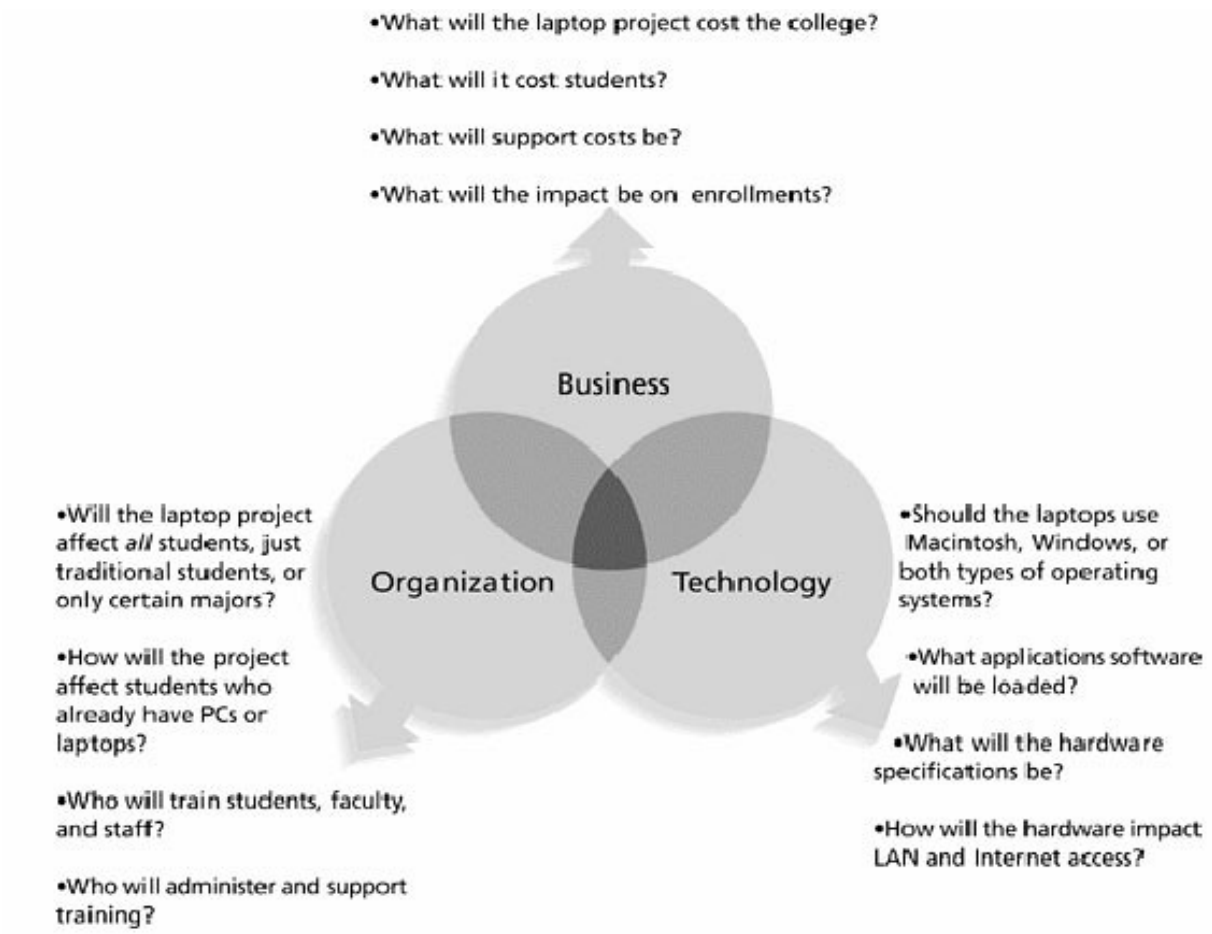


Figure. Three-Sphere Model for Systems Management

- Project must address issues in all three spheres of the systems management model. Although it is easier to focus on the immediate and sometimes narrow concerns of a particular project, ***project managers and other staff must keep in mind the effects of any project on the interests and needs of entire system or organization***.

Project phases and the project life cycle

- A ***project life cycle*** is a collection of project phases. The first two traditional project phase (***concept*** and ***development***) ***focus on planning*** and are often referred to as ***project feasibility***. The last two phases (***implementation*** and ***close-out***) ***focus on delivering the actual work*** and are often referred to as ***project acquisition***. This project life cycle approach provides better management control and appropriate links to the ongoing operations of the organization.

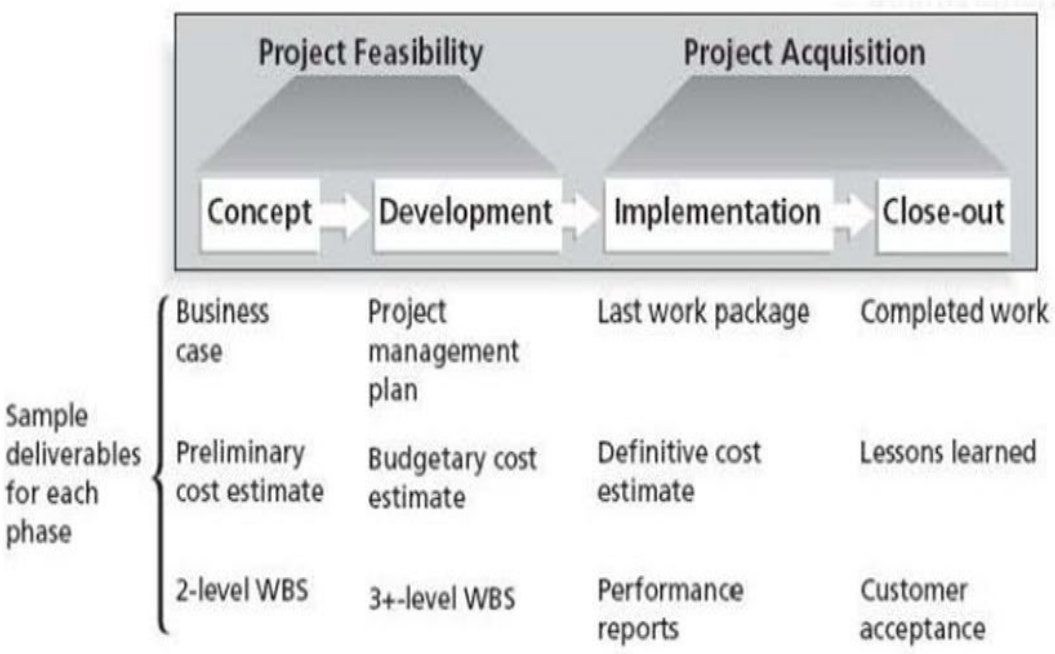
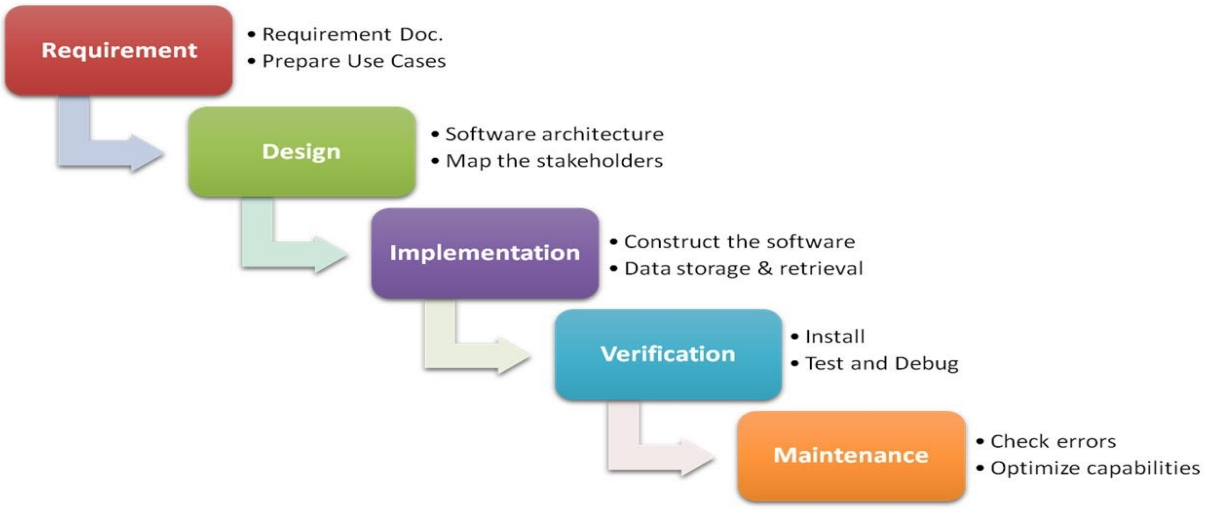


Figure. Phases of the traditional project life cycle

- Many projects, however, do not follow this traditional project life cycle. They still have general phases with some similar characteristics as the traditional project life cycle, but they are ***much more flexible***.

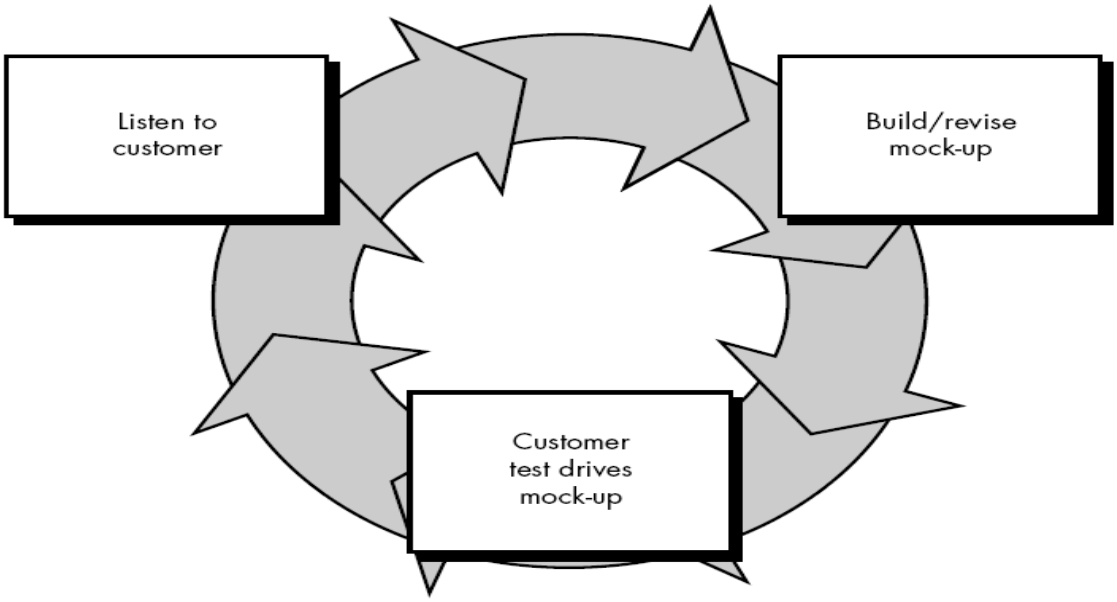
- A ***system development life cycle (SDLC)*** is a framework for describing the phases involved in developing information systems.

(1) The waterfall model



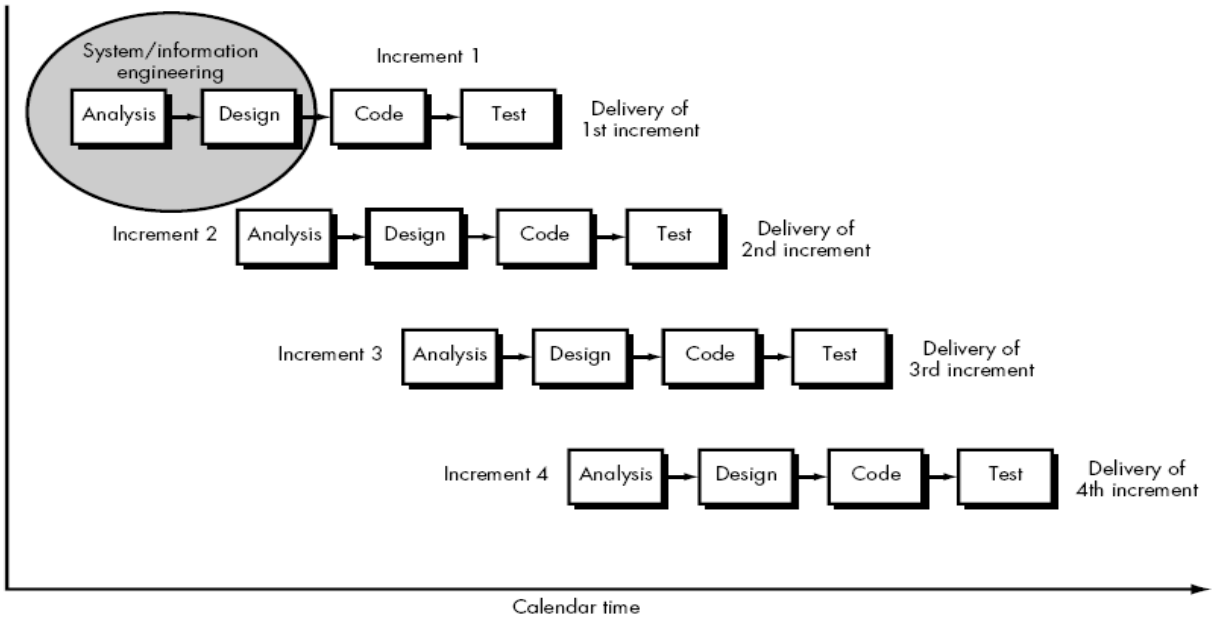
(2) The prototyping model

: uses a mock-up/incomplete system to evaluate requirements early in the process

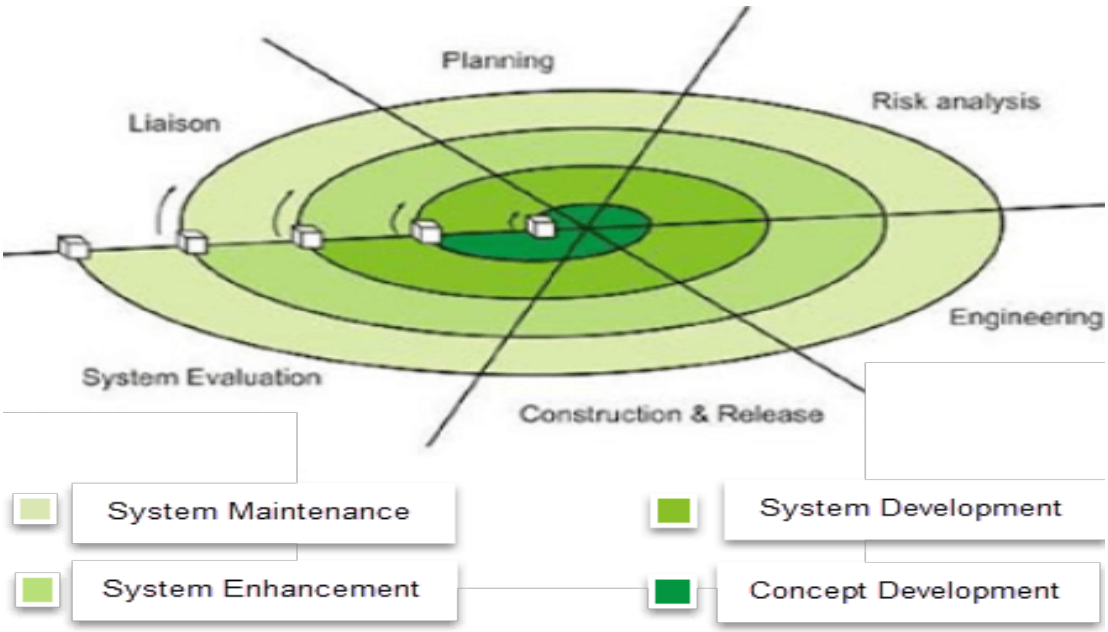


(3) The incremental model

: provides for progressive development of operational s/w, with each release providing added capabilities



(4) The spiral model (waterfall + prototyping)



(5) RAD (Rapid Application Development) model
: a waterfall model that emphasizes an extremely short development cycle by using a component-based construction approach. Developers use RAD tools such as CASE (computer aided software engineering), JRP (joint requirements planning) and JAD (joint application design).

Recent Trends Affecting Information Technology Project Management

1. Globalization

- Information technology is a key enabler of globalization, and globalization has significantly affected the field of IT (i.e. Globalization ⇔ IT).

- Key issues when working on global projects:

(a) ***Communication*** - to address how people will communicate in an efficient and timely manner

(b) ***Trust*** - to start building trust immediately by recognizing and respecting other's differences and the value they add to the project

(c) ***Common work practices*** - to align work processes to come up with an agreed-upon modus operandi with which everyone is comfortable

(d) ***Tools***

2. Outsourcing

- ***Outsourcing is when an organization acquires goods and/or sources from an outside source***. The term ***offshoring*** is sometimes used ***to describe outsourcing from another country***.

- IT projects continue to rely more and more on outsourcing, both within and outside of their country boundaries.

- Organizations ***remain competitive by using outsourcing to their advantage***. For example, ways to reduce costs by outsourcing.

- Because of the increased use of outsourcing for IT projects, project managers should become ***more familiar with negotiating contracts and many other issues, including working on and managing virtual teams***.

3. Virtual Teams

- Increased globalization and outsourcing have increased the need for virtual teams. ***A virtual team is a group of individuals who work across time and space using communication technologies***.

- Advantages:
  - (a) Increasing competitiveness and responsiveness (i.e. available 24/7)
  - (b) Lowering costs (i.e. do not require office space or support)
  - (c) Providing more expertise and flexibility
  - (d) Increasing the work/life balance for team members (i.e. eliminating fixed office hours and the need to travel to work)

- Disadvantages:
  - (a) Isolating team members who may not adjust well
  - (b) Increasing the potential for communications problem

(c) Reducing the ability for team members to network and transfer information informally
(d) Increasing the dependence on technology