

# ICT Project Management Overview



# Course Content

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- 1. Overview of quality & project management**
- 2. Project integration**
- 3. Exploration of project management software,**
- 4. Scope & requirements management**
- 5. Time management**
- 6. Cost management**
- 7. Quality management**
- 8. Human resource management**
- 9. Communications management**
- 10. Critical Path Analysis and PERT**

# Evaluation

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Class works	10%
Mid-exam	20%
Project	10%
Presentation	10%
Final	50%
Total	100%

# Motivating Questions?

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- ❖ In terms of definition, time, persons involved
  - ❖ What is Project?
  - ❖ What is Operation?
  - ❖ What is IT Project?

# Project, IT and Operations?

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- ❖ A **project** is a temporary endeavor undertaken to create a unique product, service, or result with a unique purpose and with in specified period of time.
- ❖ Large or small in time and human resource
- ❖ Start and end
- ❖ **Operations** is work done in organizations to sustain the business. It is the routine work.
- ❖ **IT project** involves hardware, software, network to create product or service

# Project Properties

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- ❖ Unique purpose
- ❖ Temporary
- ❖ Developed using progressive elaboration
- ❖ Incremental
- ❖ Resources i.e people, hardware, software, finance
- ❖ Primary customer and sponsors
- ❖ It involves uncertainty i.e difficult to define clear objective, time, cost, internal and external factor

# Project Management

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- ❖ What is Project Management?
- ❖ Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements

# New technologies and PM

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Previously, project management focused on providing schedule and resource data to top management

Now PM can no longer sustain with old style of working mainly because like any other industry project management work environment is affected by new technologies like hardware, software, network and the use of interdisciplinary and global work teams.

IT Project includes advanced technologies to create product, service or result.

# ITP Researches in 1995

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- ❖ Research in 1995 depicts it is only 16.2% of ICT project in USA are successful and 31% were cancelled before its completion.
- ❖ **Sucess** for this research was addressing goals with specified time and budget.
- ❖ The research carried out in 30 countries have found that only 2.5 percent are successfull the remains are not.
- ❖ Researchers recommended to have a better IT project managment technique

# New Technologies and PM

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- ❖ Technologies are advancing every year
  - ❖ Large investment in new technologies
  - ❖ The demand of IT workforce are increasing from time to time
  - ❖ To be competitive in such dynamic world
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- ❖ People and organizations recognise to use modern ICT project management technique
  - ❖ Individuals realize to develop their skill

# Advantages of PM

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## ❖ Advantages of project management

- Better control of financial, physical and human resource
- Improve customer relations
- Shorter development times
- Lower costs and improved productivity
- Higher quality and increased reliability
- Higher profit margins
- Better internal coordination
- Positive impact on addressing strategies
- Higher worker moral

# Project constraints

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- ❖ Project is constrained by (triple constraint)
  - ❖ Scope goal
  - ❖ Time goal
  - ❖ Cost goal
- ❖ Successful project management means meeting all these three goals (scope, time, and cost)
- ❖ Quality and communication other factors
- ❖ Managing these goals requires specific skill which leads the project to success

# PM Knowledge areas

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- ❖ Project management knowledge areas describe key competencies of project managers
- ❖ Scope, Time, Cost, Quality, Human resource, Communication, Risk, Procurement, Stakeholder and Integration management

# PM Tools and Techniques

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- ❖ Project Management Tools and Technique assist people in carrying out work the project in all knowledge area ex. Gantt charts, project network diagrams, critical path analysis, harvest
- ❖ Super PM tools are like PM software for scheduling, requirement analysis, lessons learned report and scope statements
- ❖ Different tools are more effective in different situations thus project managers and the team should select appropriate PM tools to enhance the project performance

# ITP Research 2010

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- ❖ Research done in 2010 shows the increase of the IT project success from 16.25 by 1994 to 37% and failure decreased from 31 to 21% mainly because of better tools, better managers with better management process.
- ❖ Project management is a very broad, often complex discipline. What works on one project may not work on another, so it is essential for project managers to continue to develop their knowledge and skills in managing projects

# Project success

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## ❖ Project success Criteria

- Addressing scope, time and cost of the project
- Stakeholders satisfaction
- Adress the main objectives of the project

# Project Success Factors

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## ► Project success factors

1. User involvement
2. Executive support
3. Clear Business objectives
4. Emotional maturity
5. Optimizing Scope
6. Agile process
7. Project management expertise
8. Skilled human Resource
9. Execution
10. Tools and infrastructure

# Project Success Factors

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❖ USA for successful IT project considers

- ❖ Adequate funding
- ❖ Stakeholders involvement
- ❖ Staff expertise

❖ China for successful IT project considers

- ❖ Top management support
- ❖ User involvement
- ❖ Competent project manager

# Project Success

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Winner organizations who succeeded in most of their project

1. Use an integrated toolbox: define what needs to be done in a project, by whom, when, and how project management tools, methods, and techniques.
2. Grow Project leaders: providing them with career opportunities, training, and mentoring
3. Develop a streamlined project delivery process: examined every step in the project delivery process, analyzed fluctuations in workloads, searched for ways to reduce variation, and eliminated bottlenecks to create a repeatable delivery process
4. Measure project health using metrics: quantify products by customer satisfaction, return on investment, and schedule.

# Project Manager Skill

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- ❖ Project managers should know how to work with sponsors, team members and users.
- ❖ Suggested skills for project managers
  - ▶ The project management body of knowledge
  - ▶ Application area knowledge, standards and regulation
  - ▶ Project environment knowledge
  - ▶ General management knowledge
  - ▶ Soft skills or human relations skills

# Project Manager

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- ❖ Project managers must be comfortable leading and handling change, because projects often introduce changes in organization
  
- ❖ Project managers take both the **leader** and **manager** role, create vision and achieve vision

# Skills in Major Projects

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- ▶ Skills required in three major projects
  1. Large projects:- Leadership, relevant experience, planning, people skills, verbal communication, and team building skills
  2. High-uncertainty Projects: risk management, expectation management, leadership people skills and planning skills
  3. Very novel projects:- leadership, people skills, vision and goals, self confidence, expectation management, listening skill

# System View

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- ❖ Project can not run by itself in isolation rather it needs to be contextualized in organization so it requires the system view.
- ❖ A system view is thinking about things as a system
- ❖ Systems are sets of interacting components that work within an environment to fulfill some purpose.

# System Approach

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- ❖ System approach is critical to successful project management
- ❖ Systems analysis is a problem-solving approach that requires defining the scope of the system, dividing it into components, and then identifying and evaluating its problems, opportunities, constraints, and needs.
- ❖ Systems management addresses the business, technological, and organizational issues associated with creating, maintaining, and modifying a system.

# Spheres of System Management

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- ❖ Three spheres of System management
  - ❖ Organization
  - ❖ Technology
  - ❖ Business
- ❖ Regardless of this, system management is often neglected in system development

# Understanding Organization

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Organization Frames to understand organization

- 1. Structural:** how the organization is organized.  
What are the roles and responsibilities,  
coordination and control of department, unit etc.  
Organization charts can be a source
- 2. Political:** Coalitions of composed of varied  
individuals and interest groups. Conflict and  
power is a key issue. It addresses  
organizational and personal politics

# Understanding Organization

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3. **Human resource:** providing harmony between needs of organization and needs of the people. Ex. Shortage of IT skills
4. **Symbolic:** symbols and meaning related to events. Culture, language, traditions and images are all parts of the frame

# Organization Frames

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- ❖ Poletical frame addresses organizational and personal poletics. Competition among people or group for power and leadership
- ❖ Sympolic is a meaning to that organization for instance the IT project is a threat or a good sign with that people can support or oppose the project. It is not what actually happened but what it means for the organization.  
Project managers must work in all four frames to function well in organization.

# Organizational Structure

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1. Functional organizational structure: strong functional organization skill, hierarchical organization. Ex. IT, construction, electricity
2. Project organizational structure: have diversified specialists in each project to complete the task.
3. Matrix organizational structure a mix of functional and project. Here staff report to project and functional managers.

# Organization Culture

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- ❖ Organization culture is a set of shared assumptions , values, and behaviors that characterize the functioning of an organization.
- ❖ Most problems of the organization are relied on organization culture than organizational structure.
- ❖ Some organization culture facilitates the work of the project others negatively influence the project

# Characterstics of Organization Culture

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- 1. Member identity:** The degree to which employees identify with the organization as a whole rather than with their type of job or profession.
- 2. Group emphasis:** The degree to which work activities are organized around groups or teams, rather than individuals.
- 3. People focus:** The degree to which management's decisions take into account the effect of outcomes on people within the organization.
- 4. Unit integration:** The degree to which units or departments within an organization are encouraged to coordinate with each other.

# Characterstics of Organization Culture

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- 5. Control:** balanced on control mechanisms and people
- 6. Risk tolerance:** staff encouraged to innovative activities
- 7. Reward criteria:** based on performance
- 8. Conflict tolerance:** conflicts and criticism openly
- 9. Means-ends orientation:** balancing both outcome and process
- 10. Open-systems focus:** monitors and responds to changes in external environment



THANK YOU

Q & A

# ICT Project Management Overview

# Project Stakeholders

- What is project stakeholder?
- Project stakeholders are the people involved in or affected by project activities ex. the project sponsor, project team, support staff, customers, users, suppliers and even opponents of the project
- Successful project managers develop good relationships with project stakeholders to understand and meet their needs and expectations

# Stakeholder Management

- ▶ Project managers should identify, understand and manage the project stakeholders

Stakeholders can be internal and external

## Internal stakeholders

- ▶ Project sponsorss, team, support staff, and internal customers for the project, functional managers, and project managers

## External stakeholders

- ▶ The project's customers, competitors, ssuppliers, and other external groups, ggovernment officials or concerned citizens.

# Stakeholder Management

## Top management commitment

- Key stakeholders
- If there is no top management commitment the project often will fail
- Top management is crucial because
  - Adequate resource is needed for success
  - Approval is needed for success
  - Top managers step in when unwilling functional managers appear in the project
  - Advice project managers

# Stakeholder management

## **The need of organizational commitment**

The organization that values for ICT facilitates the project success

## **The need of organizational standards**

Organization that have standards for performing projects facilitates the project success

- Identify the top project failure regarding stakeholders management

# Project Phases and Life Cycle

- ▶ Project phases vary in industry, project etc
- ▶ Project phases
  - Concept - starting
  - Development – organizing and preparing
  - Implementation- carrying out the project
  - Closeout – finishing the project
- ▶ The project management phases
  - Initiating
  - Planning
  - Executing
  - Monitoring and controlling
  - Closing

# Project Management Process

- Initiating process is defining and authorizing a project
- Planning: devising and maintaining workable scheme to ensure that the project addresses the organization needs ex. scope, schedule, cost and procurement plan
- Each plan defines specific knowledge area as it relates with the project
- The team should revise plan everytime to incorporate changes

# Project Management Process

- Executing: coordinating and planning people and other resource to carry out the various plans and create products, servies and the result of the project
- Monitoring and Controlling:- include regularly measuring and monitoring progress to ensure that the project team meets the project objectives

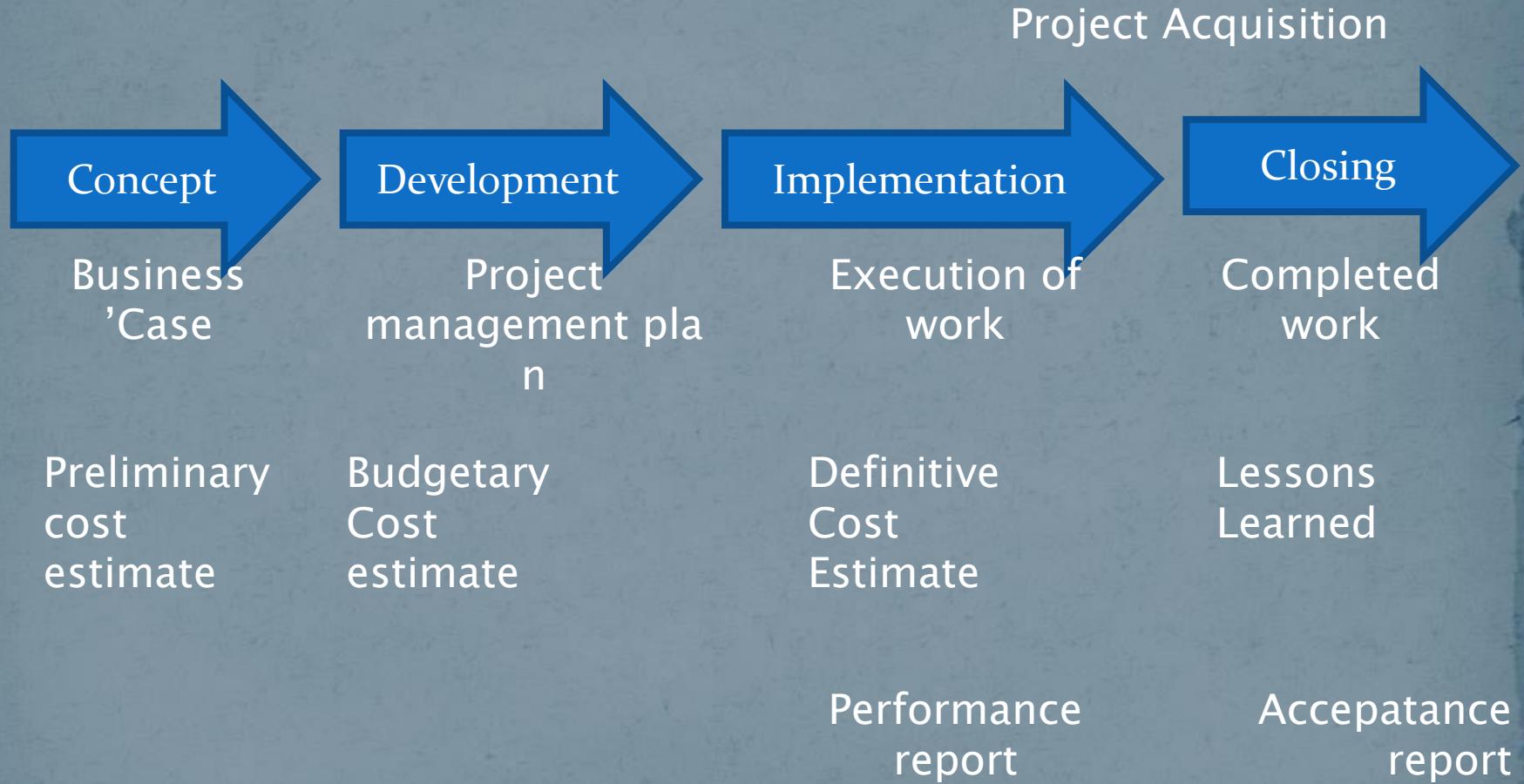
# Project Management Process

- Closing process: formalizing acceptance the project, archiving project files, closing out contracts, documenting lessons learned, and receiving formal accepatance of the delivered work.

# Project Phases and Life Cycle

- Concept and development focuses on planning which is often referred as project feasibility
- The last two project phases implementation and closing focusing on delivering the actual work and referred as project acquisition

# Project Phases and Life Cycle



# IT project

- IT project includes researching, analyzing, and then purchasing and installing new hardware and software with little or no actual software development required. Some involve in system development, minor modification, integrating application.
- Many argue that developing software requires project managers to modify traditional project management methods, depending on a particular product's life cycle

# IT project

- System development often requires phases
- A systems development life cycle (SDLC) is a framework for describing the phases of developing information systems
- Delivers phases for system development project

# IT project

- The SDLC models are
  - Waterfall
  - Incremental
  - Prototype
  - Rapid model

# System Development Life Cycle(SDLC)

- Waterfall:- linear stages of systems analysis, design, construction, testing, and support.
- It is predictive and well defined.
- Requirement stable,
- Risk must be tightly controlled
- Changes must be restricted after the requirements are defined it can be used for large scale projects

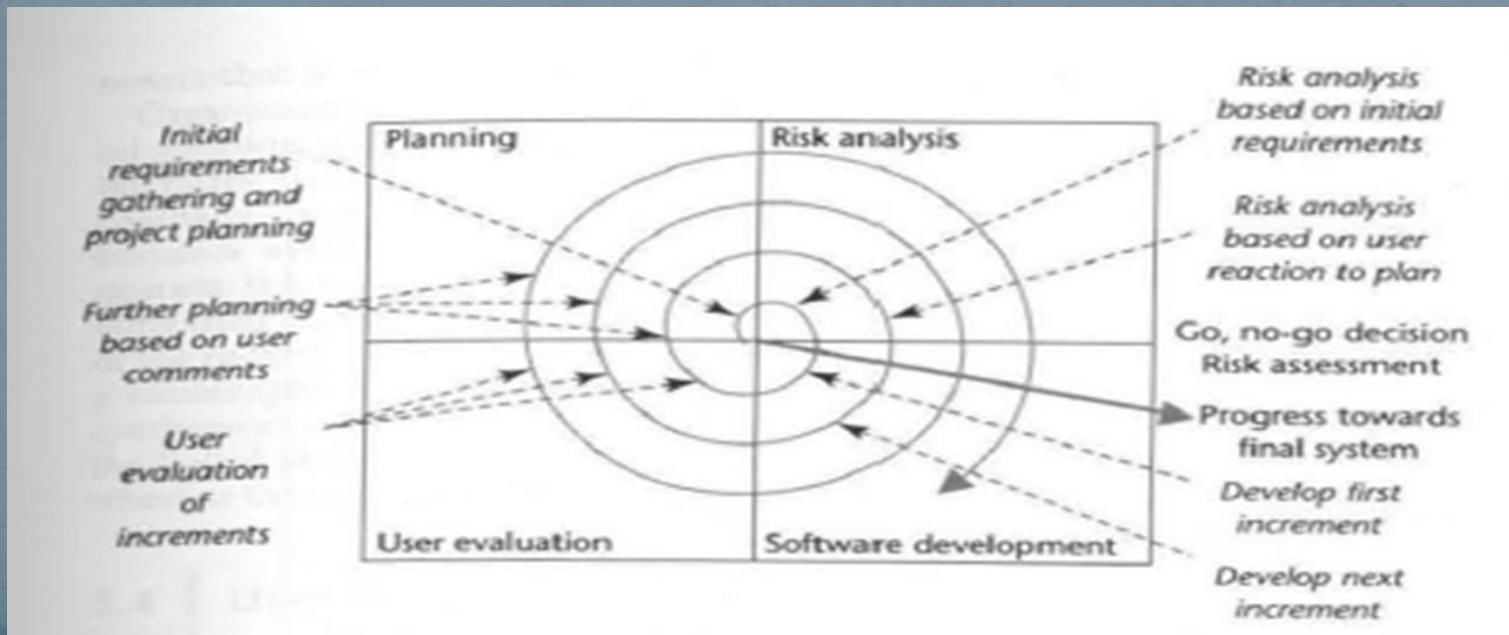
# System Models

- RAD
- Spiral life cycle model iterative or spiral approach than linear.
  - Suitable for incorporating changes
  - The team is open to changes and revisions later,
  - Change incorporated with reasonable cost and with acceptable time delays ex. Microsoft
- The prototyping life cycle model is used for developing software prototypes to clarify user requirements for operational software, it requires heavy user involvement

# System Models

- RAD life cycle work with evolving prototype, high user involvement is needed, they use RAD tools such as CASE(Computer Aides Software Enstrument)

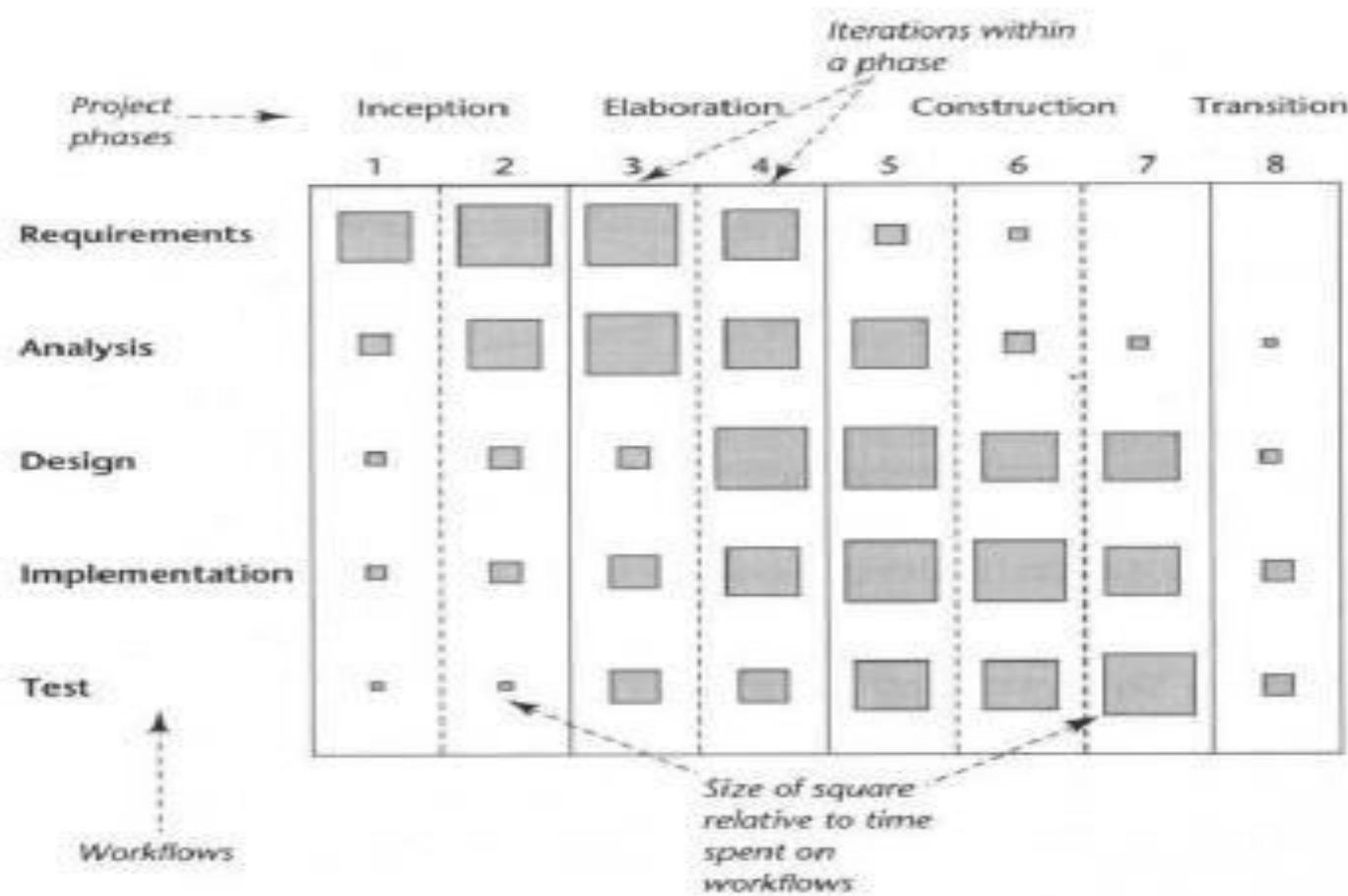
## 1-Spiral Model



# Adaptive Software Development Life Cycle

2. Adaptive Software Development life cycle model(ASD) assumes that the requirement can not be clearly expressed early in the life cycle. More freedom they are mission driven, component based, using time based cycles to meet target dates, requirements are developed in iterative way, risk driven, change tolerant incorporate risks.

# Adaptive Software Development Life Cycle



# Adaptive Software Development Life Cycle

- Agile software development is now becoming popular, close collaboration between programming teams and business experts
- It is iterative, short cycle focus on delivery of working software

# ICT Projects

- ▶ IT project management methods
  - 1. Agile methods
  - ▶ Agile means being able to move quickly and easily
  - ▶ Iterative and incremental, requirement evolve in collaboration
  - ▶ It works in any environment when requirement is unknown or changes quickly
  - 2. Rational Unified Process(RUP) framework
  - ▶ Iterative focuses on team productivity and deliver best practices to all team members

# The importance of phases and management reviews

- Due to the complexity and importance of many IT projects and their resulting products,
- it is important to take time to review the status of a project at each phase.
- Tom's failure regarding phases and management reviews

# ICT Projects

- The nature of IT projects
  - Diverse in nature begin from scratch, minor modification, installing from off the shelf system
  - Diverse background in ICT project team
  - Diverse technology
  - Problem in communication
- Recent trends in ICT projects which is unique mainly for ICT projects

## 1. Globalization

- Project managers key areas needs to address in global ICT projects
  - Communication among different languages, timezones, culture, wholedays
  - Trust
  - Common Work practice
  - Tools

# ICT Projects

2. Outsourcing and Offshoring
3. Virtual Teams: is a group of workers work regardless of time and space
  - The main advantage of virtual team
    - Low cost
    - High expertise
    - Improving the balance between work and life by eliminating travel to work and fixed office hour

# ICT Projects

- **Disadvantage of virtual team**
  - Communication problem increases
  - They are dependent on technologies
  - They may not adjust well
  - Information transfer is low since body language are not there
- **Agile Project management**
  - Being able to move quickly and easily
  - It uses iterative and incremental methodology instead of waterfall methods
  - Requirements and solution evolve in collaboration
  - Agile sets costs and time and leave scope for the sponsors to prioritize

➤ Final decisions to Tom's idea

**THANK YOU**

**Q & A**

# **ICT Project Management: Integration**

# Project Integration

- ▶ Project integration management involves coordinating all of the other project management knowledge areas through out a project's life cycle
- ▶ It brings all the elements of a project come together at the right times to complete a project successfully

# Project Integration

## Project Integration Six Main Processes

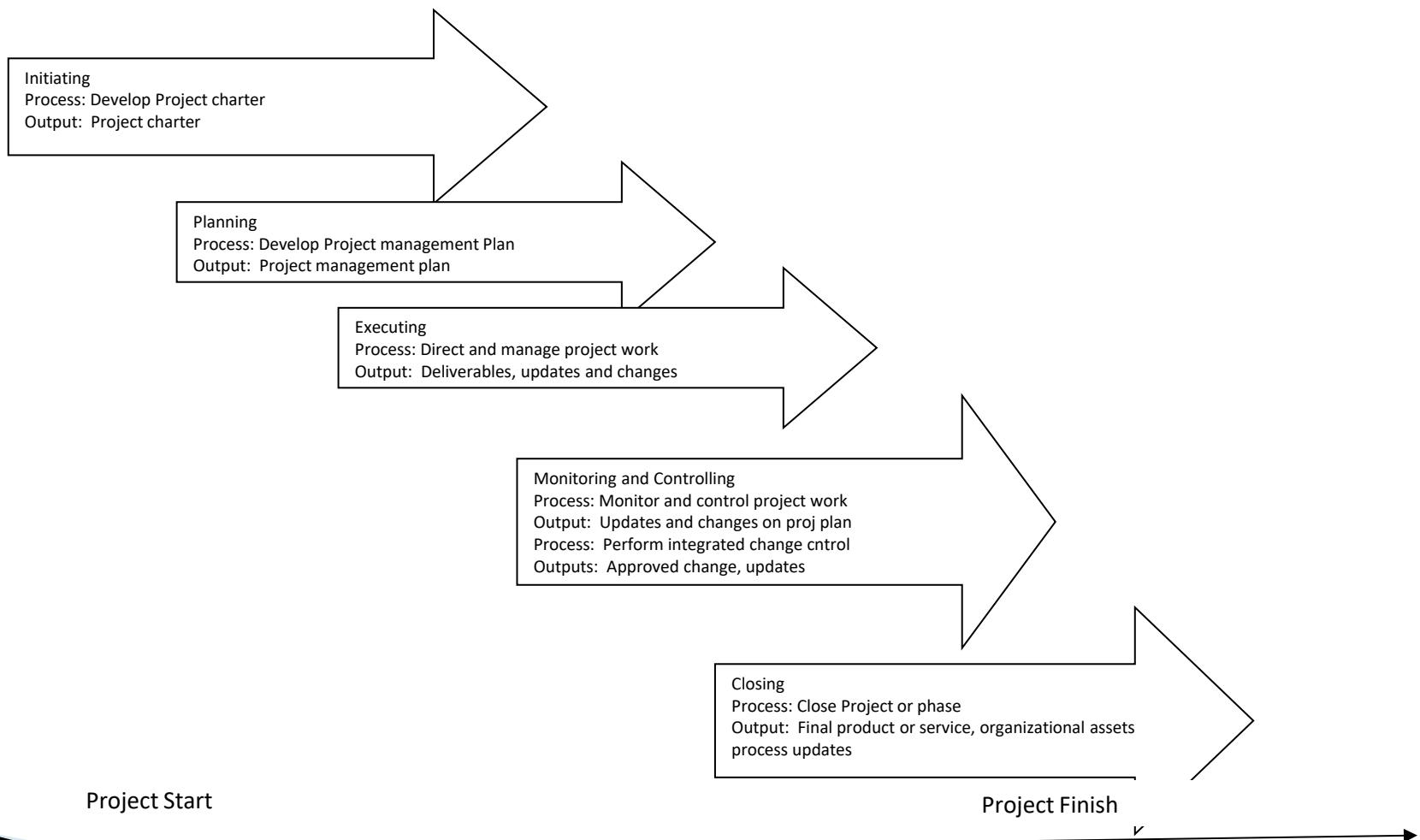
1. Developing the project charter involves working with stakeholders to create the document that formally authorizes a project – **the charter**
2. Developing the project management plan involves coordinating all planning efforts to create a consistent, coherent document – **the project management plan**
3. Directing and managing project work involves carrying out the project management plan by performing the activities. Ex. **Deliverables updates, change requests, performance**

# **Project Integration**

- 4. Monitoring and Controlling:** overseeing activities meet the performance objectives of the project
- 5. Performing Integrated Change Control** which enables us to identify, evaluate and manage changes through the project life cycle.
- 6. Closing the project or phase:** delivering the service or products

The outputs of the aforementioned processes required updating changes in every project document.

# Project Integration Summary



# Project Integration

- ▶ Integration management is the key to overall project success
- ▶ Coordinating all of the people, plans, and work required to complete the project
- ▶ Focus on the big picture and stair on the project team towards the goal
- ▶ Make final decisions when conflict occur amongst goals, peoples
- ▶ Communicate key project information

# Project Integration

- ▶ It includes interface management involves identifying and managing the points of interaction between various elements of a project
- ▶ Establish and maintain good communication and relationships across organizational interfaces
- ▶ Communicate with all project stakeholders

# Project Integration

- ▶ Project integration is applying knowledge, skills, tools and techniques to meet project requirements, while also meeting the stakeholder needs and expectations.
- ▶ Case I what is wrong with the project manager?
- ▶ Project integration management must occur with in the context of organization not at project level.
- ▶ Integrate the work of the project with the ongoing operations of the organization
- ▶ Case II Hailu's Project possible causes and consequences

# Strategic Planning and Project Selection

- ▶ Leaders should look at strategic planning to identify which projects are most valueable to the organization
- ▶ Strategic planning involves determining long-term objectives by analyzing the strengths and weaknesses of an organization, studying opportunities and threats in the business environment, predicting future trends, and projecting the need for new products and services

# Strategic Planning and Project Selection

- ▶ Strategic planning provides important information to identify then select potential valuable projects
  - ▶ SWOT analysis and mind map are used to develop strategic planning
1. Identifying Potential Projects
    - ▶ The first step in project management is deciding what projects to do the first place at Project initiation

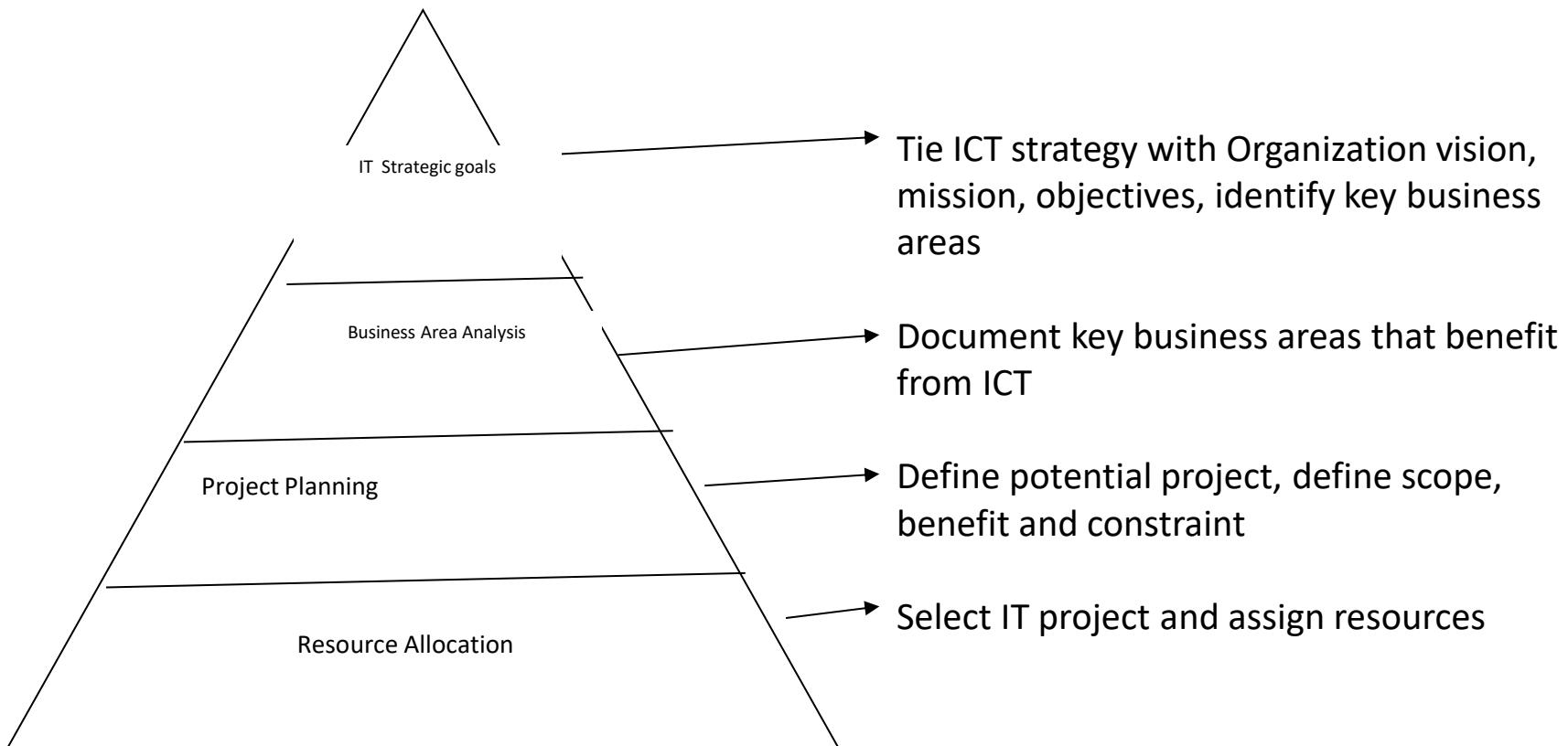
# Strategic Planning and Project Selection

- ▶ Project initiation starts with identifying potential projects, using realistic methods to select and then formalizing their initiation by project charter
- ▶ SWOT analysis and detailed process can be used for project selection
- ▶ Four stage planning process for selecting IT projects
  1. Ties the IT strategic plan to the organization's strategic plan

# Strategic Planning and Project Selection

2. Perform Business analysis to identify which processes are central to achieving strategic goals and determine which processes could benefit most from IT
3. Defining potential IT projects in terms of their scope, benefits, and constraints
4. Selecting IT projects and assigning resources

# Planning Process for Selecting IT Projects



Planning Process for Selecting Projects

# Strategic Planning and Project Selection

- ▶ Aligning IT with business strategy
- ▶ Methods for selecting Projects
  - Focusing on broad organizational needs
  - Categorizing IT Projects
  - Financial analysis
  - Using a weighted scoring model
  - Implementing a balanced scored card

# **Strategic Planning and Project Selection**

- **Focusing on broad organizational needs**
  - Three criterea to select projects
    - Need:- Does all people believe it is needed
    - Funding:- is there capacity and desire for funding
    - Will:- Is there a strong will to make the project succeed

# **Strategic Planning and Project Selection**

- ▶ **Categorizing IT Projects** based on
  - The project impetus
  - The project time window
  - The project Priority
- ▶ The impetus for project often respond to problems, directives, and opportunities
- ▶ Is there any undesirable problem that prevents the organization achieving the strategic goal.
- ▶ Is there any opportunity or chances to success the project
- ▶ Is there any new requirements to do in the organization by external force such as government, suppliers, management etc

# Strategic Planning and Project Selection

- **The project time window**
  - How long it will take, if it is too long most of the time it is not chosen
- ▶ **Priority**
  - How much it is high, medium and low priority to the organization
- ▶ Projects can be selected by one of the aforementioned project impetus, the length it will take and its priority situation.

# Strategic Planning and Project Selection

## ► Financial Analysis

- Financial consideration is key for selecting projects particularly in tough economic situations
- Three methods for financial analysis
  - Net Present Value
  - Return on Investment
  - Pay check

# Strategic Planning and Project Selection

- ▶ Net Present Value
  - A dollar earned now is worth more than a dollar earned 2 years later.
  - NPV analysis is a method of calculating expected net monetary gain or loss after discounting all expected cash outflows and inflows to the present point in time.
- ▶ Organization chooses projects whose NPV is positive
- ▶ Positive NPV means that the return from a project exceeds the cost of capital-the return available by investing the capital elsewhere.

# Strategic Planning and Project Selection

Discount rate	10%					
Project q	year1	year2	year3	year4	year5	Total
Benefits	0	2000	3000	4000	5000	14000
Costs	5000	1000	1000	1000	1000	9000
Cash flow	-5000	1000	2000	3000	4000	5000
NPV	ETB2,316.35					
Project 2						
Benefits	1000	2000	4000	4000	4000	15000
costs	2000	2000	2000	2000	2000	10000
	-1000	0	2000	2000	2000	5000
ETB3,201.41						

# Strategic Planning and Project Selection

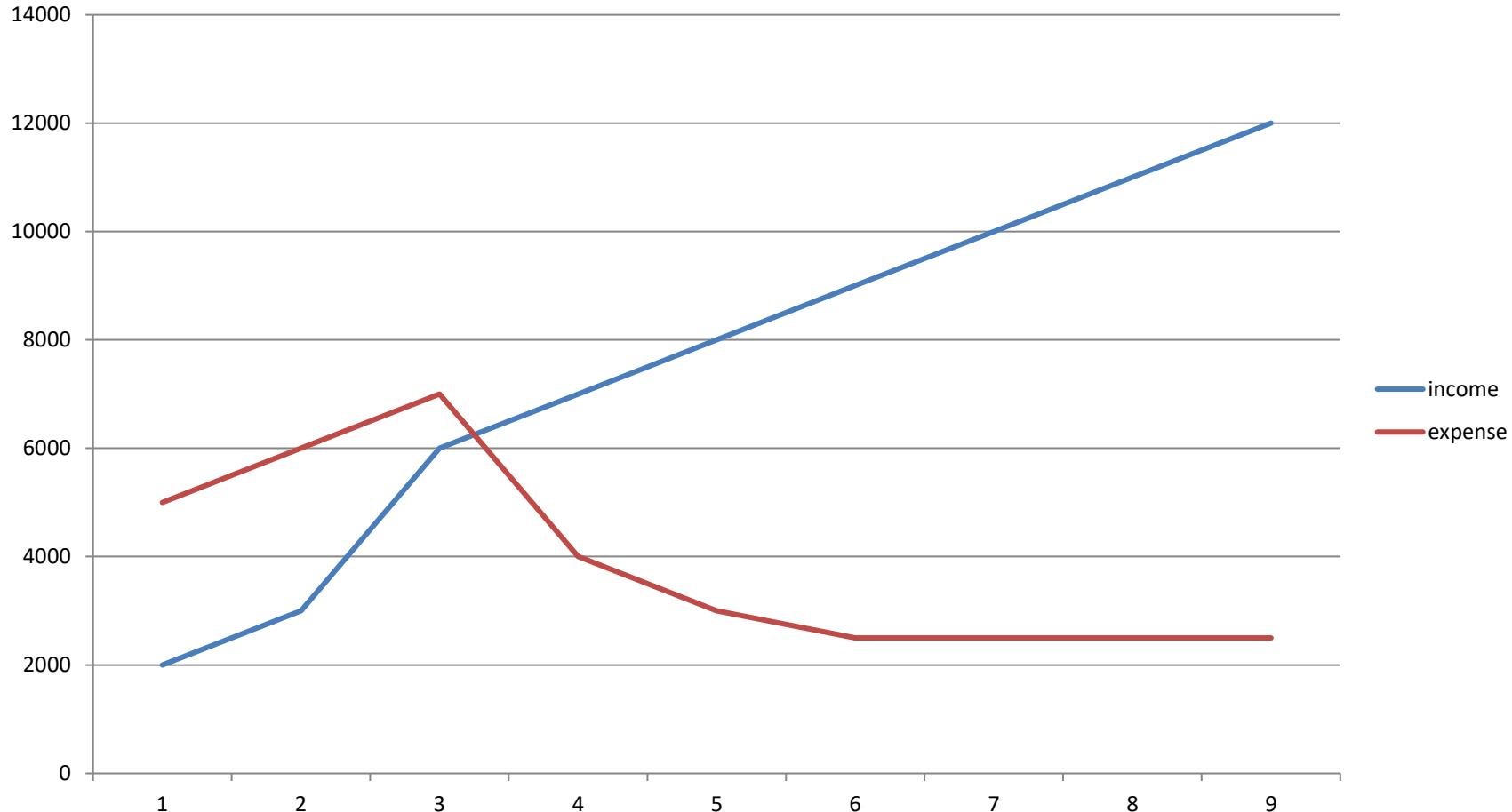
- ▶ **Return On Investment (ROI)**
- ▶ ROI is the result of subtracting the project costs from the benefits and then dividing by the costs
- ▶ If you invest 3000 today and next year it is worth 3030, your ROI  $(3030-3000) \div 3000$  p.10 0.01 or 1%
- ▶ The higher return rate could be selected

# Strategic Planning and Project Selection

## ► Pay back

- Pay pack period is the amount of time it will take to get the total dollars invested in a project,
- Payback occurs when the net cumulative benefits equal the net cumulative costs. Or the net cumulative benefits minus costs equal to zero

# Strategic Planning and Project Selection



# Strategic Planning and Project Selection

- ▶ **Weighted Scoring Model**
- ▶ A weighted scoring model is a tool that provides a systematic process for selecting projects based on many criteria
- ▶ **THE CRITERIA COULD BE**
- ▶ Meeting broad organizational needs, addressing problems, opportunities, directives, the amount of time, priority, NPV, ROI, payback

# Strategic Planning and Project Selection

1. Identify the criteria that are important to the project selection process
2. Assign weight to each criterian based on its importance to the project based on percentage the total should be 100
3. Put the available project and score each project for the criteria
4. Multiply weight with score and add the total do the same for all project

The highest score is the prefered project

# Weighted Scoring Model

	A	B	C	D	E	F
1	Criteria	Weight	Project 1	Project 2	Project 3	Project 4
2	Supports key business objectives	25%	90	90	50	20
3	Has strong internal sponsor	15%	70	90	50	20
4	Has strong customer support	15%	50	90	50	20
5	Uses realistic level of technology	10%	25	90	50	70
6	Can be implemented in one year or less	5%	20	20	50	90
7	Provides positive NPV	20%	50	70	50	50
8	Has low risk in meeting scope, time, and cost goals	10%	20	50	50	90
9	Weighted Project Scores	100%	56	78.5	50	41.5
10						
11						
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22						
23						
24						
25						
26						

### Weighted Score by Project

Project	Score
Project 4	42
Project 3	50
Project 2	80
Project 1	58

# **Scope & Requirements Management**

Prepared Birkinesh Woldeyohannes

# Project Scope Management

- ▶ Scope refers to all the work involved in creating the products of the project and the processes used to create them
- ▶ Project scope management
  - The processes involved in defining and controlling what work is or is not included in a project
  - The processes to ensure that the project addresses all the work required to complete the project successfully
- ▶ Project stakeholders must agree on
  - What the products of the project are
  - How they should be produced to define all of the deliverables
- ▶ Deliverable describes a product created as part of a project

# Project Scope Management

- ▶ Poor project scope management is one of the key reasons for projects fail
- ▶ Mainly for IT projects scope management is important
- ▶ Good project scope management have strong user involvement, executive support, a clear statement of requirements, and a process for managing scope changes

# Project Scope Management

- ▶ Activities of scope management
  - 1. Planning scope management
  - 2. Collecting requirements
  - 3. Defining scope
  - 4. Creating the WBS
  - 5. Validating scope
  - 6. Controlling scope

# Project Scope Management

## Planning

Process: **Plan scope management**

Outputs: Scope management plan, requirements management plan

Process: **Collect requirements**

Outputs: Requirements documentation, requirements traceability matrix

Process: **Define scope**

Outputs: Project scope statement, project documents updates

Process: **Create WBS**

Outputs: Scope baseline, project documents updates

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## Monitoring and Controlling

Process: **Validate scope**

Outputs: Accepted deliverables, change requests, work performance information, project documents updates

Process: **Control scope**

Outputs: Work performance information, change requests, project management plan updates, project documents updates, organizational process assets updates

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Project Start

Project Finish

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# Planning Scope Management

- ▶ The first step in project scope management is planning how the scope will be managed throughout the life of the project
- ▶ All team members are responsible for developing two important plans scope management plan and requirement plan
- ▶ Inputs
  - Project management plan, project charter, enterprise environmental factors, and organizational process assets
- ▶ The process and technics
  - Expert judgment and meetings

# Planning Scope Management

- ▶ The output will be scope management and requirement plan
- ▶ Planning scope management involves determining how the project's scope and requirements will be managed
- ▶ The scope management plan is a subsidiary part of the project management plan
- ▶ It could be left, simple, and detailed based on the type of project (small, medium and large and complex)

# Planning Scope Management

1. A scope management plan includes
  - How to prepare a detailed project scope statement
  - How to create a WBS
  - How to maintain and approve the WBS
  - Shows guidelines for maintaining the WBS and getting approval for it
  - How to obtain formal acceptance of the completed project deliverables
  - How to control requests for changes to the project scope

# Planning Scope Management

2. Requirements management plan
  - ▶ Requirement is a conditions or capabilities that must be met by the project or present in the product, service, or result to satisfy an agreement or other formally imposed specification
  - ▶ Requirements include the quantified and documented needs and expectations of the sponsor, customer, and other stakeholders
  - ▶ The requirements management plan documents how project requirements will be analyzed, documented, and managed

# Planning Scope Management

A requirements management plan can include the following information

- ▶ How to plan, track, and report requirements activities
- ▶ How to prioritize requirements
- ▶ How to use product metrics
- ▶ How to trace and capture attributes of requirements

# Collecting Requirement

## 2. Collecting Requirement

The second step in project scope management is often the most difficult one is collecting requirements

► Collecting requirement involves defining and documenting the features and functions of the products for the project as well as the processes used for creating them

The output will be requirement documentation

If you do not clearly define the requirement results rework  
It consumes half of the project budget

# Collecting Requirement

- ▶ Most software development projects have problems in defining requirement
  - As a result they ended up with improved system rather than producing a new one
- ▶ The project's size, complexity, importance and other factors affect how much effort is spent on collecting requirement

# Collecting Requirement

- ▶ Requirement Capturing Method
- ▶ Fact finding technique
  - Background reading
  - Interviewing
  - Focus group, workshop – less expensive and faster
  - Observation
  - Questionnaires
  - Prototyping and document analysis mainly for software development project ideal for requirement collection
- ▶ User Involvement
  - System development success depends not only on the skills of the developers but also by user involvement

# Collecting Requirements

- ▶ Benchmarking, or generating ideas by comparing specific project practices or product characteristics to those of other projects or products

With all available requirements collection method, people who work on software projects in particular have considerable difficulty defining and managing requirements

# Collecting Requirements

## ► Advantages of Interview

- high quality information
- Depth information

## ► Disadvantages

- Time consuming
- Interview analysis, transcribing is required
- Costy
- Conflicting information can be gathered

## ► Advantages of Observation

- First hand information how it operates
- Real time information with high validity

Verify information

Baseline data

# Collecting Requirements

- ▶ Questionnaire
  - An economical
  - Results can be analysed easily
- ▶ Disadvantages
  - Difficult to construct
  - No automatic mechanism for follow/up
  - Low response rates

# Collecting Requirements

- ▶ Based on the aforementioned requirements methods requirements can be collected and produced requirements documents
- ▶ Requirements can be categorized as
  - Functional requirements
  - Service requirements
  - Performance requirements
  - Quality requirements
  - Training requirements
- ▶ Requirement document are often generated by software which includes text, images, diagrams, videos, and other media.

# Collecting Requirements

- ▶ In addition to requirements documents project teams often create a requirements traceability matrix
- ▶ A requirements traceability matrix (RTM) is a table that lists requirements, their various attributes, and the status of the requirements to ensure that all are addressed.
- ▶ The main purpose of an RTM is to maintain the linkage from the source of each requirement through its decomposition to implementation and validation.

# Collecting Requirements

## ► Requirement Traceability Matrix

Req.No	Name	Category	Source	Status
R130	PC harddisk	Hardware	Project charter, specificati on	Ordered not yet received

# Researchers in 2011

- ▶ Eighty-eight percent of the software projects involved enhancing existing products instead of creating new ones
- ▶ 73 percent said the most important challenge for their teams was gaining a clear understanding of what customers wanted, followed by documenting and managing requirements

# Defining the Scope

- ▶ It defines a baseline for performance measurement and project control, and it aids in communicating clear work responsibilities
- ▶ Inputs for scope definition
  - The project charter, scope management plan, requirements documentation, and organizational process assets such as policies and procedures related to scope statements, as well as project files and lessons learned from previous, similar projects

# Defining the Scope

- ▶ Tools and techniques for scope definition
  - Expert judgment, product analysis, alternatives generation, and facilitated workshops
- ▶ Outputs of scope definition
  - The project scope statement and project documents updates
- ▶ Project scope statements should include
  - A product scope description
  - Product user acceptance criteria
  - Detailed information on all project deliverables
- ▶ Good scope definition is very important to project success because it helps improve the accuracy of time, cost, and resource estimates

# **Creating the Work Breakdown Structure**

- ▶ After collecting the requirement and defining the scope, the next activities is creating the work breakdown structure
- ▶ Creating work breakdown structure involves subdividing the major project deliverables into smaller, more manageable components (scope baseline) workbreakdown structure
- ▶ The WBS is a foundation document in project management because it provides the basis for planning and managing project schedules, costs, resources, and changes

The WBS is a key concept in properly using project management software because it provides the basis

# Creating the Work Breakdown Structure

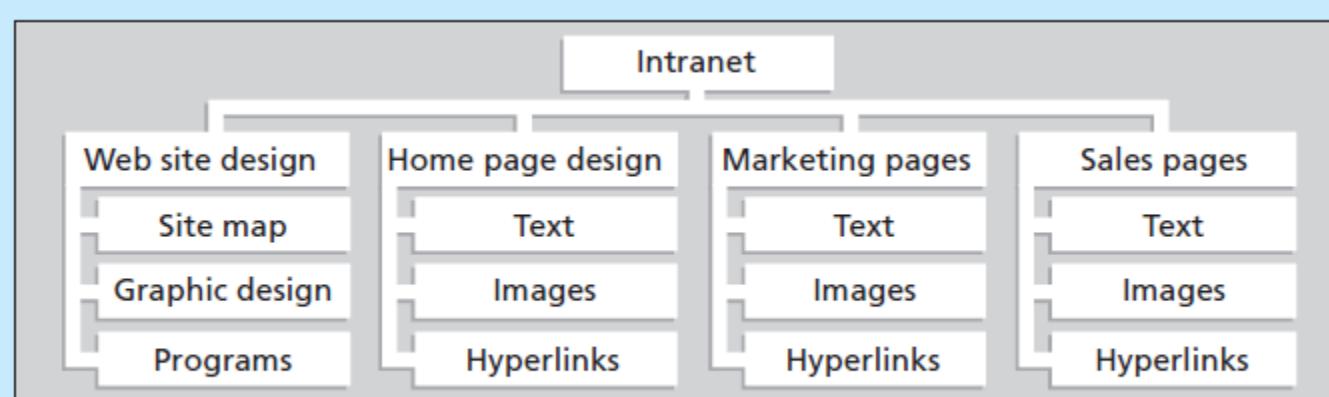
- ▶ Main Inputs for creating WBS
  - Project scope management plan
  - Scope statement
  - Requirement documentation
  - Enterprise environmental factors
  - Organizational process assets
- ▶ The main tool or technique
  - Subdividing project deliverables into smaller pieces
- ▶ The outputs
  - Scope baseline and project documents updates

# Creating the Work Breakdown Structure

- ▶ The scope baseline includes
  - The approved project scope statement and
  - Its associated WBS
- ▶ A WBS is often depicted as a task-oriented tree of activities, similar to an organizational chart
- ▶ WBS is often developed around project products, project phases, or the project management process groups by the project team.

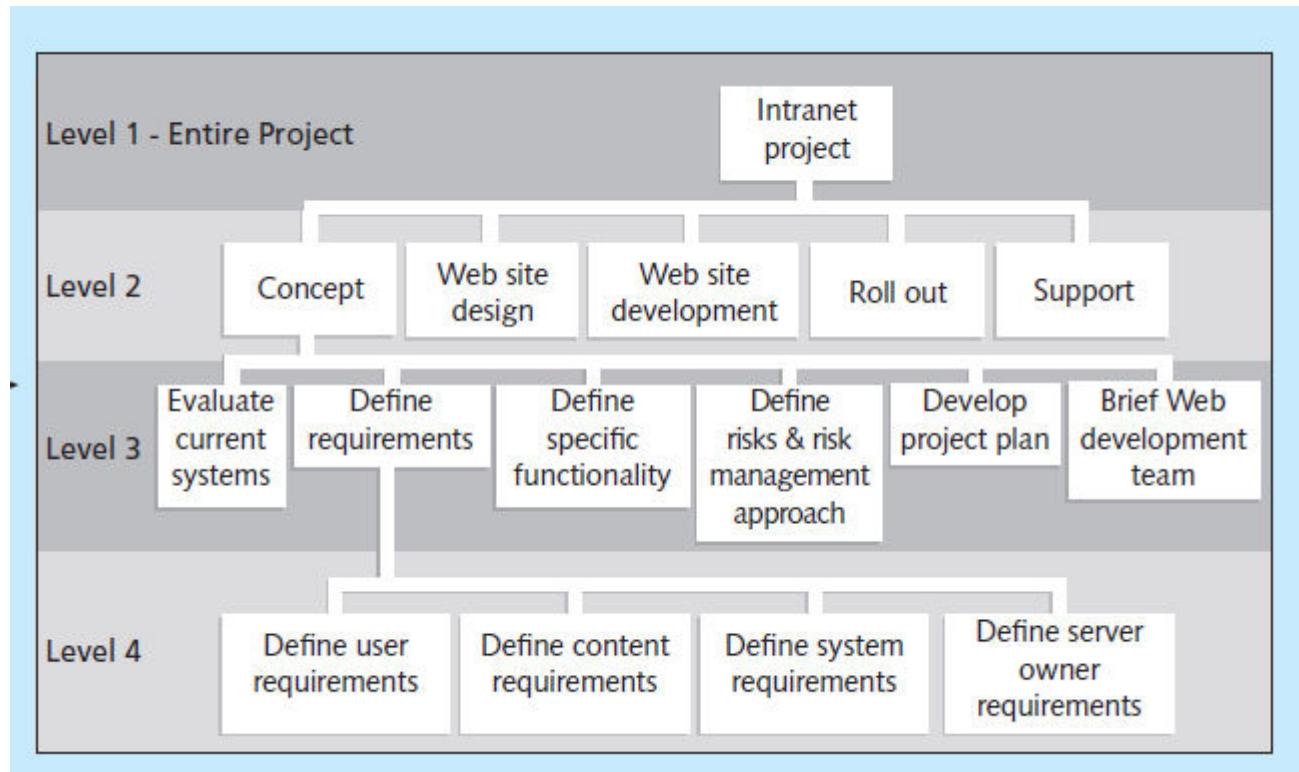
# Creating the Work Breakdown Structure

## Product Based Work Break Down Structure



# Creating the Work Breakdown Structure

## Chart based WorkBreak Down Structure



# Creating the Work Breakdown Structure

## Tabular form workbreakdown structure

### 1.1 Concept

- 1.1.1 Evaluate current systems
- 1.1.2 Define requirements
  - 1.1.2.1 Define user requirements
  - 1.1.2.2 Define content requirements
  - 1.1.2.3 Define system requirements
  - 1.1.2.4 Define server owner requirements
- 1.1.3 Define specific functionality
- 1.1.4 Define risks and risk management approach
- 1.1.5 Develop project plan
- 1.1.6 Brief Web development team

### 1.2 Web site design

### 1.3 Web site development

### 1.4 Roll out

### 1.5 Support

# Creating the Work Breakdown Structure

- ▶ Works which are listed in the WBS are vague what does it means define user requirement. The person responsible might understand yet the task can be described more detail to create similar understanding in a team by using WBS dictionary.
- ▶ A WBS dictionary is a document athat provides detailed information about each WBS item.
- ▶ WBS dictionary describes the responsible organization, resource requirements, estimated costs, and other information

# **Creating the Work Breakdown Structure**

- ▶ A work package is a task at the lowest level of the WBS
- ▶ Some tasks can remain at high level in WBS at this time the work package represents the high level
- ▶ A workpackage should be defined at the proper level through estimation of the needed effort, needed cost, and the time.
- ▶ A work package also represents the level of work that the project manager monitors and controls
- ▶ A work package might represent work completed in a week or one month or more depending up on the the project duration.

# Creating the Work Breakdown Structure

- ▶ Another way to think of work packages relates to entering data into project management software.
- ▶ Estimates of work time should be entered only at the work package level in project software.
- ▶ The software automatically calculates duration estimates for various WBS levels based on data entered for each work package and the WBS hierarchy
- ▶ The project manager and the project team must decide as a group how to organize the work and how many levels to include in the WBS

# Creating the Work Breakdown Structure

- ▶ Operating at too high a level
  - Increases project risk
- ▶ Tasks on a WBS
  - Represent work that needs to be done to complete the project(main focus)
  - How it will be done not when it will be done(main focus)
  - How to organize the WBS to provide the basis for the project schedule

# Creating the Work Breakdown Structure

- ▶ Approaches to developing workbreakdown structure
  - Using guidelines
  - The analogy approach
  - The top-down approach
  - The bottom-up approach
  - The mind-mapping approach

# Validating Scope

- ▶ Validating scope involves formalizing acceptance of the project deliverables(accepted deliverables, request change, workperformance, updates to project document)
- ▶ To receive formal acceptance of the project scope, the project team must develop clear documentation of the project's products and procedures to evaluate whether they were completed correctly and satisfactorily

# Validating the Scope

- ▶ Inputs for scope validation
  - The scope management plan, scope baseline, requirements documentation, requirements traceability matrix, validated deliverables, and work performance data
- ▶ Tools for performing scope validation
  - Inspection and group decision-making techniques
- ▶ Outputs of scope validation
  - Accepted deliverables
  - Change requests
  - Work performance information

# Controlling Scope

- ▶ Scope control involves managing changes to the project scope throughout the life of the project while keeping project goals and business strategy in mind
- ▶ The goal of scope control is
  - To influence the factors that cause scope changes,
  - To ensure that changes are processed according to procedures developed as part of integrated change control,
  - To manage changes when they occur

# Controlling Scope

- ▶ Good controlling scope is determined by doing good collecting requirements, defining scope, and validating scope
- ▶ Stakeholders should be encouraged to suggest changes that will benefit the overall project and discouraged from suggesting unnecessary changes

# Controlling Scope

- ▶ Inputs to scope control
  - The project management plan, requirements documentation, requirements traceability matrix, work performance data, and organizational process assetsn
- ▶ Tool for performing scope control
  - Variance analysis.
- ▶ Variance is the difference between planned and actual performance.

# Controlling Scope

- ▶ The outputs of scope control
  - Work performance information, change requests, project management plan updates, project documents updates, and organizational process assets updates
- ▶ Four of the 10 factors that help IT project success are related to scope validation and control:
  - user involvement
  - Executive support
  - Clear business objectives
  - Optimizing scope.

# Controlling Scope

- ▶ To avoid project failures
  - Improve user input and executive support
  - Reduce incomplete and changing requirements
- ▶ Read the IT upgrade case and come up with what must be done to make the project success

# Using Software to Assist in Scope Management

- ▶ Project managers and their teams can use several types of software to assist in project scope management
  - Word-Processing software – requirement documentation
  - Spreadsheet or presentation Software – charts, graphs and matrixes
  - Mind mapping Software - WBS
  - Communication Software – transmit information related to project
  - Project management software – WBS which is a base for matrixes, assigning courses, allocating costs
  - Templates that come with PM software - WBS

# Using Software to Assist in Scope Management

- ▶ Project scope management is very important, especially on IT projects. After selecting projects, organizations must plan scope management, collect the requirements and define the scope of the work, break down the work into manageable pieces, validate the scope with project stakeholders, and manage changes to project scope.