# Group # 5

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# Class notes

## Class 2

* IT Project Manager
  + Information technology (IT) project managers lead their technical team(s) in design and development tasks. They assist test teams in their efforts to create test plans, and they make sure that the software quality is up to par. Additionally, they coordinate the delivery of development and production releases, making sure that quality assurance standards are met. IT project managers create and maintain project plans to ensure timely completion of tasks, major project milestones, and resource allocation. They also utilize software life cycle methodology.
  + Coordinate delivery of development (beta) and production releases that meet quality assurance standards.
  + Assist test team in creating test plans and testing efforts.
  + Create and maintain a information technology project plan that communicates tasks, milestone dates, status and resource allocation.
  + Assist technical team in design and development tasks.
  + Utilize software life-cycle methodology.
  + 53-120k
  + IBM, Accenture, Cognizant, J.P. Morgan Chase & Co, Cisco, InfoSys
* Junior IT Project Manager
  + APN Software Solutions, Accenture, AQR Capital Management,
  + 35k-70k
  + Junior project managers are responsible for planning, organizing, and directing operations related to ongoing projects in the company. They lead team members in the project development department and oversee company projects to make sure they are running as planned. Computer skills are extremely important, and junior project managers will need to be capable of using basic office software program and the ability to type and run various company reports.
  + Manage expectations and track risks and benefits.
  + Communicate with stakeholders about scheduling, staffing and technical requirements.
  + Create schedules and collect documents to orient and guide projects and outcomes.
  + Translate metrics into actionable, meaningful intelligence.
  + San Francisco,
* IT Project Assistant
  + 29k – 52k
  + Prepare correspondence related to project.
  + Maintain project records and ensure that all regulatory documents are correct, processed and approved.
  + Assist in preparing reports and data collection for analysis.
  + Review and distribute project documents.
  + IAS-USA, InterMountain Electric Company, Agency 360,
  + San Francisco, san carlos
* Software’s chronic crisis
  + Chronic: of long duration, continuing;
* Impacts of software failures
  + Business impacts from IBM consulting group survey
    - 55% of projects cost more than expected
    - 68% took longer than estimated to complete
    - 88% of proejcts had to be substantially redesigned
  + Failed proejcts are not used
    - 75% of large projects are operating failures or not used at all
* CMM: Capability Maturity Model (1 is least desired)
  1. Initial processes are unpredictable, poorly controlled, reactive
  2. Managed: processes are planned, documented, performed, monitored, and controlled ath the project level, often reactive
  3. Processes are well characterized and understood, processes, standards, procedures, tools, etc. are defined at the organizational level, proactive
  4. Processes are ctronlled using statistical and other quantitative techniques
  5. Process performance continually improved through incremental and innovative technological improvements
* Real time systems
  + The first time you write the code, it has to be correct
  + The amount of code in consumer products is doubling every two years
* Challenge of large software project
  + Problem with testing
  + Human comprehension: no single person can completely comprehend a large project
  + Growth in hardware complexity: hardware complexity doubles every 18 months
  + Lack of standardization: no codified handbooks with standard routine designs, mistakes are repeated project after project, year after year
  + Lack of measurement: lines of code per worker per week is not the right measure; time and cost are hard to estimate; it is very difficult to measure the productivity of a software developer

## Class 3

### Chapter 1 review

* What is the current state of IT project management
* Explain value driven, sociotechnical, project management, and knowledge management approaches
* What is a project
* Define the disciple called project management
* Define triple constraint
* Identify the pMBK
* Improving likelihood of success
  + A value driven approach
    - Plain & simple: IT projects must provide value to the organization
      * Better customer service
      * More efficient business processes
      * Lower costs
      * Expanded market share
    - The project success should be measured by value, not by budget or schedule
  + There are 4 approaches, will be in the mid term
* Project: a temporary endeavor undertaken to complete a specific task
  + Triple constraint
    - Timeline
    - Budget
      * If you want to reduce cost, you have to reduce scope
    - Scope
      * If you want to increase scope, you have to increase cost
* Project management body of knowledge areas
  + Project scope
  + Project time management
  + Project scope
  + Project quality
  + Project HR
  + Project Communication management
  + Project risk management
  + Project procurement management (servers, software, etc)
  + Project integration management (i.e. change management)
* 2 most import aspects of IT management
  + User involvement
  + Executive support

## Class 4

* ROI analysis
  + NPV: Total Discount Benefit – total discount cost
    - 516000-243200=272800
    - Or you can just calculate the total accumulated discount benefit
  + ROI = NPV / Discount Cost
    - Or
      * (total discounted beneifts – total discounted costs) / discounted costs
      * (516k – 243.2) / 243.2 (see below for these numbers
    - If higher than the Discount Rate, take the project
    - If lower than the discount rate, reject the project
  + Payback

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| THIS IS Discount Cost | 1/(1+discount rate)^year | 1/(1+.08)^1 | 1/(1+.08)^2 | 1/(1+.08)^3 |  |
| Year | 0 | 1 | 2 | 3 |  |
| Payment schedule | 140k | 40k | 40k | 40k |  |
| Discount factor | Not needed | .93 | .86 | .79 |  |
| Discounted cost | Not needed | 40k\*.93=37200 | 40k\*.86=34400 | 40k\*.79=31600 |  |
| Total discount cost | 140k+37200+34400+31600 = 243,200 | | | |  |
| Benefit discount factor | 0 | 200k | 200k | 200k |  |
| Discount factor | Not needed | .93 | .86 | .79 |  |
| Discounted benefit | 0 | 186k | 172k | 158k |  |
| Discount benefit – accumulated | 0-140k =  -140k | 186k-37,200=  148,800 | 172k-34400=  137,600 | 158k-31600=  126,400 | 516,600 |
| Accumulated discount benefit | -140 | -140+148800=  8800 | 8800+137600=  146400 | 146400+126400=  272800 |  |
|  |  | This is the payback year, the first year its positive |  |  |  |

# Chapter 1: ITPM

## introduction

* ITPM: information technology project management
* Business computer eras:
  + EDP: electronic data processing era: began in the early 1960s and is characterized by the purchase of the first centralized mainframe or a minicomputer by large organizations.
    - Focused generally on automating various organizational transactions such as general accounting tasks, inventory management, and production scheduling.
    - The goal of using technology was to improve efficiency and reduce costs by automating many fo the manual or clerical tasks performed by people
  + Micro era: in the early 1980s, the IBM personal computer and its subsequent clones signaled the beginning of the micro era
    - The proliferation of the pc in many organizations challenged the centralized control of many MIS mangers
  + Network era: in the late 1960s and 1970s a defense project called ARPANET allowed university researchers and scientists to share information with one another, by the mid 1980s this network fo computers became known as the internet and led to the network era that began around 1995
    - IT projects focused primarily on the challenge of creating an IT infrastructure to support many partners, strategic alliences, vendors, and customers.
  + Globalization
* CHAOS studies: a survey first conducted by the Standish Group of 365 IT maangers in 1994, analyzing IT projects and produced facts e.g.
  + Only 16 % of application development projects were successful in terms of being completed on time and within budget
  + 31 % of proejcts were canceled before completion
  + 53 % were completed but over budget, over schedule, and not meeting specifications
  + The average cost overrun for a medium size company surveyed was about 182 % of the original estimate.
  + The average schedule overrun was about 202 %

## Factors for project success

* User involvement: users can be though of as the projects customers and are important stakeholders that should be involved I important decisions and because they may have vital knowledge of the business and processes not possessed by the more technical people; working closing together the users and developers can better understand the business opportunities and limitations of technology
* Executive support: support from support management is critical in terms of acquiring and maintaining financial backing for the project. Visible support by senior management is also important in terms of emotional support and negotiation or resolution of organizational conflicts
* Clear business objectives: stakeholders must focus on the core value of the project. This includes understanding the larger picture of how a particular project supports the business and organizational strategies
* Emotional maturity: projects are planned organizational change. Emotional maturity focuses on the ability and capability to understand and manage the emotions and actions of the various project stakeholders, e.g. delivering bad news, accepting criticism, or dealing rationally with various project challenges.
* Optimization: the optimization of information technology centers making systems, processes, and people efficient and effective as possible in order to provide the highest level of value to the organization.
  + An information system should include only those features and functions that help the users perform their job
* Agile process: an agile process supports the user/developer relationship by encouraging team work, collaboration, and evolving requirements, while allowing for rapid delivery.
* Project management expertise: project managers must be skilled in both project management knowledge and the organizational environment.
  + The organization must recognize and give support to the project manager and his/her expertise.
* Skilled resources: to be successful, a project manager must be able to acquire, manage, and control the right resources at the right time. This may include the ability to develop people or replace a key project tea member due to turnover
* Execution projects are executed/carried out according to a plan.
* Tools and infrastructure: using the right tool for the job, but also having the skill to use that tool properly.

## Why IT projects fail

* see table 1.3 for a full list
* The definition of success may not be appropriate, e.g. if a project is brilliant, but also happens to be 10% over budget
* Poor communication, insufficient resources, unrealistic schedule deadlines
* Appropriate project expectations, requirements, as well as schedule and budget constraints
* All projects require resources in terms of people, technology, and facilities

## Improving the likelihood of success

* Value driven approach: IT projects must provide value to the organization. Defining success less on ‘budget & time’ and more on the ‘value’ it provides when completed. Also, completing a project under budget & under time does not matter if the project is filled with bugs or does not provide the value/functionality the business requires
* Socio-technical approach: you cannot rely solely on the technical side of IT, you must understand the impact technology will have on business & organizational processes
  + You cannot get a set of requirements, disappear for 20 months, and then come back when its time to deliver the project. You must actively update and converse with the user to understand their environment and be aware of any changes
  + Actively seek and encourage user participation, involvement, and let them help define the vision, so that the users are stakeholders in the project
* Project management approach:
  + Methodology: step by step activities, processes, tools, quality standards, controls, and deliverables that are defined for the entire project
  + Resources: all IT projects are capital projects that require cash and other organizational resources, thus, projects must be estimated accurately, and cost and schedules must be controlled effectively
  + Expectations: clients/customers expect IT professionals to deliver quality products and services in a professional manner. Timely status updates and communication, as well as sound project management practices are acquired
  + Competition: internal & external competition is huge. An internal IT department’s services can easily be outsources if the quality/cost of providing IT services can be bettered outside the organization
  + Efficiency & effectiveness:
    - Efficiency: doing something right the first time
    - Effectiveness: doing the right thing the first time
* Knowledge-management approach:
  + Knowledge management: a systematic process for acquiring, creating, synthesizing, sharing, and using information, insights, and experiences to transform ideas into business value.
  + Lessons Learned: document both reasons for success and failure can be valuable assets if maintained and used properly
  + Best practices: doing things in the most efficient and effective manner

## The context of project management

* PMI: the project management institute founded in 1969, is the leading nonprofit professional association in the area of project management & establishes many project management standards and provides seminars, educational programs, and professional certification
* Project: a temporary endeavor undertaken to accomplish a unique product, service, or result
* Project management: is the application of knowledge, skills, tools and techniques to project activities to meet project requirements
* Project manager: the person assigned by the performing organization to achieve the project objectives

## Project attributes

* Time frame: because a project isa temporary endeavor, it must have a definite beginning and end. Many projects have a specific start date and an estimated date of completion, or an immoveable date when the project must be completed
  + In the latter case, it is necessary tow ork backward to determine the date when the project must start
* Purpose: projects are undertaken to accomplish something, e.g. a system, software package, or a recommendation based on a study. Therefore a project’s goal must be to produce something tangible and of value to the organization
  + The goal will drive the project in terms of defining the work to be done, its schedule, and its budget, and to provide the project team with a clear direction
* Ownership: the project must provide something of value to an individual or group who will own the projects product after its completed.
  + Stakeholders: people/groups who have a vested interest in the project’s outcome.
  + Sponsor: an executive, end user, customer, or client who has the ability and desire to provide direction, funding, and other resources to the project
* Resources: i.e. time, money, people, and technology. Resources provide the means for achieving a project’s goal and also act as a constraint.
* Scope: work to be accomplished, is determined directly by the project’s goal, i.e. if we know what we have to accomplish, we can then figure out how to accomplish it.
  + If the scope increases, then the schedule and budget of the project must increase accordingly.
  + If the project’s schedule and resources are fixed, then the only way to decrease the cost or schedule of the project may be to reduce the project’s scope
  + Triple constraint: Scope, schedule, and budget must remain in a sort of equilibrium to support a particular project goal.
* Roles: projects require different individuals with different skill sets
  + Project manager/leader: responsible for ensuring that all of the project management and technical development processes are in place and are being carried out within a set of specific requirements, defined processes, and quality standards
  + Project sponsor: e.g. the client, customer, or organizational manager who will act as a champion for the project and provide organizational resources and direction when needed
  + SME: subject matter experts; e.g. a user/client who has specific knowledge, expertise, or insight in a specific functional area needed to support the project
    - E.g. if the project is to develop a tax product, then having a tax expert on the project team is very product rather than having the technical experts try to learn everything
  + TE: Technical Experts: provide a technical solution to the organizational problem, e.g. system analysts, network specialists, programmers, graphic artists, etc.
* Risks & Assumptions: risks can arise from many resources, both internal and external to the project
  + Internal risks: arise from the estimation process or from the fact that a key member of the project team could leave in the middle of the project
  + External risks, arise from dependencies on other contractors or vendors
  + Assumptions: form of risk that we introduce into the project tin terms of forecasts/predictions, and are used to estimate scope, schedule, and budget, and to assess the risks of the project
* Interdependent tasks: projects require many interdependent tasks, e.g., a network cannot be installed until the hardware is delivered, or certain requirements cannot be incorporated into the design until a key user is interviewed.
  + The delay of one task can affect other subsequent, dependent tasks.
  + Progressive elaboration: many of the project tasks will be conducted in steps/increments. E.g., features and fucntinoality of an information system will be defined at a higher/abstract level early on in the project, but will eventually be defined at a much greater level of detail later on.
    - Progressive elaboration will result as part of the systems development process or as the project manager and team gain a deeper understanding of the project or as new information becomes available
* Organizational change: projects are planned organizational change, and this change must be understood and managed because implementation of the IT project twill change the way people work; the potential for resistance, therefore, exists, and a system that is a technical success could end up being an organizational failure
* Operating in an environment larger than the project itself: projects impact the organization, and it is important that the project manager and team understand the company’s culture, environment, politics, and the like. These organizational variables will influence the select of projects, the IT infrastructure, and the role of IT within the organization.

## Extreme project management

* XPM: Extreme project management: the art and science of facilitating and managing the flow of thoughts, emotions, and interactions in a way that produces valued outcomes under turbulent and complex conditions, i.e. those that feature high speed, high change, high uncertainty, and high stress
* Traditional approach: employs an orderly approach that attempts to fit reality to the project tools and processes
* XPM approach: embraces the reality that projects are often chaotic and unpredictable, and attempts to deal with it through increased flexibility and adaptability
  + Requirement changes are inevitable so planning and management becomes a self-correcting and iterative process
  + Innovation: creative ideas for new products & services, and innovative processes, methods, and tools for managing the project
  + Focuses on enabling people to discover best solutions and self-correct themselves as needed

## PMBOK: Project management body of knowledge

* A document available from the project management institute (PMI) that provides a basis for identifying and describing the generally accepted principles and practices of project management.
* PMP the project management professional certification exam provided by the PMI.

## Project management knowledge areas

* Project integration management: integration focuses on coordinating the project plan’s development, execution, and control of changes
* Project scope management: a project’s scope is the work to be completed by the project team, and must be defined accurately and completely and completed as planned.
* Project time management: important for developing, monitoring, and managing the project’s schedule, identifying the project’s phases and activities and then estimating, sequencing, and assigning resources for each activity to ensure that the project’s scope and objectives are met
* Project cost management: cost management assurances that the project’s budget is developed and completed as approved
* Project quality management: quality management focuses on planning, developing and managing a quality environment that allows the project to meet/exceed stakeholder needs/expectations
* Project human resource management: people are the most important resource on a project
* Project communications management: communication management entails communicating timely and accurate information about the project to the project’s stakeholders
* Project risk management: concerned with identifying and responding appropriately to risks that can impact the project

## Involving the user

* Projects can be viewed as an ecosystem where users and developers must work together to share knowledge, ideas, and information.
* User involvement is one of the leading factors for project success

# Chapter 2 • Conceptualizing and initializing the IT Project

## Overview

* Describe the project life cycle (PLC) and the systems development life cycle (SDLC), and their relationship
* Define what a methodology is and describe the role it serves in IT projects
* Identify the phases and infrastructure that make up the IT project methodology introduced in this chapter
* Develop and apply the concept of a project’s measurable organizational value (MOV)
* Describe and be able to prepare a business case
* Distinguish between financial models and scoring models
* Describe the project selection process as well as the balanced scorecard approach

## Introduction

* Methodology: provides a game plan for planning and managing the IT project and recommends the phases, processes, tools, and techniques to be followed and used through the project life cycle.
* Project objectives include project scope, schedule, budget, and product quality.
  + A project should have only one goal, but may hae several objectives
* Business case: a deliverable that documents the project’s goal, as well as several alternatives or options.
  + The feasibility, costs, benefits, and risks for each alternative are analyzed and compared, and a recommendation to approve and fund one of the alternatives is made to senior management

## The project life cycle and IT development

* Project life cycle: PLC: is a collection of logical stages or phases that maps the life of a project from its beginning to its end in order to define, build, and deliver the product of a project, i.e. the product, service, or information system.
  + Each phase should provide one/more deliverables
* Deliverable: tangible and verifiable product of work, i.e. project plan, design specifications, delivered system, etc
  + Deliverables at the end of each phase also provide tangible benefits throughout the project and serve to define the work & resources needed for each phase
* Phase exists, stage gates, or kill points are the phase-end review of key deliverables that allow the organization to evaluate the project’s performance and to take immediate action to correct any errors/problems.
* Fast tracking: starting the next phase before approval is obtained can sometimes reduce the projects schedule.

## Project Life Cycle Steps

* Project Goal: define the projects overall goal, focusing on providing business value to the organization. The goal answers the question “ how will we know if this project is successful given the time, money, and resources invested
* Plan project: answering the following questions
  + What are we going to do
  + What are we not going to do
  + Why are we going to do it
  + How are we going to do it
  + Who is going to be involved
  + How long will it take
  + How much will it cost
  + What can go wrong and what can we do about it
  + How will we know if we are successful
  + The project plan defines the agreed upon scope, schedule, and budget and is used as a tool to guage the projects performance throughout the life cycle
* Execute project plan
  + People must be actively managed to ensure that the project achieves its goal
  + Progress must be documented and compared to the plan to assess and deviation
  + Project performance must be communicated to all of the stakeholders.
  + At the end of execution, the team implements/delivers a competed product, service, or information system to the organization
* Close project
  + Ensure that all of the work is completed as planned and as agreed to by the team and the sponsor
  + There should be formal acknowledgement by the sponsor that they will accept the product delivered
  + After formal acknowledgement, deliver a project report and presentation to the client that documents that all promised deliverables have been completed as specified
* Evaluate project
  + The value of an IT project is not readily known when the product, service, or information system is implemented, but only after user experience is obtained & documented
  + Evaluating when the project met its goal can be made only after the system has been implemented
  + Other evaluations
    - Project team should document its experiences in terms of lessons learned
    - The things they would do the same
    - The things they would do differently
    - Post mortem should be documented, and stored electronically, and shared throughout the organization
    - Many of these experiences can be translated into best practices and integrated into future projects
  + The project manager should evaluate each team members performance in order to provide feedback and as part of the organizations established merit and pay raise processes and procedures

## The Systems Development Life Cycle (SDLC)

* Projects follow a project life cycle
* The development of new products, services, or information systems follows a product life cycle
* Systems Development Life Cycle: SDLC: represents the sequential phases/stages an information system follows throughout its useful life
  + Establishes a logical order/sequence in which the system development activities occur and indicates whether to proceed from on system development activity to the next

## SDLC Stages

* Planning: identifying and responding to a problem/opportunity and incorporates the project management and system development processes and activities
  + A formal planning process ensures that the goal, scope, budget, schedule, technology, and system development processes, methods, and tools are in place
* Analysis: delve into the problem/opportunity more fully
  + Documenting the current system to develop an ‘as is’ model to understand the system currently in place
  + Meet with SME (subject matter experts)
* Design: use the requirements and ‘to be’ logical models as input for the designing the architecture to support the new information system.
  + Architecture: includes designing the network, hardware configuration, databases, user interface, and application programs
* Implementation: includes the development/construction of the system, testing, and installation, training, support, and documentation
* Maintenance and support: may be handed to another team, but should be considered.
  + Maintenance: fix undiscovered errors, add features, etc.
  + Support: call center/help desk must be in place to help users on an as-needed basis
* After SDLC, the system becomes part of the organizational infrastructure and becomes known as a legacy system

## PLC v SDLC

* PLC focuses on the phases, processes, tools, knowledge and skills for managing a project
* SDLC focuses on creating and implementing the project’s product
  + How the project team chooses to implement the SDLC will directly affect how the project is planned in terms of phases, tasks, estimates, and resources assigned
  + The SDLC is really part of the PLC because many of the development activities occur during the execution phase of the PLC
  + The last two phases of the PLC (close project and evaluate project) occur after the implementation of the information system

## ITPM: information technology project methodology

* Methodology: provides a strategic-level plan for managing and controlling IT projects, i.e. a template for initiating, planning and developing an information system
  + Although information systems may be different, it is the product, and not necessarily the process that makes them different
  + Provide the project team with a game plan for implementing the project and product life cycles, the team can then focus on the tasks at hand, instead of always worrying about what they are suppose to do net
* ERP: enterprise resource planning
* CRM: customer relations management
* Types of modeling:
  + Process modeling
  + Data modeling
  + Object-oriented modeling

## IT Project management phases

* Phase 1: conceptualize and initialize
  + Defining the overall goal of the project, the specific purpose for the project (must be to add tangible value to the organization)
  + The project goal aids in defining the project’s scope and guides decisions throughout the project life cycle
  + The project goal is used at the end of the project to evaluate the project’s success
  + Alternatives that would allow the organization not meet its goal must be identified, then the costs and benefits as well as feasibility and risk of each alternative must be analyzed
    - Based on this analysis, a recommendation is made
    - The project’s goal and the analysis are summarized in a deliverable called the business case
  + Senior management will use the business case during the selection process to determine whether the proposed project should be funded
* Phase 2: develop the project charter and detailed project plan
  + Project charter: key deliverable, defines how the project will be organized and how the project alternative that was recommended and approved for funding will be implemented.
  + Clarifies the project’s goals and defines the project’s objectives in terms of scope, schedule, budget, and quality standards
  + Project plan: provides all the tactical details concerning who will carry out the project work and when
  + Project charter & plan must answer the following questions
    - Who is the project manager, who is the project sponsor, who is on the project team, what role does everyone associated with the project play, what is the scope of the project, how much will the project cost, how long will it take to complete the project
    - What resources and technology will be required, what approach, tools, and techniques will be used to develop the system
    - What tasks/activities will be required to perform the project work, how long will these tasks or activities take
    - Who will be responsible for performing these tasks or activities
    - What will the organization receive for the time, money, and resources invested in this project?
  + The project’s scope, schedule, budget, and quality objectives must be defined in detail
  + The project plan and charter are the products of tactical planning
    - The business case is the strategic plan
* Phase 3: execute and control the project
  + Carrying out the project plan to deliver the IT product and managing the project’s processes to achieve the project’s goal
  + During this phase the project uses a particular approach and set of system analysis and design tools for implementing the systems development life cycle (SDLC)
  + Requires:
    - People with the appropriate skills, experience, and knowledge
    - Technical infrastructure for development
    - IS development methods and tools
    - Proper work environment
    - Scope, schedule, budget, and quality controls
    - Detailed risk plan
    - Procurement plan for vendors and suppliers
    - Quality management plan
    - Change management plan
    - Communications plan
    - Testing plan
    - Implementation plan
    - HR system for evaluation and rewards
* Phase 4: close project
  + After the project has been developed, tested, and installed, a formal acceptance should transfer control from the project team to the client/project sponsor.
  + Prepare a final project report and presentation to document and verify that all the project deliverables have been completed as defined the project’s scope
  + Final cost of the project determined
  + Follow the set of processes to formally close the project
    - Closing all project accounts, archiving all project documents and files, and releasing project resources
* Phase 5: evaluate project success
  + Postmortem: the final project review, focus on the entire project and attempt to assess what went well and what the project team could have done better
    - Lessons learned from the team’s experiences should be documented and made available to others throughout the organization
  + Performance review: structured in terms of the organizations performance and merit review policies and procedures
    - Each member of the team receives honest and useful feedback concerning their performance
    - Areas of strength and opportunities for improvement should be identified so that plans of action can be developed to help each person develop
  + Third party review: should answer the following questions
    - What is the likelihood of this project achieving its goal
    - Did the project meet its scope, schedule, budget and quality objectives
    - Did the project team deliver everything that was promised to the sponsor or client
    - Is the sponsor & client satisfied with the project?
    - Did the project team follow the processes outlined in the project & system development methodologies
  + Did the project provide value to the organization?

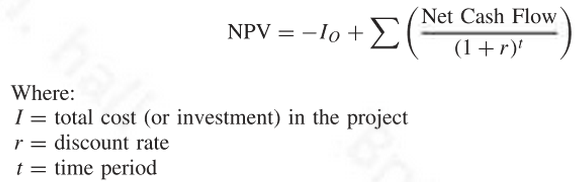
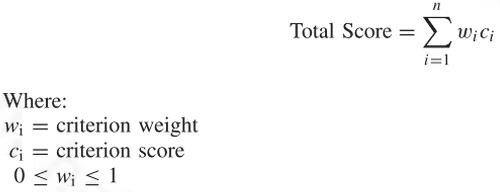
## IT Project Management Foundation

* PM Process groups: initiating, planning, executing, controlling, closing
  + Process: a series of activities that produce a result
  + Project management processes: describe and help organize the work to be accomplished by the project
  + Product oriented processes: focus on the creation and delivery of the product of the project
  + Intiating processes: to start/initiate a project/phase once commitment is obtained
  + Planning processes: to develop and maintain a workable plan to support the project’s overall goal
  + Executing processe: to coordinate people and other resources to execute the plan
  + Controlling processes: to ensure proper control and reporting mechanisms are in place so that progress can be monitored, problems identified, and appropriate actiosn taken when necessary
  + Closing processes: to provide closure in terms of a formal acceptance that the project or a project’s phase has been completed satisfactorily
* PM objectives: scope, schedule, budget, quality
  + Project objectives:
* Tools: infrastructure: project management, information systems development
  + Tools: support both the processes and product of the project; tools & techniques for estimation, development, and management of scope, schedule, budget, and quality
    - CASE: computer aided software engineering tools and models support the analysis and design phases of development
  + Organizational infrastructure: determines how projects are supported and managed within the organization, and influences how project resources are allocated, the reporting relationships of the project manager and project team members, and the role of the project within the organization
  + Project infrastructure: supports the project team in terms of the project environment and the project team itself
    - Project environment: the physical workspace for the team to meet and work
    - Roles & responsibilities of team members: determines the reporting relatoiships, as well as the responsibilities and authorities of the individual team members
    - Processes and controls: provide support for managing all aspects of the project, ensuring the project’s goald and objectives are being met
  + Technical infrastructure: provides the hardware and software tools to support the project team, e.g. project management software, email, voicemail, word processing, internet, etc., the technical infrastructure allows the project team to do its work
* PMBOK Areas: organizational, project, technical integration management, scope management, time management, cost management, quality management, HR Management, communications management, risk management, procurement management

## The business case

* Business case: purpose is to provide senior management with all the information needed to make an informed decision as to whether a specific project should be funded
  + It is like an investment proposal or a legal case, using compelling facts and lgoci in order to influence an individual or group with decision making authority
  + Detail all posibile impacts, costs and benfits
  + Clear and logical in comparing the cost/benefit impact of each alternative
  + Include pertinent information
  + Systematically summarizing findings and presenting a recommendation
* Organization value focuses on improving effectiveness and/or efficiency, e.g.
  + Reduce costs, create a ne product/service, improve customer service, improve communication, improve decision making, create/strengthen relationships with suppliers, customers, partners
  + Improve processes, improve reporting capabilities, support new legal requirements

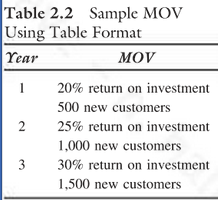
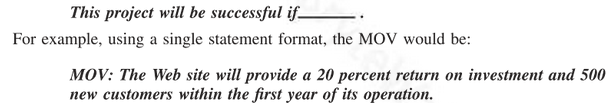
## Steps to develop a business case

* Select the core team: one person should not develop the business case, but a team should be created that includes many of the project stakeholders
* Define measureable organizational value (MOV): the core team’s objective is to define the problem/opportunity and then identify several alternatives that will provide direct and measurable value to the organization
  + Must be measurable, i.e. have a target #:
  + Provide value to the org: a system cannot provide value, it only enables an organization to do things, thus, whatever the ‘output’ of the system/product, that is the value, and that value must be worth something to the organization
  + Be agreed on: everyone must agree on the MOV for it sets expectations for the project stakeholders.
  + Be verifiable: the MOV must be verified to determine if the project was a success
* Identify alternatives: no single solution ever exists, so identify several alternatives before dealing directly with a given business opportunities
  + Best case alternative: how the organization would perform if it maintained the status quo, i.e. if it did not pursue any of the options describe in the business case
  + Types of alternatives
    - Changing the existing business processes without investing in IT
    - Adopting/adapting an application developed by someone else in the organization
    - Reengineering the existing sytem
    - Purchasing an off-the-sehfl application package from a software vendor
    - Custom building a new application using internal resources/outsourcing the development to another company
* Define feasibility & assess risk
  + Feasibility: focus on whether a particular alternative is doable and worth doing
    - Economic feasibility: whether funds & resources exist to support the project
    - Technical feasibility: the technical infrastructure needed to support the IT solution: technology required, knowledge required, skills & experience required
    - Organizational feasibility: considers the impact on the organization; focusing mainly on how people within the organization will adapt to this planned organizational change
      * How will people and the way they do their jobs be impacted?
      * Will they accept this change willingly?
      * Will business be disrupted while the proposed solution is implemented?
    - Other feasibilities: depending on the situation & organization, a business case may include other issues, e.g. legal & ethical feasibility
  + Risk: what can go wrong and what must go right
    - Identification: what can go wrong? What must go right?
    - Assessment: what is the impact of each risk?
    - Response: how can the organization avoid/minimize each risk?
* Define total cost of ownership: the decision to invest in an IT project must take into account all of the costs associated with the application system
  + TCO: Total Cost of Ownership: the total cost of acquiring, developing, maintaining, and supporting the application system over its useful life
    - Direct/up-front costs: initial purchase price of all hardware, software and telecommunications equipment, all development or installation costs, outside consultant fees, etc.
    - Ongoing costs: salaries, training, upgrades, supplies, maintenance
    - Indirect costs: initial loss of productivity, time lost by users when the system is down, the cost of auditing equipment, quality assurance, and post-implementation reviews
* Define total benefits of ownership: TBO: must include all of the direct, ongoing and indirect benefits associated with each proposed alternative over the course of its useful life
  + Increasing high-value work: e.g. less time on paper work and more time calling on customers
  + Improving accuracy and efficiency: reducing errors, duplication, number of steps in a process, etc.
  + Improving decision making: e.g. providing timely and accurate information
  + Improving customer service: e.g. new products/services, faster/more reliable service, convenience, etc.
* Analyze alternatives: once costs & benefits have been identified, be sure that all alternatives are compared with each other consistently
  + Financial models: focus on either profitability and/or cshflows
    - Cashflow models: focus on the net cash (positive/negative) and are calculated by subtracting the cash outflows from the cash inflows
      * Payback method: determines how long it will take to recover the initial investment
        + Payback period: initial investment/net cash flow
        + Disadvantage is that it does not consider the time value of money or cash flwos beyond the payback period
      * Breakeven method: determine the point at which a project will begin to recoup its original investment
        + Breakeven point: initial investment/net profit margin
      * Return on investment: ROI: indicator of a company’s financial performance, providing a measure of the value expected/received from a particular alternative/project
        + Project ROI: (total expected benefits total expected costs) / total expected costs
      * Net present value: NPV: focuses on the time value of money
        + 
      * Scoring models: provide a method or comparing alternatives/projects based on a weighted score; allows for quantifying intangible benefits using multiple criteria
        + 
* Propose and support the recommendation: once all alternatives have been identified and analyzed, the last step is to recommend one of the options with factual support
* Business case outline
  + Cover page: title and subtitle, author and address, date
  + Executive summary: brief description of the problem/opportunity, brief description of organizatino’s goal and strategy, brief description of project’s MOV and how it ties to the organization goal and strategy, brief description of each option or alternative analyzed, brief explanation of which alternative is being recommended and why
  + Introduction: background,c urrent istuation, description of the problem/opportunity, project’s MOV, how achieving the project’s mOV will support the organizatin’s goal and strategy, objectives of writing this business case
  + Alternatives: description of alternative 1 (base case), description of alternative 2, etc.
  + Analysis of laternatives: methodology of how alternatives will be analyzied (data collection methods, metrics used and explanation why they are relevant), presentation fo results that compares each alternative (metrics, sensitivity analsyis, risks, assumptions), proposed recommendation

## Project selection process

* Project portfolio: a set of proejcts that an organization may fund
* Project selection decision: the decision to approve a project requires a number of conditions be met:
  + The project must map directly to the organization’s strategies and goals
  + The project must provide measurable organizational value that can be verified at the completion of the project
  + The selection o fa project should be based upon diversity of measures that include:
    - Tangible costs and benefits
    - Intangible costs and beneifts
    - Various levels throughout the organization (e.g. individual, process, department, and enterprise)
* Balanced scorecard approach: helps balance traditional financial measures with operational metrics across four different perspectives: finance, customer satisfaction, internal business processes, and the organization’s ability to innovate and learn
  + Financial perspective: understanding how an organization performed in the past.
    - Operating income: ROI, NPV, IRR, etc.
    - EVA: economic value added: determines if an organization is earning more than its true cost of capital, provides a clear picture on whether management is creating/destroying shareholder wealth
      * Consider the cost of debt and the cost of equity, a positive EVA indicates that positive wealth has been created
  + Customer perspective: how an organization performs in its customer’s eyes and determines customer satisfaction; satisfied customers mean repeat business and referrals for new business
  + Internal process perspective: focuses on long & short term processes tha an organization must excel at in order to achive its customer and financial objectives,
    - Internal based measurements should focus on the efficiency and effectiveness of the organization’s processes
  + Innovation and learning perspective: the abilities, capabilities, and motivations of the people within an organization determine the outcomes of the operational activities, financial performance, and levels of customer satisfaction within the organization
    - Include training, certifications, and employee satisfaction and retention

## Steps to define a MOV (measurable organizational value)

* Identify the desired area of impact
  + Strategic: penetration of new markets, transformation of the terms of competition within the market, or increased market share
  + Customer: more choices of produces/services, access to better products/services, transaction processes are more efficient/effective
  + Financial: increased profit/maregins
  + Operational: lower costs due to streamlined operations, increased operational effectiveness, or improvements to the supply chain
  + Social: education, health, safety, or the environment
* Identify the desired value of the IT project
  + Better: what does the organization want to do better? (quality)
  + Faster: what does the organization want to do faster? (effectiveness)
  + Cheaper: what does the organization want to do cheaper? (efficiency)
  + Do more: what does the organization want to do more of? (growth)
* Develop an appropriate metric: A metric or set of metrics that:
  + Provides the project team with a target/directive
  + Sets expectations among all stakeholders
  + Provides a means for evaluating whether the project is a success
  + Money, percentage, numeric value, either increase/decrease for all 3
* Set time frame for achieving the MOV: need a specifc date to achieve the desired MOV
* Verify and get agreement from project stakeholders
* Summarize the MOV in a clear, concise statement/table
  + 
  + 

# Ch3 Project infrastructure

## Objectives

* Define the project management knowledge area called project integration management and describe its role in project plan development, project plan execution, and overall change control
* Describe the five project management processes and hwo they support each phase of the project life cycle
* Understand product oriented processes and how they are used to implement the systems development life cycle
* Develop a project charter and describe its relationship to the project plan
* Identify the steps in the project planning framework introduced in this chapter and describe how this framework links the project’s measurable organizational value to the project’s scope, schedule and budget

## Introduction

* The first phase of the IT project management methodology focuses on conceptualizing and initializing the project, and producing and delivering a business case which defines the proejct’s goal and value to the organization and includes an analysis and feasibility of several alternatives
  + The basic question: what is the value of the project to the organization?
* Project integration management: coordinates the other eight knowledge areas and all of the project management processes throughout the project life cycle
  + Includes characteristics of unification, consolidation, articulation, and integrative actions that are crucial to project completion, successfully managing stakeholder expectations, and meeting requirements
  + Making choices about resource allocation
  + Making trade-offs among competing objectives and alterantives
  + Managing the interdependencies among the project management knowledge areas
  + Integration is the job of the project manager
* Six processes for project integration management
  + Develop project charter is a document that formally authorizes the project and gives specific authority to the project manager to apply organizational resources to the project tasks/activities. A project cannot be started without a project chater
    - Includes: SOW (statement of work, i.e. deliverables)
  + Develop the project management plan: a document that details how the project will be executed, monitored, controlled, and closed; it is the day-to-day tool that outlines how the project goal and objectives will be met
    - All subsidiary plans (e.g. scope management plan, risk management plan, communications plan are integrated into the project management plan)
  + Direct and manage project execution: the project manager accomplishes the project management plan by integrating all of the project processes into one coordinated effort
  + Monitor and control project work: corrective actions may be necessary to ensure the execution of the process, effort and resources are utilized appropriately
  + Perform integrated change control: change control processes must be in place so that all proposed changes can be documented, reviewed, and decided upon, then corrective, preventive, or defect repairs can be made effectively and efficiently
    - In most circumstances, proposed changes will impact the project’s scope, schedule, budget, and quality objectives
    - All changes should be incorporated in the project management plan
  + Close project/phase: includes both administrative and contract closure procedures to ensure that closure is brought to the project/phase
    - Whether the project/phase ends as planned/prematurely, it should be closed out using the close project process

## Project management processes

* Process: a set of interrelated actions and activities performed to achieve a pre-specified product, result, or service.
  + i.e. something you do to achieve a result
* project management processes: help initiate, plan, execute, monitor and control, and close a project as well as interact with the project management knowledge areas
* product-oriented processes: specify and create the project’s product; all of the processes required to design, build, test, document, and implement an application system

## project management process groups

* five process groups define appropriate processes for managing the project by function/the kind of work that needs to be done
* initiating: signals the beginning of the project/phase
* planning: planning of the entire project and each individual phase; e.g. scope planning, activity planning, resource planning, cost estimating, schedule estimating, and procurement planning
  + planning is often an iterative process
* executing: once a project phase has been approved and planned, the executing process group focuses on integrating people and resources to carry out the planned activities of the project plan/phase
* monitoring and controlling: allows for managing and measuring progress toward the project’s MOV and scope, schedule, budget, and quality objectives.
  + Allows for the project manager to measure and keep an eye on project variances between actual and planned results so that appropriate corrective actions can e taken when necessary
* Closing: provides a set of processes for formally accepting the project’s product, service, or end result so that the project or phase can be brought to an orderly close, and includes processes for evaluating the project in terms of whether it achieved its MOV

## Product-oriented processes

* Are needed to define and create a product, service, or information system, and define how the systems development life cycle (SDLC) will be implemented

## Implementing SDLC

* Structured approach to systems development:
  + Waterfall method: simple and disciplined method that follows the SDLC closely in a very sequential and structured way. Works best when the design/development does not change much
    - Define requirements
    - Design
    - Build
    - Test
    - Implement
    - Maintenance
* Iterative systems development
  + RAD: Rapid applications development: compress the anlaysis, design, build, and test activities of the SDLC into a series of short iterations or development cycles.
    - Each cycle implements up to 25% of the requested functionality
  + Prototyping: the user and developer work closely together to develop a partially/fully functional system as soon as possible.
  + Spiral development: breaks up software project into a number of mini-projects that address one/more major risks until all the risks have been addressed
    - The basic idea is to begin development of a system on a small scale where risks can be identified, and once identified, the team develops a plan for addressing these risks
  + Agile systems development:
    - SCRUM:
    - DSDM: dynamic systems development method
    - ASD: Adaptive software development
    - XP: eXtreme programming: the system is transferred to the users in a series of versions called releases
      * The user requirements are first documented as a user story
      * User stories are then documented using an object oriented model called a class diagram
      * A set of acceptance tests is then developed for each story
      * Releases that pass the acceptance tests are then considered complete

## The project charter

* Provides a governance framework for carrying out or executing the IT project.
* Serves as an agreement/contract between the project sponsor and project team – documenting the project’s MOV, defining its infrastructure, and summarizing the project plan details, defining roles and responsibilities, showing project commitments, and explaining project control mechanisms
  + Documenting the project’s MOV: the MOV must be cast in stone and must not change
  + Defining the project infrastructure: defines al lthe people, resources, technology, methods, project management processes, knowledge areas that are required to support the project
  + Summarize the details of the project plan: the project charter should summarize the scope, schedule, budget, quality objectives, deliverables, and milestones of the project
  + Defining roles and responsibilities: identify the project sponsor, project manager, project team, and when and how they will be involved throughout the project life cycle, also specifying the lines of reporting and who will be responsible for specific decisions
  + Showing explicit commitment to the project: detail the resources to be provided by the project sponsor and specify clearly who will take ownership of the project’s product once the project is completed
  + Setting out project control mechanisms: should outline a process for requesting and responding to proposed changes
* The project charter and the project plan should be developed together
  + The details of the project plan need to be summarized in the project charter
  + The infrastructure outlined in the project charter will influence the estimates used in developing the project plan

## Project charter outline

* Project identification: a unique name/way to identify the project
* Project stakeholders: specifically name the project sponsor and the project manager, reduces the likelihood of confusion when determining who will take ownership of the project’s product and who will be the leader of the project; who is on the project team? What are their titles? What are their roles? What is the reporting structure?
* Project description: describe the project to help someone unfamiliar with the project understand the details, and the larger picture
* Measurable Organizational Value: duh
* Project scope: what will be produced and delivered by the project team, and also what will not be delivered or produced
  + The project scope can be equal to the statement of work
* Project schedule: details of the project schedule will be sourced from the project plan; summarize the plan with respect to the expected start and completion dates for the project, as well as major deliverables, milestones, and phases
* Project budget: highlight the total cost of the project, this is sourced from the project plan
* Quality standards: this should be sourced from the quality management plan
* Resources: specify the resources required and who is responsible for providing those resources, e.g. people, technology, facilities, etc.
* Assumptions and risks: any risks or assumptions should be sourced from the risk management plan
  + Key situations or events that could significantly impac the project’s scope, schedule, or budget
  + Any known constraints that may be imposed by the organization orproject environment
  + Dependencies on other projects internal or external to the organization
  + Impacts on different areas of the organization
  + Any outstanding issues
* Project administration: focuses on the knowledge areas, processes, and controls that will support the project, these are actually separate subplans or strategies that make up the project management plan
  + Communicatinos plan: outlines how the project’s status/progress will be reported to various stakeholders, detailing a process for reporting and resolving significant issues or problems as they arise
  + Scope management plan: describes how changes to the project’s scope will be submitted, logged, and reviewed
  + Quality management plan: details how quality planning, assurance, and control will be supportd throughout the project life cycle, a plan for testing the system should be included
  + Change management and implementation plan: specifies how the project’s product will be integrated into the organizational environment
  + Human resources plan: for staff acquisition and team development
* Acceptance and approval: key stakeholders will need to sign off on the project charter, by signing the document, the project stakeholder shows formal acceptance of the project, and therefore, gives the project manager and team the authority to carry out the project plan
* References: in developing the project charter and plan, the project manager may use a number of references, document these references in order to add credibility to the project charter and plan, as well as to provide a basis for supporting certain processes, practices or estimates
* Terminology: to reduce complexity and confusion, provide a glossary to give meaning to the terms and acronyms used throughout the project that maybe unfamiliar with stakeholders outside of the IT industry

## Project charter template

* Project name
* Project stakeholders: names, titles/roles, phone numbers, email addresses
* Project description: background, description of the challenge/opportunity, overview of the desired impact
* Measurable organizational value (MOV): statement/table format
* Project scope: what will be included in the scope, what will not be included in the scope
* Project schedule summary: start date, end date, timeline of project phases & milestones, project reviews and review dates
* Project budget summary: total project budget, budget broken down by phase
* Quality issues: specific quality requirements
* Resources required: people, technology, facilities, other, resources to be provided (resource, name of resource provider, date to be provided)
* Assumptions & risks: assumptions used to develop estimates, key risks (probability of occurrence, impact), constraints, dependencies on other projects/areas within/outside the organization, assessment of project’s impact on the organization, outstanding issues
* Project administration: communications plan, scope management plan, quality management plan, change management plan, human resources plan, implementation and project closure plan
* Acceptance & approval: names, signatures, dates for approval
* References
* Terminology/glossary
* Appendices (as required)

## Steps for the Project planning framework

* The project planning framework is part of the IT project methodology and provides the steps and processes necessary to develop the detailed project plan that will support the project’s MOV
  + What needs to be done?
  + Who will do the work?
  + When will they do the work?
  + How long will it take?
  + How much will it cost?
* Step 1: The MOV: finalizing the definition of, and agreement on, the project’s measurable organizational value
  + The MOV must provide a direct link to the organization’s strategic mission as well as the project plan, i.e. the MOV is the bridge between the org’s strategic mission and tactical objectives
  + Guides decisions related to scope, schedule, budget, and resources throughout the project’s life cycle
* Step 2: define the project’s scope: make a commitment in terms of time and resources to define the project’s scope in order to estimate the project’s schedule & budget
  + Includes the products/services to be provided by the project & includes all of the project deliverables
  + i.e. it is the work that needs to be completed in order to achieve the project’s MOV
  + Planning: develop a detailed scope statement that defines the work to be included, as well as the work not to be included and is used to guide future project-related decisions and to set stakeholder expectations
  + Definition: the scope must be organized into smaller and more manageable packages of work, these work packages will require resources and time to complete
  + Verification: once the scope has been defined, the project team & stakeholders must verify it to ensure that the work completed will infact support the project in achieving its MOV
  + Change control: controls must be in place to manage proposed changes to the project’s scope; scope changes can either move the project closer to its MOV or result in increased work that drains the project’s budget and exceed its scheduled deadline.
* Step 3: subdivide the project into phases: the work of the project must e organized into phases & subphases in order to complete all of the project’s deliverables
  + Phases: logical stages that organize the project work to reduce complexity and risk; each phase should focus on at least one specific deliverable
  + Deliverable: a tangible & verifiable piece of work
  + Milestone: significant event/achievement that provides evidence that the deliverable, phase, or subphase has been completed and accepted by the project sponsor
* Step 4: tasks > sequence > resources > time:
  + a task is a specific activity/unit of work to be completed
  + sequence: some tasks may be linear (back to back) while others can be parallel (at the same time)
  + resources: e.g. technology, facilities (e.g. meeting rooms), and people; define the cost that is associated with each resources
  + time: it will take a resource a specific amount of time to complete a task
* step 5: schedule & budget, the baseline plan: the detailed project plan is an output of the project planning framework; once the tasks are identified and their sequence, resources required, and time to complete estimated, it is relatively simple to determine the project’s schedule & budget
  + once completed, the project plan should be reviewed by the project manager, the sponsor, and the project team to make sure it is complete, accurate, and most importantly able to achieve the project’s MOV
  + the project plan will likely go through several iterations as new information becomes know or if there are compromises with respect to scope, schedule, and budget
  + Tasks and their sequence, resources, and time should be entered in a project management software (e.g. ms project) and the schedule & budget will automatically be provided
* Step 6: kick-off meeting: once the project charter and the project plan are approved, many organizations have a kick-off meeting to officially start work on the project
  + It brings closure to the planning phase of the project and signals the initiation of the next phase of the IT project methodology
  + A way of communicating to everyone what the project is all about
  + Should be a festive atmosphere in order to energize the stakeholders and get them enthusiastic about working on the project

# Chapter 4: the human side of project management

## Objectives

* Describe the major types of formal organization structures: functional, pure project, and matrix
* Discuss the advantages and disadvantages of the functional, pure project, and matrix organizational structures
* Describe the informal organization
* Develop a stakeholder analysis
* Describe the difference between a work group and a team
* Describe an apply the concept of learning cycles and lessons learned as a basis for knowledge management

## Introduction

* Human resource management: fundamental component for defining and developing the project’s infrastructure;
  + Includes the processes that organize, manage, and lead the project team.
  + The project team is comprised of the people with assigned roels and responsibilities for completing the project
* Human Resource Management Steps
  + Develop Human Resource Plan: focuses on creating staffing management plan that identifies and documents the reporting relationships as well as each team member’s role, responsibility and required skills
  + Acquire project team: confirms that specific human resources will be available to work on the project
  + Develop project team: focuses on the processes to improve the competencies of the project team, their interactions, and the overall team environment
  + Management project team: ensures the tracking of the project team’s performance, providing feedback, resolving interpersonal issues, and managing organizational change

## Organization and project planning

* Functional organization: the traditional organizational form; based upon organizing resources to perform specialized tasks or activities in order to attain the goals of the organization
  + Projects in a functional organization are typically coordinated through customary channels and housed within a particular function
  + Benefits: increased flexibility, breadth and depth of knowledge and experience, less duplication
  + Disadvantage: determining authority and responsibility, poor response time,
* The project organization: polar opposite of the functional organization; supports projects as the dominant form of business;
  + Typically a project organization will support multiple projects at one time and integrate project management tools and techniques throughout the organization
  + Advantages: clear authority and responsibility, improved communication, high level of integration
  + Disadvantages: project isolation, duplication of effort, projectitis
* The matrix organization: in between the functional organization and the project organization; a combination of the vertical functional structure and the horizontal project structure;
  + Balanced matrix organization: the project manager focuses on defining all of the activities of the project, while the functional managers determine how those activities will be carried out
  + Functional matrix organization: project manager focuses on coordinating the project activities, while the functional managers are responsible for completing those activities that are related to their particular area
  + Project matrix organization: project manager has most of the authority and responsibility for defining and completing the project activities, while the functional managers provide guidance and resources, as needed
  + Advantages: high level of integration, improved communication, increased project focus
  + Disadvantages: higher potential for conflict, poorer response time
* Formal organization: the published structure that defines the official lines of authority, responsibilities, and reporting relationships
* The informal organization: how people actually work together, whether or not it truly reflects the formal organization
* Stakeholders: individuals, groups, or even organizations that have a stake, or claim, in the project’s outcome
* Stakeholder analysis: determines who should be involved with the project and understanding the role that they must play
  + Develop a list of stakeholders: include individuals, groups, and organizations that must provide resources to the project or who have an interest in the successful or unsuccessful outcome of the project
  + Next to each stakeholder, identify the stakeholder’s interest in the project by giving the stakeholder a +1 or -1 depending on their interest, use 0 for neutral interest
  + Gauge the amount of influence each stakeholder has over the project, use a scale from 0 to 5 (5 more influence)
  + Assess whether potential conflict among the different stakeholders exist; some stakeholders may resist the organizational change that the IT project requires
  + Define a role for each stakeholder that they play in the project
  + Define an objective for each stakeholder that they will deliver to the project
  + Identify various strategies for each stakeholder, e.g. building, maintaining, improving, or reestablishing relationships

## The project team

* Project manager: assigned to the project at the earliest stages of the project life cycle;
  + Focuses on planning, organizing, and controlling;
  + developing the project plan organizing the project resources, and then overseeing execution of the plan
  + administrative functions: performance reviews, project tracking and reporting, and other general day to day responsibilities
  + selecting and staffing the project: recruiting and assigning people to the project team
  + abilities & skills: ability to communicate with people, ability to deal with people, ability to create and sustain relationships, ability to organize,
* work groups: the traditional approach where a single leader is in control, makes most of the decisions, delegates to subordinates, and monitors the progress of the assigned tasks.
* Teams: a number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable
* Learning cycle theory: describes how people learn
  + Understand and frame the problem
  + Plan: defining what the team is trying to accomplish and how they are going to go about it
  + Act: carrying out the actions defined in the team’s action plan
  + Reflect and learn: the team should meet to share its findings and reflect upon what everyone has learned

## The project environment

* A place to call home
* Technology
* Office supplies
* Culture

# Ch5: defining and managing project and product scope

## Objectives

* Identify the five processes that support project scope management, including collecting requirements, defining scope, create the work breakdown structure (WBS), verify scope, and control scope
* Describe the difference between product scope (i.e. features & functions that must support the IT solution) and project scope (i.e. the deliverables and activities that support the IT project methodology)
* Apply several tools and techniques for defining and managing the project’s scope

## Steps to project scope management

* Collect requirements: define and document the customer, sponsor, or other stakeholders needs and expectations
* Define scope: develop a detailed description of the project and the product, service, or information system the project team will design, build or implement
  + Scope definition: defines what is and is not included in the project work; sets the work boundary for the project and identifies the project deliverables
* Create work breakdown structure (WBS): provides a hierarchical decomposition of all the project’s scope/deliverables; dividing the major project deliverables into smaller and more manageable components
* Verify scope: confirms that the scope is complete and accurate, the project team & sponsor must agree to all of the project deliverables
* Control scope: ensuring that controls (processes) are in place to manage proposed scope changes once the project’s scope is accepted; these procedures must be communicated and understood by all project stakeholders
* Scope management plan: the previous steps for defining and managing scope make up the scope management plan; this can be a separate document or summarized in the project charter

## Scope planning

* After the project is formally accepted and funds are committed to developing the project charter & plan, the project manager and team will then develop a scope management plan
* Scope planning: process for defining and documenting the project work, defining all the work, activities, and deliverables that the project team must provide in order for the project to achieve its MOV
  + Scope boundary: the first step to establish what is, and what is not, part of the project work to be completed by the project team
  + Statement of Work (SOW): narrative description of the product, service, or information system;
    - Internal SOW: should tie together the business need with the specific requirements or expectation of the project
    - External SOW: includes specifications, quantities, quality standards, or performance requirements that can be sent to prospective bidders
  + The Scope Statement: documents the project sponsor’s needs and expectations;

## Project Scope Definition

* Scope definition: defined in terms of the deliverables that the tea must provide; should be divided into project-oriented deliverables and product-oriented deliverables
* Project-oriented scope: support te project management and IT develop processes that are defined in the IT project methodology (ITPM)
  + Includes: business case, project charter, and project plan and defines the work products of the various ITPM phases, current systems study, requirements definition, and the documented design of the information nssytem
  + Role is to ensure that the project processes are being completed so that the project’s product achieves the project’s MOV and objectives
  + Deliverable Definition table: DDT: defines all of the project-oriented deliverables to e provided by the project team, each deliverable should have a clear purpose
    - Deliverable structure chart: DSC: after the DDT is finished, the DSC can be developed as an interim step to define detailed work packages that will be used to estimate the project schedule and budget, and will be used later on to create a work breakdown structure (WBS)
* Product-oriented scope: focuses on identifying the features and functionality of the product/system to be implemented
  + Context Level Data flow diagram: DFD: a process model that represents a high-level representation of the system that has one process and depicts all the inflows and outflows of data and information between the system and its external entities
    - External entities: e.g. people, departments, or other systems that provide/receive flows of data
  + Use case diagram: provides a high level model for defining, verifying, and reaching agreement upon the product scope
    - Used to identifying the main functions/features of the system and the different users/external systems that interact with the system
    - Actors: people or external systems that interact, or use, the system think of actors in terms of roles
    - Use case: depicts the major functions the system must perform for an actor(s)
    - JAD: joint application development session: a group based method where the users and systems analysts jointly defne the system requirements or design the system

## Project scope verification

* The scope management process that provides a mechanism for ensuring that the project deliverables are completed according to the standards described in the DDT.
* Scope verification checklist
  + Is the project’s MOV clearly defined and agreed upon?
  + Are the deliverables tangible and verifiable?
  + Do the deliverables support the MOV?
  + Are controls in place to ensure that the work was completed to standards & best practices
  + Are milestones defined for each deliverable? Milestones indicate the deliverable was completed, reviewed, and accepted
  + Are all stakeholders clear in their expectations, and did they all accept the project’s scope definition?

## Scope change control

* Is concerned with managing actual changes to the project’s scope as and when they occur, to ensure that any changes to the project’s scope will be beneficial
* Scope grope: metaphor that describes a project team’s inability to define the project’s scope; common in the early stages of the project
  + Minimize scope grope by having a clearly defined MOV
* Scope creep: increasing featurism, adding small yet time and resource consuming features to the project after the scope of the project has been approved

## Ch6: the work breakdown structure and project estimation

## Objectives

* Develop a work breakdown structure
* Describe the difference between a deliverable and a milestone
* Describe and apply several project estimation methods, e.g. Delphie technique, time boxing, top-down estimation, and bottom-up estimation
* Describe and apply several software engineering estimation approaches, e.g. lines of Code (LOC), function point analysis, COCOMO, and heuristics

## Introduction

* Project time management: focuses on the processes necessary to develop the project schedule and to ensure that the project is completed on time
  + Define activities: identifying what activities must be completed to produce the project scope deliverables
  + Sequence activities: determining whether activities can be completed sequentially or in parallel and any dependencies that may exist among them
  + Estimate activity resources: identifying the type of resources (people, technology, facilities, etc) and the quantity of resources needed to carry out project activities
  + Estimate activity durations: estimating the time to complete each activity
  + Develop schedule: based on the availability of resources, the activities, their sequence, and time estimates, a schedule for the entire budget can be developed
  + Control schedule: ensuring that proper processes and procedures are in place in order to control changes to the project schedule
* Activity definition and activity estimation are required inputs for developing the project network model that will determine the project’s schedule and budget
* WBS: work breakdown structure: provides a hierarchical structure that outlines the activities or work that needs to be done in order to complete the project scope
  + Also provides a bridge/link between the project’s scope and the detailed project plan that will be entered into a project management software package

## The work breakdown structure (WBS)

* Once the project’s scope is defined, the next step is to define the activities or tasks the project team must undertake to fulfill the scope deliverable requirements (i.e. work breakdown structure)
* WBS: represents a logical decomposition of the work to be performed and focuses on how the product, service, or result is naturally subdivided. It is an outline of what work is to be performed
  + Provides a framework for developing a tactical plan to structure the project work
  + The total scope of the project is divided and subdivided into specific deliverables that can be more easily managed; this includes both product and project-oriented deliverables
  + i.e. it provides an outline for ALL of the work the project team will perform
* Work packages: are the subdivisions of the project; smaller components and more management units of work
  + Provide a logical basis for defining the project activities and assigning resources to those activities so that all the project work is identified
  + A work package starts with the project itself, the project is then decomposed into multiple phases, each phase having one/more deliverables as defined in the deliverable definition table and deliverable structure chart, each deliverable should produce a tangible and verifiable piece of work, which is then decomposed into one/more activities or tasks that are verifiable pieces of work

## Deliverables & milestones

* Milestone: a significant event/achievement that provides evidence that the deliverable has been completed or that a phase is formally over
  + Focuses on an achievement, which can be multiple deliverables
* Deliverables: e.g. presentations, reports, plans, prototypes, final product/system
* Crux: the testing of an idea, concept, or technology that is crucial to the project’s success

## Developing the WBS

* DSC: defines the phases and deliverables for the project.
* Subdivide each deliverable in the DSC (deliverable structure chart) into the activities & and tasks that represent a verifiable product, service, or result; this can take many iterations to come to team concensus
  + This can take the form of single statement sentences,
  + “do x”, “then do y”
* WBS Guidelines
  + WBS should be deliverable oriented
  + WBS should support the project’s MOV
  + The level of detail should support planning and control
  + Development of the WBS should involve the people who will be doing the work

## Project estimation

* After the WBS has been completed, the next step in developing the project schedule and budget is to estimate each activity’s duration.
* Guesstimating: guessing at the estimates
* Delphi technique: multiple experts arrive at a consensus on a particular subject/issue.
  + Several experts are recruited to estimate the same item, if estimates are close, then they are averaged
  + If estimates are not close, successive rounds of estimating take place until each experts delivers a close estimate that can be estimated
* Time boxing a box of time is allocated for a specific activity or task; usually based on a requirement that guess work
* Top-down estimating: estimating the schedule and/or cost of the entire project in terms of how long it should take or how much it should cost;
  + Common when receiving a mandate from upper management “this project should not take more than six months nor cost more than 500k”
* Bottom-up estimating: dividing the project into smaller modules and then directly estimating the time and effort in terms of person-hours, person-weeks, or person-months for each module
  + The WBS provides the basis for bottom up estimating because all of the project phases and activities are defined
* LOC: counting the lines of a code in a program
* Heuristics: rules of thumb; relies on the fact that the same basic activities will be required for atypical software development project and these activities will require a predictable % of the overall effort

## COCOMO

* constructive cost model; based on LOC estimates, it is used to estimate cost, effort, and schedule.
* Convert your function points to LOC
* Determine the type of project
  + Organic: routine projects where the technology, processes, and people are expected to work together smoothly
  + Embedded: a challenging project
  + Semi-detached: between organic and embedded projects
* Determine the number of person-months (152 hours) it will take
  + Organic: 2.4 \* KDSO^1.05
  + Semi-detached: 3.0 \* KDSI^1.12
  + Embedded: 3.6\*KDSI^1.2
    - KDSI: thousands of delivered source instructions, i.e. LOC
    - The result is in # of person months
* Determine the duration of the project
  + Organic 2.5 \* Effort^0.38
  + Semi-Detached: 2.5 \* Effort ^0.35
  + Embedded: 2.5 8 Effort^ 0.32
    - Effort = # of person-months
    - The result is in # of months
* Determine the number of people required
  + Effort / Duration
  + i.e. Total person months / total # of months

## Steps in function point analysis

* Function points: a synthetic metric, similar to hours, kilos, tons, etc., focuses on the functionality and complexity of an application system or a particular module
  + Count the # of functions that is involved with the project
* Internal Logical File: ILF: stores data within the application boundary
  + E.g., each entity in an Entity-relationship diagram (ERD) would be considered an ILF
* External Interface File: EIF: a file maintained by another application system
* External Input: EI: processes or transactional data that originate outside the application and cross the application boundary from outside to inside
  + E.g. a touchscreen that accepts user input, keyboard, ouse,
* External Output EO: process or transaction that allows data to exit the application boundary
  + E.g. reports, confirmation messages, derived or calculated totals, graphs/charts, etc.
* External Inquiry: EQ: process or transaction that includes a combination of inputs and outputs for retrieving data from either the internal files or from files external to the application; EQs do not update/change any data stored in a file, but they read this information
* Calculate UAF: Value Adjustment Factor: based on the degrees of influence, i.e. Processing Complexity Adjustment (PCA), is derived from the fourteen general systems characteristics (GSC)

## Software engineering metrics and approaches

* Software engineering: focuses on the processes, tools, and methods for developing a quality approach to developing software
* Metrics: the basis for software engineering and refers to a broad range of measurements for objectively evaluating computer software

# Chapter 2 notes;

* Kill points: points at which your project are killed if not successful
* Fast tracking: a short cut for project managers to shorten the duration of projects by making tasks go parallel

# Chapter 7: the project schedule & budget

## Objectives

* Describe the project management body of knowledge (PMBOK) area called project cost management
* Develop a gantt chart
* Develop a project network diagram using a technique called activity on the node (AON) technique
* Identify a project’s critical path and explain why it must be controlled and managed
* Develop a PERT diagram
* Describe the concept of precedence diagramming and identify finish-to-start, start-to-start, finish-to-finish, and start-to-finish activity relationships
* Describe the concept of critical chain project management (CCPM)
* Describe the various types of costs that make up the project’s budget
* Define what is meant by the baseline project plan

## Introduction

* Project cost management: focuses on the processes, procedures, and techniques to develop and manage the project budget
  + Estimate costs: focuses on the processes to estimate the monetary resources needed to complete the project work or activities
  + Determine budget: aggregating the individual cost for each of the project activities or work package components to determine the cost baseline or overall project budget
  + Control costs: updating the project’s status while monitoring the project’s budget and managing any changes to the baseline plan
* Gantt Charts: a visual representation that compares a project’s planned activities with actual progress over time
  + Time estimates for the tasks/activities defined in the WBS are represented using a bar across a horizontal time axis
  + Depicts the general sequence of activities or work tasks
* Project network diagrams: tools for planning, scheduling, and monitoring the project’s progress
  + Use the WBS as a basis
* AON: activity on the node: an activity/task focusing on producing a specific project deliverable
  + AON is a project networking tool that graphically represents all of the project activities and tasks, as well as their logical sequence and dependencies
* AON Steps
  + Complete the WBS, and assign time estimates to each task/activity
  + For each task/activity, determine which are predecessors, successors, or parallel
    - Predecessors: activites that must be completed before another activity can be started
    - Parallel: activities that can be worked on at the same time as another activity
    - Successors: activities that must follow a particular activity in some type of sequence
  + Create an activity on the node network diagram
  + Critical path analysis: define the critical path; the longest path in the project network and is also the shortest time in which the project can be completed
    - The critical path has 0 slack/float: the amount of time an activity can be delayed before it delays the project
    - Expedite/crash the project: add additional resources to an activity on the critical path in order to shorten the project duration
    - Fast tracking the project: find parallel activity opportunities can shorten the critical path
* PERT: program evaluation and review technique; uses the project network diagramming technique to create a visual representation of the scheduled activities that expresses both their logical sequence and interrelationships and uses statistical distribution that provides probability for estimating when the project and its associated activities will be completed using 3 estimates for each activity (optimistic, most likely, pessimistic)
  + Optimistic estimate: the minimum time in which an activity or task can be completed, i.e. best-case scenario where everything goes well
  + Most likely estimate: the normally expected time required to complete the task/activity
  + Pessimistic estimate: worse-case scenario and is viewed as the maximum time in which an activity can or should be completed
  + Activity estimate = (optimistic time + (4 x most likely time) + pessimistic time) / 6
  + Total expected time of project: sum of activity estimates
* Precedence diagramming method: PDM: based on 4 fundamental relationships
  + Finish to start: FS: activity B cannot begin until activity A is completed
  + Start to start: SS: two tasks can/must start at the same time (But can have different durations)
  + Finish to finish two activities can start at different times, have different durations, but are planned to be complete at the same time; once both activities are completed, the next set of activities can be started
  + Start to finish: SF: task A cannot end until task B starts (e.g. one activity cannot end until another activity begins)
* lead time: allows for overlapping activities,
* lag time: ?
* critical chain project management (CCPM): based on the idea that people often ifnlat/add cushioning to their time estimates in order to give themselves a form of safety to compensate for uncertainty;
  + instead of adding safety to each task, put that safety in the form of ‘buffers’ where needed most
  + feeding buffers
  + resource buffers
  + end of project buffers
* resource contention: when you assign more than one task to a resource, thus delaying the completion of both projects
* rolling wave planning: instead of developing a large, detailed project plan requiring frequent updates, the project manager can prepare an overall summary plan, or master schedule, and then develop detailed schedules for only a few weeks or a few months at a time

## developing the project budget

* project budget: is a function of the project’s tasks/activities, the duration of those tasks and activities, their sequence, and the resources required.
* Cost estimation steps:
  + Define what resources will be needed to perform the work
  + Determine the quantity of resources that are needed
  + Define the cost of using each resource
  + Calculate the cost of the task/activity
  + Ensure that the resources are leveled (i.e. not over allocated)
* Cost of task: estimated duration \* true cost of the resource
* Direct costs: the cost of labor for using a resource
* Indirect costs: e.g. rent, utilities, insurance, and administrative costs.
* Sunk costs: costs that have been incurred prior to the current project
* Learning curve: time and effort to learn best practices
* Reserves: provide a cushion when unexpected situations arise
* Contingency reserves: based on risk and provide the project manager with a degree of flexibility

# Chapter 8 managing project risk

## Objectives

* Describe the project risk management planning framework introduced in this chapter
* Define risk identification and the causes, effects ,and the integrative nature of project risks
* Apply several qualitative and quantitative analysis techniques that can be used to prioritize and analyze various project risks
* Describe the various risk strategies, e.g. insurance, avoidance, or mitigation
* Describe risk monitoring and control
* Describe risk evaluation in terms of how the entire risk management process should be evaluated in order to learn from experience and to identify best practices

## Introduction

* Mistakes in managing risk
  + Not understanding the benefits of risk management
  + Not providing adequate time for risk management
  + Not identifying and assessing risk using a standardized approach
* Aspects of successful risk management
  + Commitment by all stakeholders
  + Stakeholder responsibility
  + Understanding there are different risks for different types of projects
* Steps to risk management
  + Plan risk management: determine how to approach and plan the project risk management activities
  + Identify risks: deciding which risks can impact the project, in terms of risks to goal, scope, schedule, budget, and quality objectives
  + Perform qualitative risk analysis: focusing on qualitative analysis concerning the impact and likelihood of the risks that were identified
  + Perform quantitative risk analysis: using a quantitative approach for developing a probabilistic model for understanding and responding to the risks identified
  + Plan risk responses: developing procedures and techniques to reduce the threats of risks, while enhancing the likelihood of opportunities
  + Monitor and control risks: providing an early warning system to monitor identified risks and any new risks

## Step 1: Risk management planning processes

* Project risk: an uncertain event/condition that, if it occurs, has a positive or negative effect on the project objectives
  + Uncertainty: stems for attempting to predict the future based on estimates, assumptions, and limited information
* Project risk management: the processes of conducting risk management planning, identification, analysis, response planning, and monitoring and control on a project; this is very iterative and happens throughout the project
  + Objectives: to increase the probability and impact of positive events, and decrease the probability and impact of events adverse to the project
* Risk planning: get 100% commitment from stakeholders, ensure resources are in place to plan properly for and manage the risks
  + Resources: time, people, technology
  + Commitment: in identifying, analyzing, and responding to threats and opportunities
* Risk identification: identify the various risks to the project; both threats and opportunities must be identified
  + Threats: be sure to identify the problem, and not the system of the problem; the causes & effects of the risks must be clearly identified
* Risk assessment: analyze the risks; provides a basis for understanding how to deal with the risks
  + What is the likelihood of a particular risk occurring?
  + What is the impact on the project if it does occur?
* Risk strategies: determine how to deal with the various project risks; triggers/flags in the form of metrics should be identified to draw attention to a particular risk when it occurs. The output of this step becomes the basis of the ‘risk response plan’
  + Negative risks:
    - Accept or ignore the risk?
    - Avoid the risk completely?
    - Reduce the likelihood or impact (or both)of the risk if the risk occurs
    - Transfer the risk to someone else (i.e. insurance)
  + Positive risks (i.e. opportunities)
    - Exploitation
    - Sharing ownership
    - Enhancement of the probability of the impact/probability of the positive event
    - Accept and take advantage
* Risk monitoring and control: scan the project environment so that both identified and unidentified threats and opportunities can be followed; risk owners should monitor the various risk triggers so that well informed decisions and appropriate actions can take place
* Risk response: the risk owner must commit resources and take action once a risk threat/opportunity is made known.
* Risk evaluation: a formal documented evaluation of a risk episode provides the basis for lessons learned and lays the foundation for identifying best practices
  + How did we do?
  + What can we do better next time?
  + What lessons did we learn?
  + What best practices can be incorporated into the risk management process

## Step 2: Identifying project risks

* Identifying and creating a list of threats and opportunities that may impact the project’s goal and/or objectives
* Framework:
  + Core: the MOV, is the goal of the project defines the measurable value the organization expects from the project,
  + Next layer: the project objectives in terms of scope, quality, schedule, and budget
  + Next layer: project risk, in terms of the stakeholders, legal considerations, processes (project and product), the environment, technology, the organization, the product, and a catchall category ‘other’
  + Next layer: whether the sources of risk are internal or external to the project; the project owner is responsible for all risks internal to the project
  + Next layer: three different types of risks
    - Known risks: events that are going to occur:
    - Known-unknown risks: are of identifiable uncertainty
    - Unknown-unknown risks
  + Next layer: provides a time element in terms of the project lie cycle; determine/identify when risks may occur,
* Tools to identify risks:
  + Learning cycles: determining what you know, assumptions, and things to research
  + Brainstorming: use the risk framework and the WBS to identify risks starting with the phases of the project life cycle, and working toward the framework’s core or MOV or working from the MOV outward toward the project phases
  + Nominal group technique: NGT:
    - Each individual writes their ideas on a piece of paper
    - The group aggregates and discusses all of the identified risks/opportunities
    - Each group member ranks the risks
    - The group then averages the risks
  + Delphi technique: a group of experts are assembled and asked to identify potential risks
  + Interviewing: interview various project stakeholders, users, sponsors, etc.

## Step 3: risk analysis and assessment

* Risk analysis: determines each identified risk’s probability and impact on the project
* Risk assessment: focuses on prioritizing risks so that an effective risk strategy can be formulated; i.e. which risks require a response?
* Qualitative approaches: focuses on subjective analysis of risks based upon project stakeholder’s experience or judgment
  + Expected value: an average/mean that takes into account both the probability and impact of various events or outcomes
    - Create a payoff table
  + Decision trees: provides a visual/graphical view of various decisions and outcomes
  + Risk impact table: used to analyze and prioritize various project risks.
* Quantitative approaches: mathematical/statistical techniques that allow you to model a particular risk situation
  + Discrete probability distributions: use only integer or whole numbers; e.g. flipping a coin would allow for only two outcomes (heads or tails); output is a binomial probability distribution
  + Continuous probability distributions: useful for developing risk analysis models when an event has an infinite number of possible values within a stated range, output can be a normal distribution, PERT distribution, and triangular distribution
    - Normal distribution: the shape id determined by its mean and standard deviation; probability is associated wit the area under the curve; about 68% of all the values will fall between 1 standard deviation of the mean; about 95% of all values will fall between 2 standard deviations of the mean; about 99 % of all the values will fall between 3 standard deviations of the mean
    - PERT distribution: find a probability by calculating the area under the curve:
      * A = an optimistic estimate
      * B = a most likely estimate
      * C = a pessimistic estimate
      * The mean: (a + 4b + c ) / 6
      * Standard deviation: (c – a ) / 6
    - Triangular distribution: TRIANG: uses a three point system
      * A = optimistic estimate
      * B = most likely estimate
      * C = pessimistic estimate
      * Mean: (a + b + c ) / 3
      * Standard deviation: ((c-a\_^2 + (b-a)(b-c) / 18)^1/2
  + Simulations: pick a random sample and study it
  + Monte carlo simulation: randomly generates specific values for a variable with a specific probability distribution; the simulation goes through a specific number of iterations or trials and records the outcome, e.g. flipping a coin 500 times to estimate the likely of Heads
  + Tornado graph summarizes the tasks, with the most significant risks at the top, and allows you to compare the magnitudes of impact for each of the tasks by comparing the size of each bar

## Step 4: risk strategies

* Risk strategy depends on:
  + The nature of the risk itself: is it a threat/opportunity?
  + The impact of the risk on the project’s MOV and objectives
  + The project’s constraints in terms of scope, schedule, budget, and quality requirements
  + Risk tolerances or preferences of the various stakeholders
* Opportunity strategies:
  + Exploitation: attempt to take advantage of the situation to ensure the opportunity is realized
  + Sharing of ownership: the opportunity may be shared with another party who can better capture the benefit of the positive event
  + Enhancement: attempts to increase the probability/impact of the opportunity
  + Acceptance: have an open mind so that they can take advantage of an opportunity should it arise without actively pursuing it
* Threat strategies:
  + Accept or ignore: passive approach, take no action but accept that it has occurred
  + Avoidance: taking steps to avoid the risk altogether
  + Mitigate: focuses on lessening the probability and/or impact of the threat if it does occur
  + Transfer: transferring ownership of the risk to someone else, e.g. purchasing insurance or subcontracting a portion of the project work to someone who may have more knowledge or expertise
* Management reserves: resources that are controlled and released by senior management at its discretion
* Contingency reserves: controlled and released within specific guidelines by the project manager when a particular risk occurs
* Contingency plans: i.e. Plan B; a plan that can be initiated in the event a particular risk occurs
* Risk response plan:
  + The project risk
  + The trigger that flags whether the risk has occurred
  + The owner of the risk: i.e. the person/group responsible for monitoring the risk and ensuring that the appropriate risk response is carried out
  + The risk response based on one of the four basic risk strategies

## Step 5: risk monitoring and control

* Risk monitoring and control focuses on metrics that help identify when a risk occurs, and communicating its occurrence to stakeholders
* Tools for monitoring & controlling risk:
  + Risk audits: focuses on ensuring that the project manager and team have done a good job of identifying and analyzing project risks and on ensuring that proper procedures and processes are in place; should be conducted by people outside the project team
  + Risk reviews: conducted internally by the project team; should be part of each team meeting and part of the project team’s learning cycles
  + Risk status meetings and reports: provides a formal communication system for monitoring and controlling project risks

## Step 6: risk response and evaluation

* This section was wack

# Ch 9: Project communication, tracking and reporting

## Objectives

* Identify an describe the processes associated with the project management body of knowledge (PMBOK) area called project communications management, which includes identifying stakeholders, plan communications, distribution information, manage stakeholder expectations, and performance reporting
* Describe several types of reporting tools that support the communications plan
* Apply the concept of earned value and discuss how earned value provides a means of tracking and monitoring a project’s scope, schedule, and budget
* Describe how information may be distributed to the project stakeholders and the role information technology plays to support project communication

## Steps to project communications management

* Identify stakeholders: includes the process of identifying people or organizations that have a positive/negative interest in the project’s outcome
* Plan communications: a stakeholder analysis provides a basis for identifying the various stakeholders as well as their interest, influence, and project role
* Distribute information: focuses on getting the right information to the right stakeholders in the right format
* Manage stakeholder expectations: ensuring that clear, consistent, and timely communication satisfies the information needs and that any project stakeholder issues are resolved
* Report performance: focuses on the collection and dissemination of project information to the various project stakeholders, i.e. status, progress, and forecast reports

## Monitoring and controlling the project

* Project plan: acts as an anchor, allowing the project manager to guage the project’s performance against planned expectations
* Project control: ensures that processes and resources are in place to help the project manager monitor the project

## The communications plan:

* Can be formal/informal, and depends on the needs of the project stakeholders and the size of the project
* Steps:
  + Identify the various stakeholders of the project
  + Determine what information each needs
  + How will each stakeholder’s information needs be met
  + When can a stakeholder expect to receive this information
  + How will this information be received
* Stakeholders: communication requires a sender, a message, and a receiver; stakeholders are individuals/groups who have a stake/claim in the project’s outcome and, therefore, are the receivers of the project information we send
* Information requirements: a diverse group pf stakeholders will result in diverse information requirements
  + Send the information to each stakeholder in the format they require
  + Type of report/metric: a specific report/reporting mechanism can be identified based on the information the stakeholder requires
  + Timings/availabilities: the timing an availability of the reports set expectations for the stakeholder, determine when they want, and communicate a realistic expectation of when they will actually receive it
  + Medium/format: the medium/format defines how the information will be provided, e.g. paper reports, face to face, electronic files, email, or some other electronic format (e.g. the web)

## Project metrics

* Project metrics should focus on the following key areas: scope, schedule, budget, resources, quality, risk
* Project metric: a qualitative measurement of some attribute of the project, and should be obtained from observable, quantifiable data
  + Understandable: should be intuitive and easy to understand
  + Quantifiable: i.e. objective, should have little bias as a result of personal influence or subjectivity
  + Cost effective: data must be collected in order to produce a metric, and relatively easy and inexpensive to create
  + Proven: should be meaningful, accurate, and have a high degree of validity
  + High impact: why measure something that has little impact on the project?

## Earned value

* Planned value: PV: is the planned/budgeted cost of work scheduled for an activity/component of the WBS
* BAC: budget at completion: the total planned cost of the project
* Actual cost: AC: the total cost incurred for completing a scheduled task/WBS component
* Earned value: EV: a performance measurement that tells you how much of the budget you really should have spent for the work completed so far
  + A WBS component’s planned/estimated cost
* Cost Variance: CV: Earned Value – Actual Cost
  + The difference between a WBS component’s planed/estimated cost and its actual cost
  + Negative numbers indicates that the project is over budget
    - You may have to increase the budget/reduce scope to get the project back on track
  + Positive numbers indicate the project is under budget
* Schedule variance: SV: shows the difference between the current progress of the project and its original/planned schedule
  + Earned Value – Planned Value
  + Negative numbers indicate the project is behind schedule
* Cost Performance Index: CPI: Earned Value / Actual Cost
  + Reflects the cost and schedule performance of a project and is used as a basis for predicting the outcome
  + A CPI of X tells you for every $1 spent so far, only X was really being completed
  + A CPI greater than 1 indicates that we are ahead of our planned budget
  + A CPI of less than 1 indicates we are encountering a cost overrun
* Schedule Performance Index : SPI: Earned Value / Planned Value
  + A schedule efficiency metric
  + For every $1 of work that was expected to be completed, X was actually completed
  + An SPI greater than 1 indicates the project is ahead of schedule
  + Less than 1 indicates the project is behind schedule
* Expected Time Complete: ETC: provides an estimate for completing the scheduled work that remains
  + (BAC – Cumulative EV to date) / Cumulative CPI
  + We will need at least X to complete the remainder of the project
* Estimated at completion: EAC: for typical variances
  + Cumulative AC + (BAC – Cumulative EV) / Cumulative CPI
  + If things continue as they are, our total project budget will be X
* Estimated At Completion: EAC: for non-typical work variances
  + Cumulative AC + BAC – Cumulative EV
  + If things continue as they are, our total project budget will be X
  + Use both the typical & non-typical formulas to get a spread (our total project budget will be from X to X)

## Reporting performance & progress

* Reviews: projects reviews are meetings that include various project stakeholders, focus on specific deliverables, milestones, or phases. The purpose of the review is to show evidence that the project work has been completed to standards/agreed-upon requirements
* Status reporting: describes the present state of the project, comparing the project’s actual progress to the baseline plan; is analogous to a balance sheet used by accountants; should include variance analysis
* Progress Reporting: what project team has accomplished compares the activities that were completed to the activities outlined in the project charter
  + Burn down chart: show how the scope, features, or functionality, or work is being completed over time
* Forecast reporting: focuses on predicting the future status or progress of the project, e.g. via a trend analysis

## Information distribution

* Face to face meetings
* Telephone, electronic mail, other wireless devices
* Collaboration technology

# Ch 10: Project Quality Management

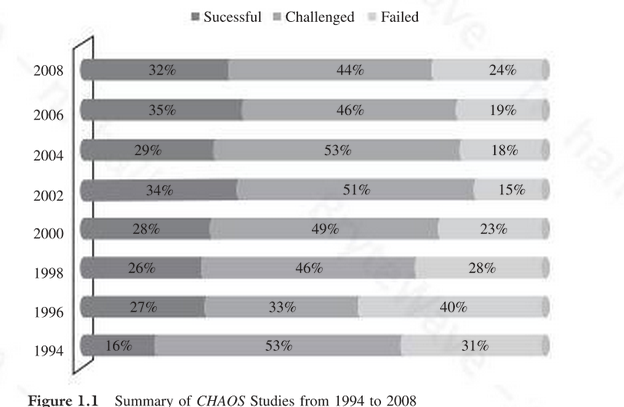
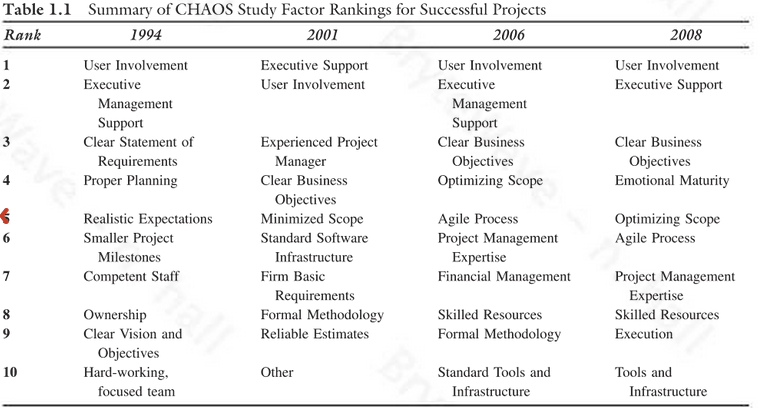
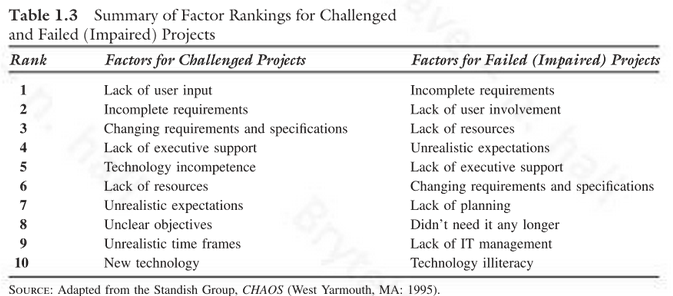
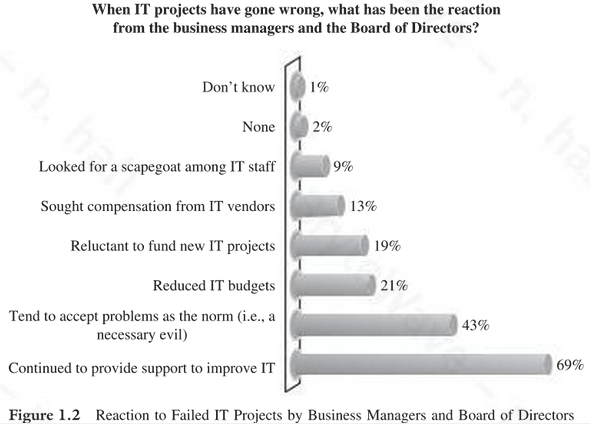
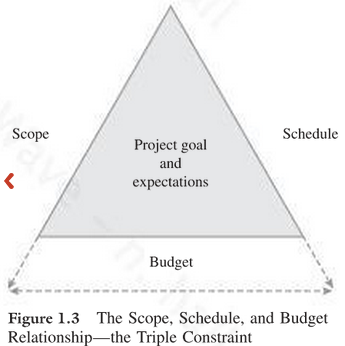
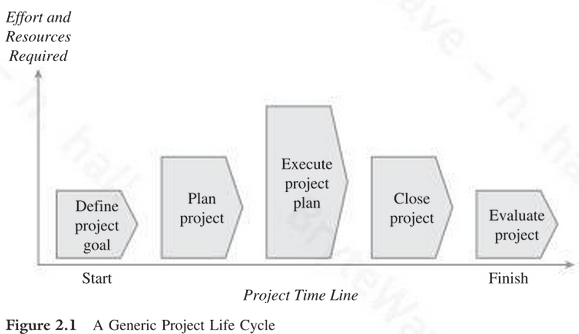
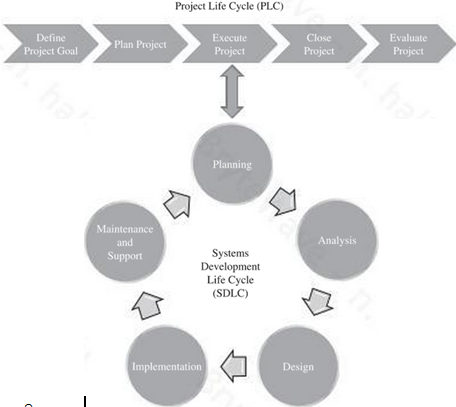
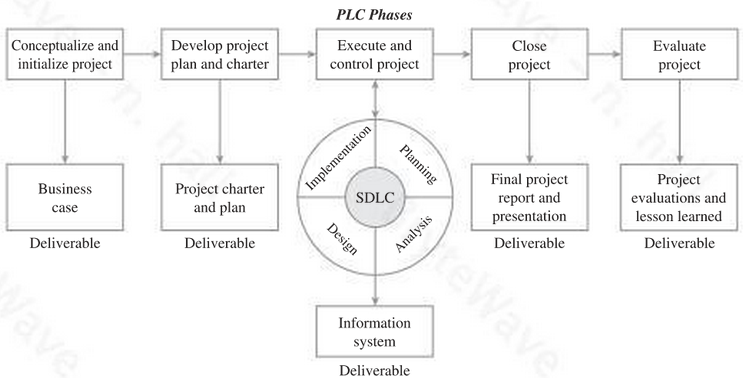
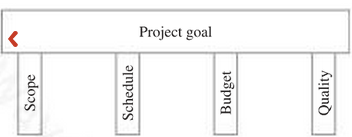
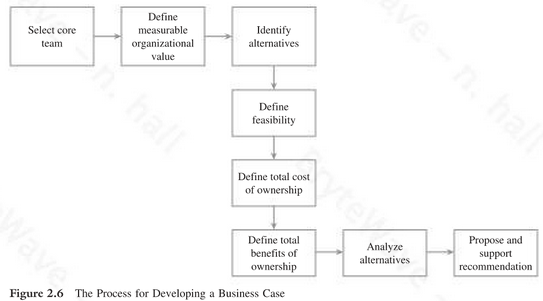
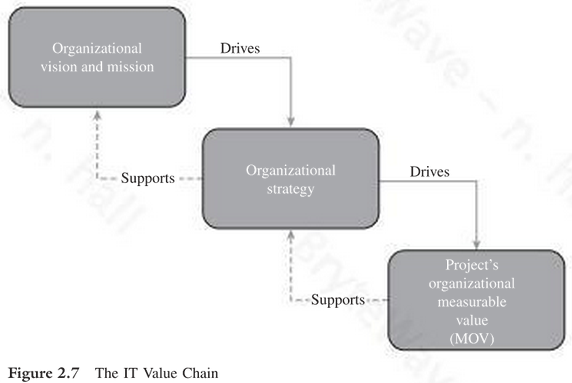
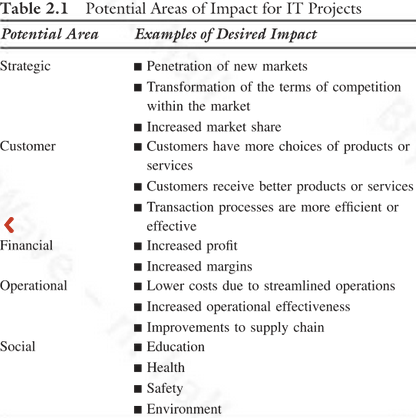
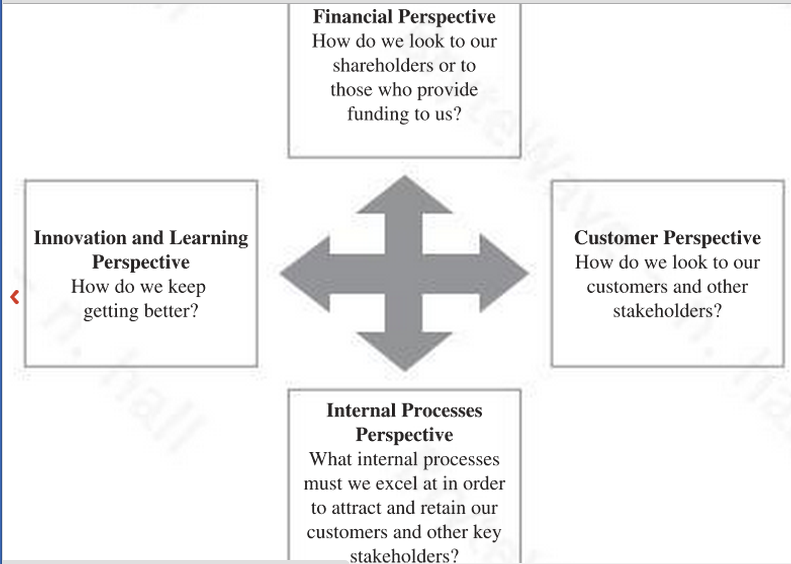
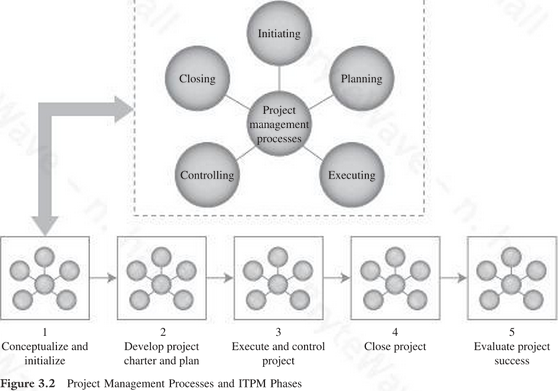
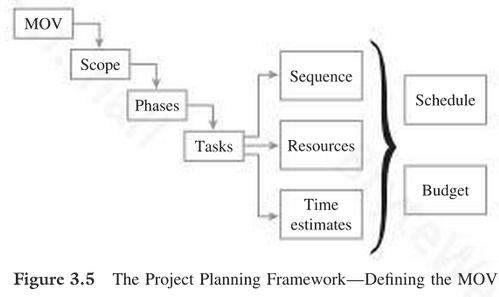
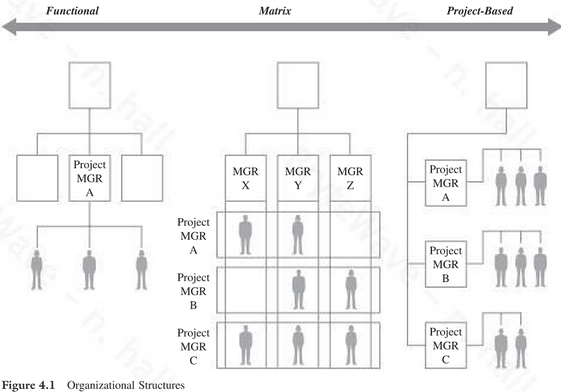
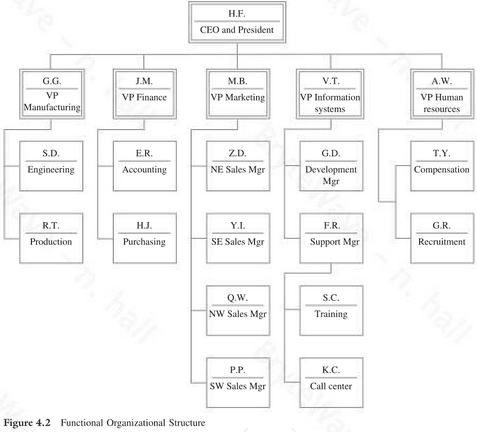
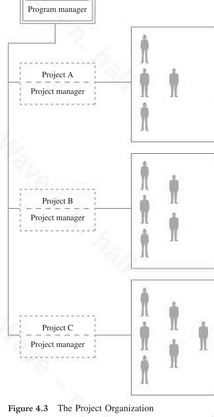
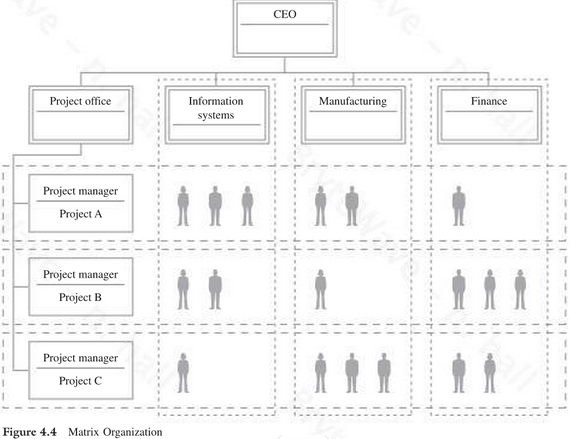
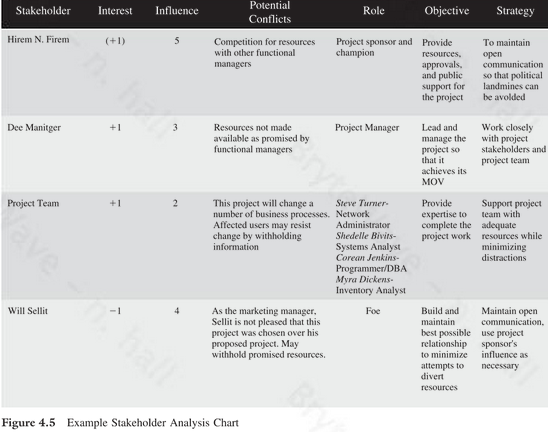
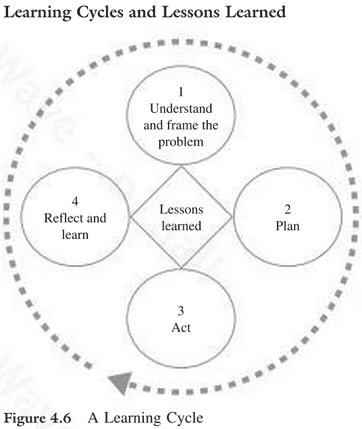
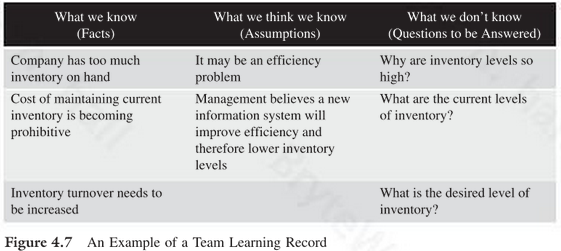
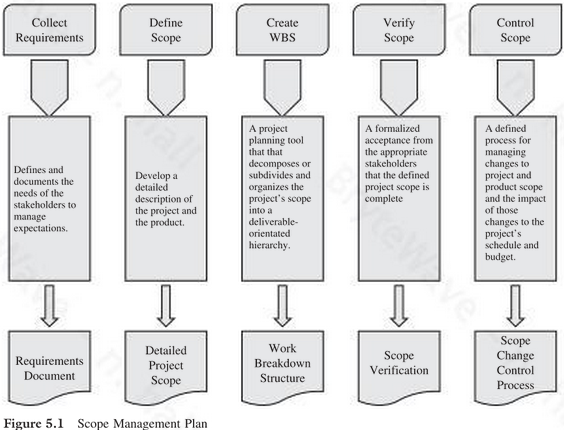
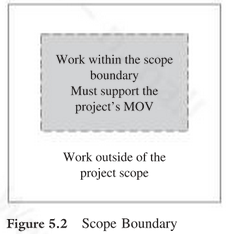
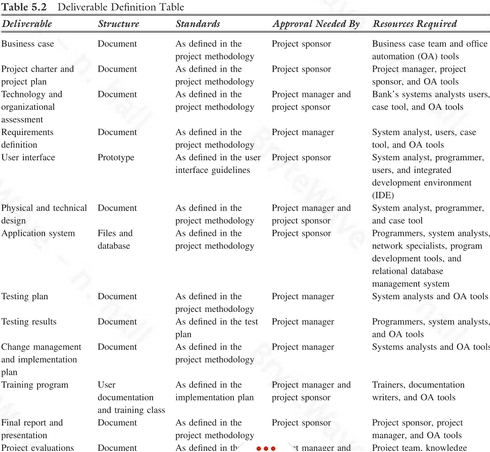
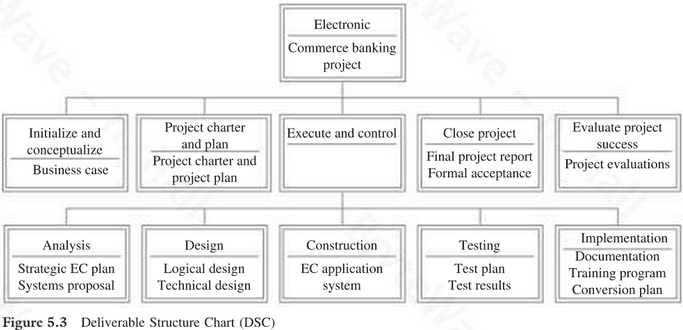
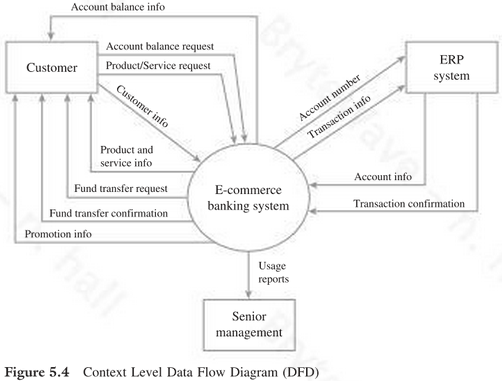
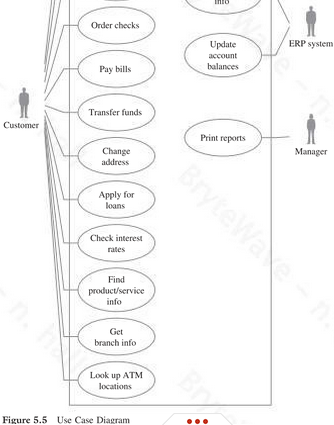
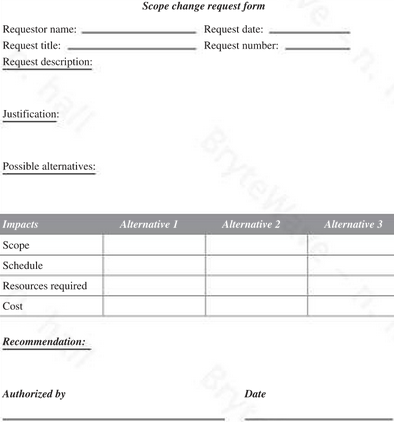
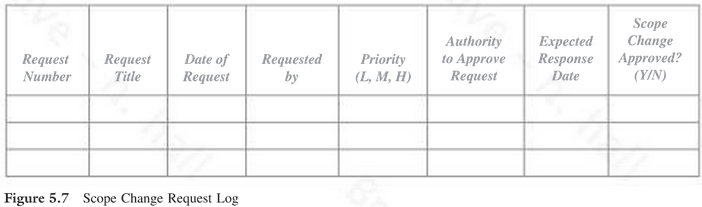
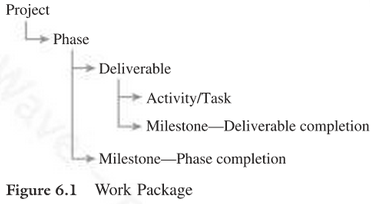
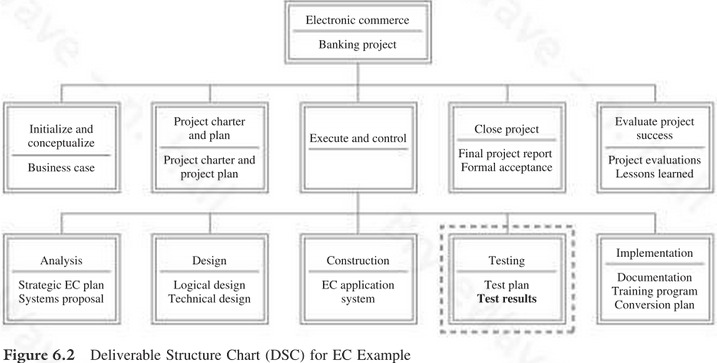
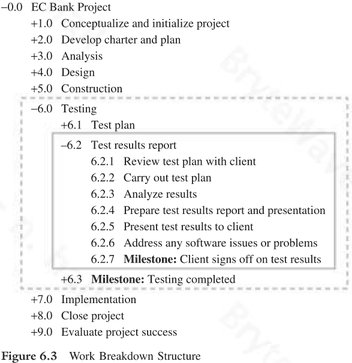
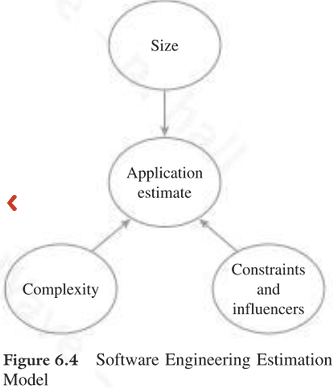
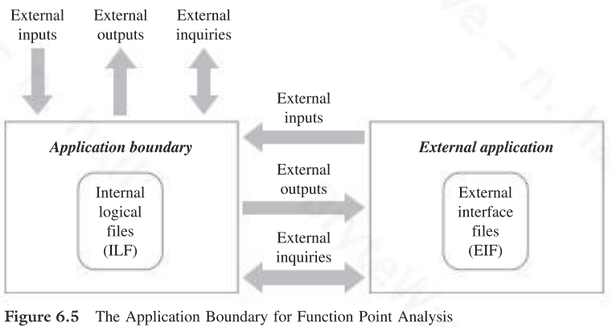
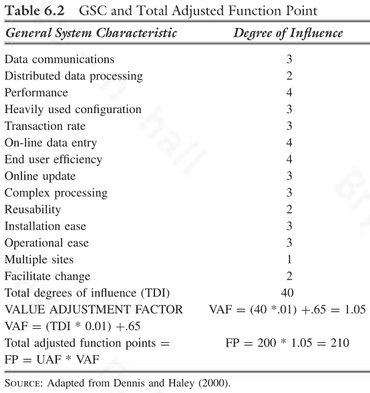
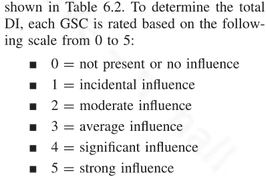
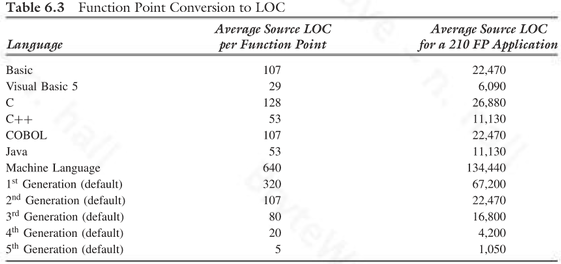
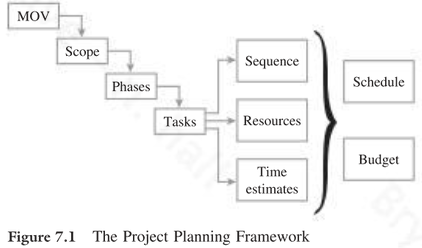
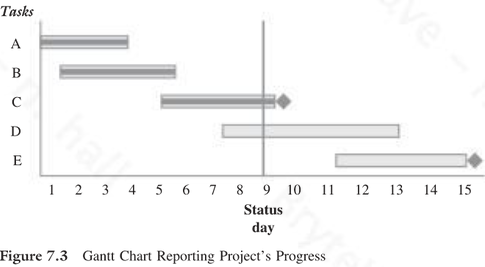
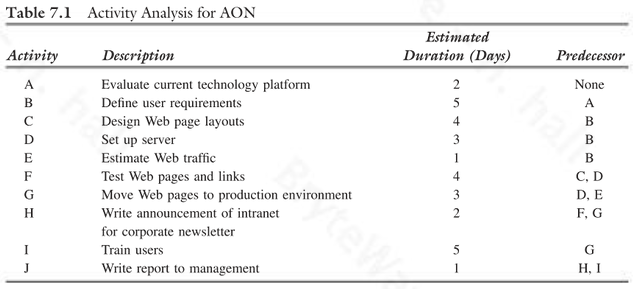
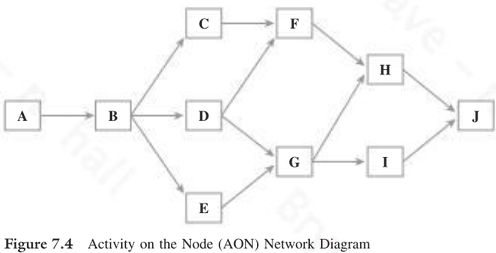
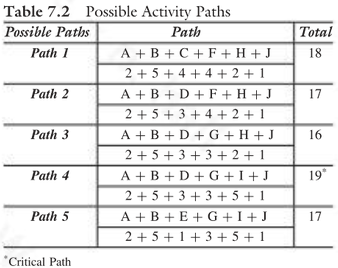
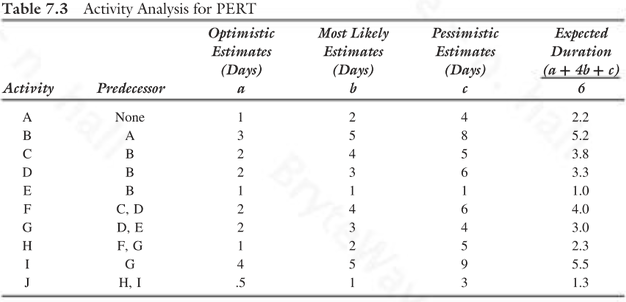
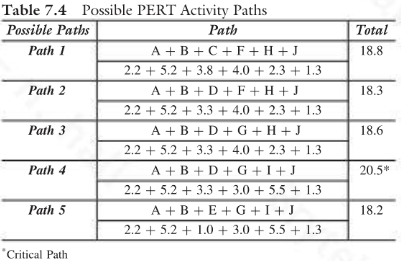
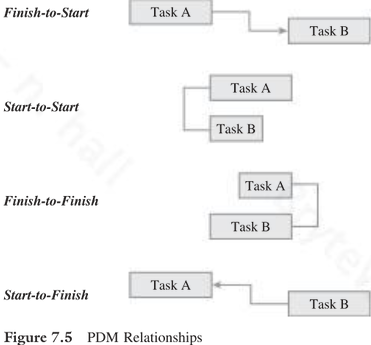
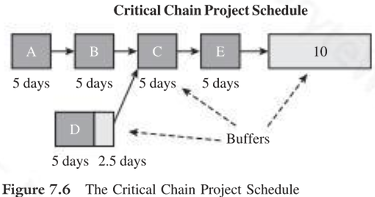
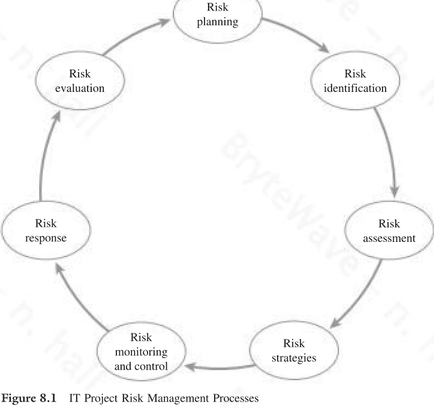
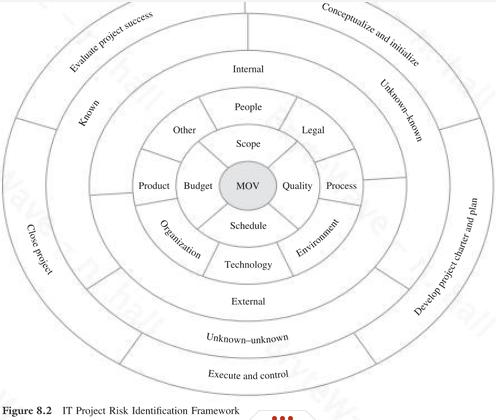
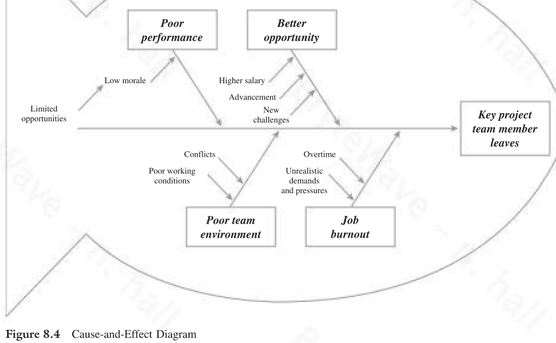
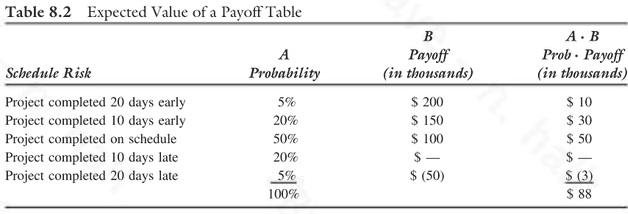
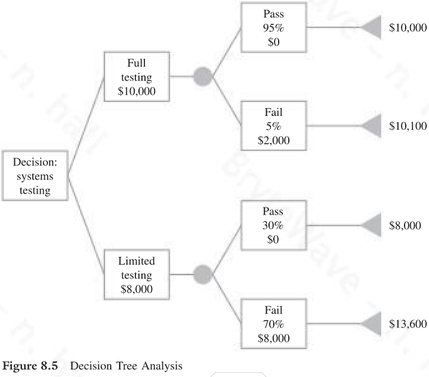
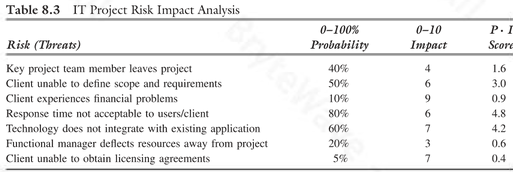
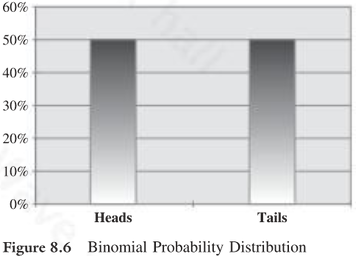
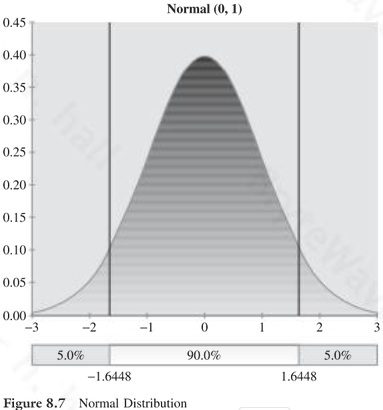
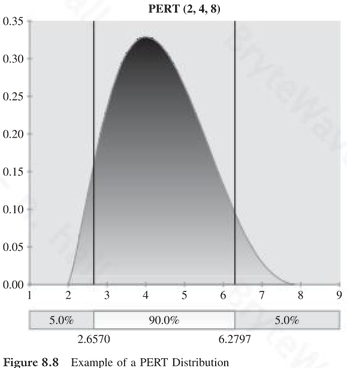
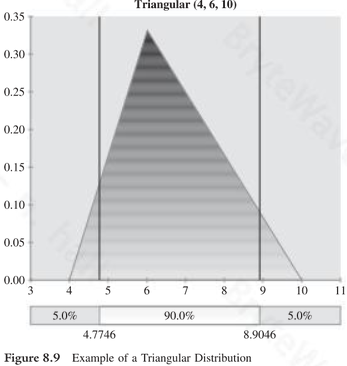
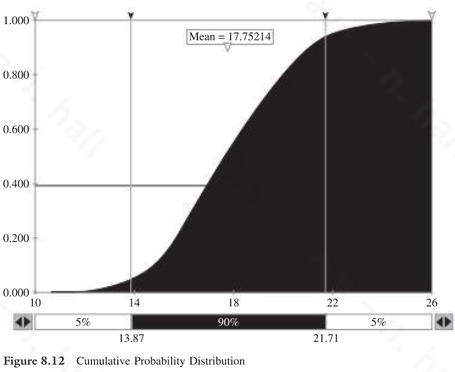
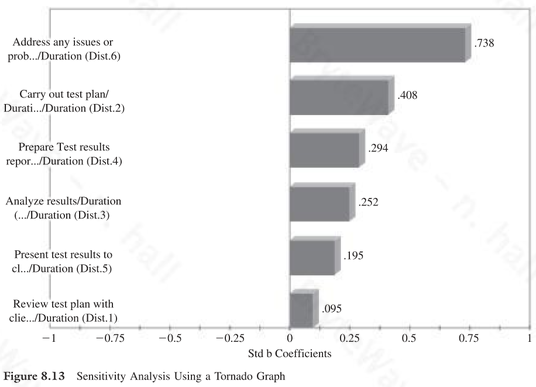
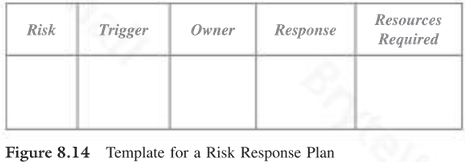
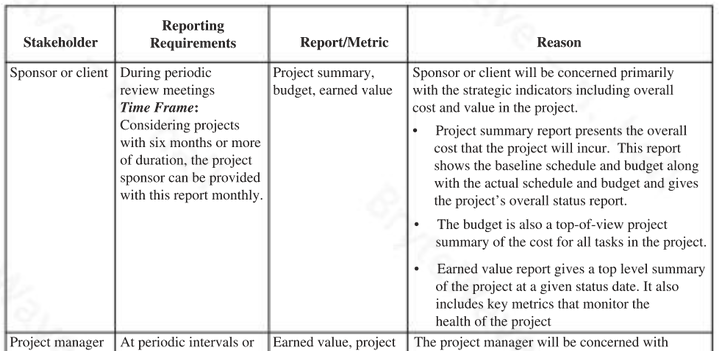
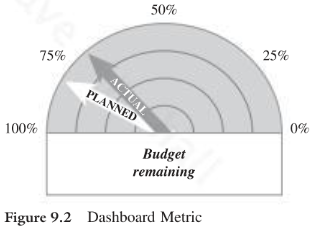
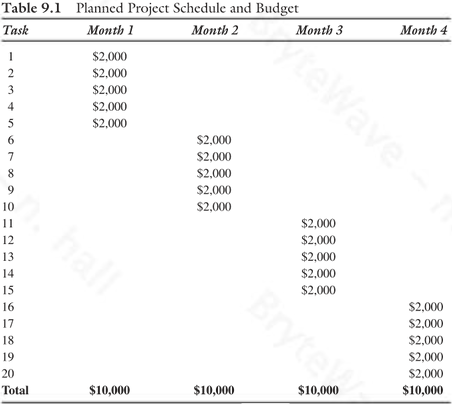
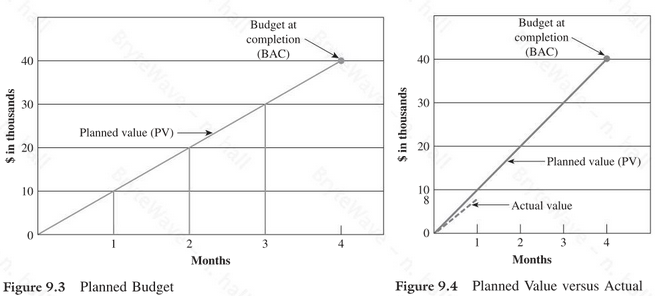
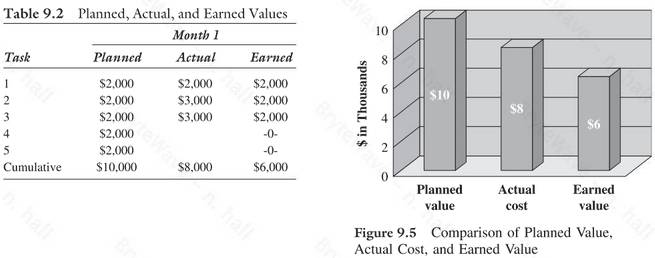
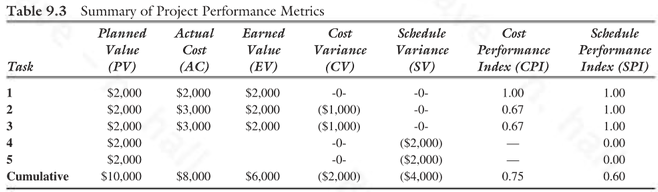
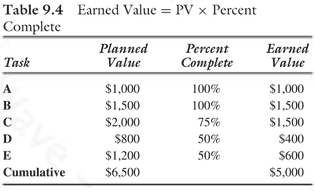
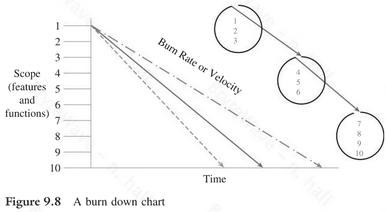
## Objectives

* Describe the project management body of knowledge PMBOK area called project quality management PQM and how it supports plan quality, perform quality assurance, and perform quality control to provide continuous improvement of the project’s products and supporting processes
* Identify several quality gurus, or founders of the quality movement, and their role in shaping quality philosophies worldwide
* Describe some of the more common quality initiatives and management systems that include ISO certification, six sigma, and the capability maturity model (CMM) for software engineering
* Distinguish between verification and validation activities and how these activities support IT project quality management
* Describe software engineering discipline called configuration management and how it is used to manage the changes associated with all of the project’s deliverables and work products
* Apply the quality concepts, methods, and tools introduced in this chapter to develop a project quality plan

## Introduction

* Project quality management: includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It implements the quality management system through policy and procedures with continuous process improvement activities conducted throughout, as appropriate
* Quality management processes
  + Plan quality: determining which quality requirements and/or standards are important for the project and the product and then documenting how compliance will be demonstrated
  + Perform quality assurance: provides the basis for continuous improvement by auditing and evaluating the results from quality control measurements so that appropriate quality standards and operational definitions are used
  + Perform quality control: monitoring and documenting the results of executing project quality activities to eliminate causes unsatisfactory performance and implement new processes and techniques to improve project quality throughout the organization
* Process: the activities, methods, materials, and measurements used to produce the product or service

# Pictures

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