

BAIT3153 Software and  
Project Management (SPM)

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# Project Management Concepts

## Chapter 1

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# 1.1 Introduction to Project Management

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- What is a Project?
- Characteristics of Projects
- What is Management?
- Software vs Other Types of Projects
- Triple Constraints in Projects

# What is a Project?

## 1.1 Introduction to Project Management

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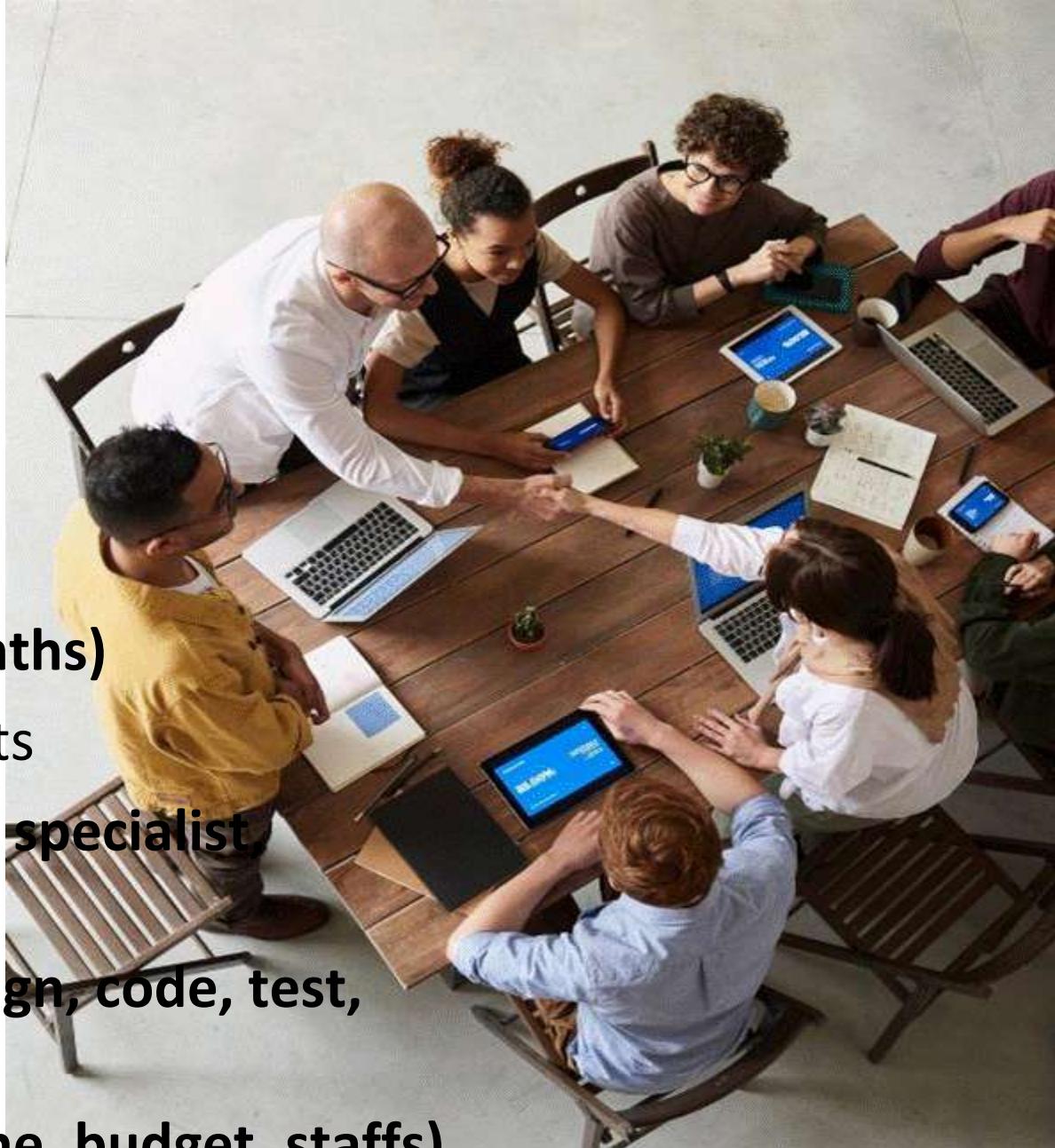
- “A **specific** plan or design”
- “A **planned** undertaking”
- “A **large** undertaking”
  - The East Coast Rail Link (ECRL) Project
  - Developing the Huawei’s Harmony OS



# Characteristics of Projects

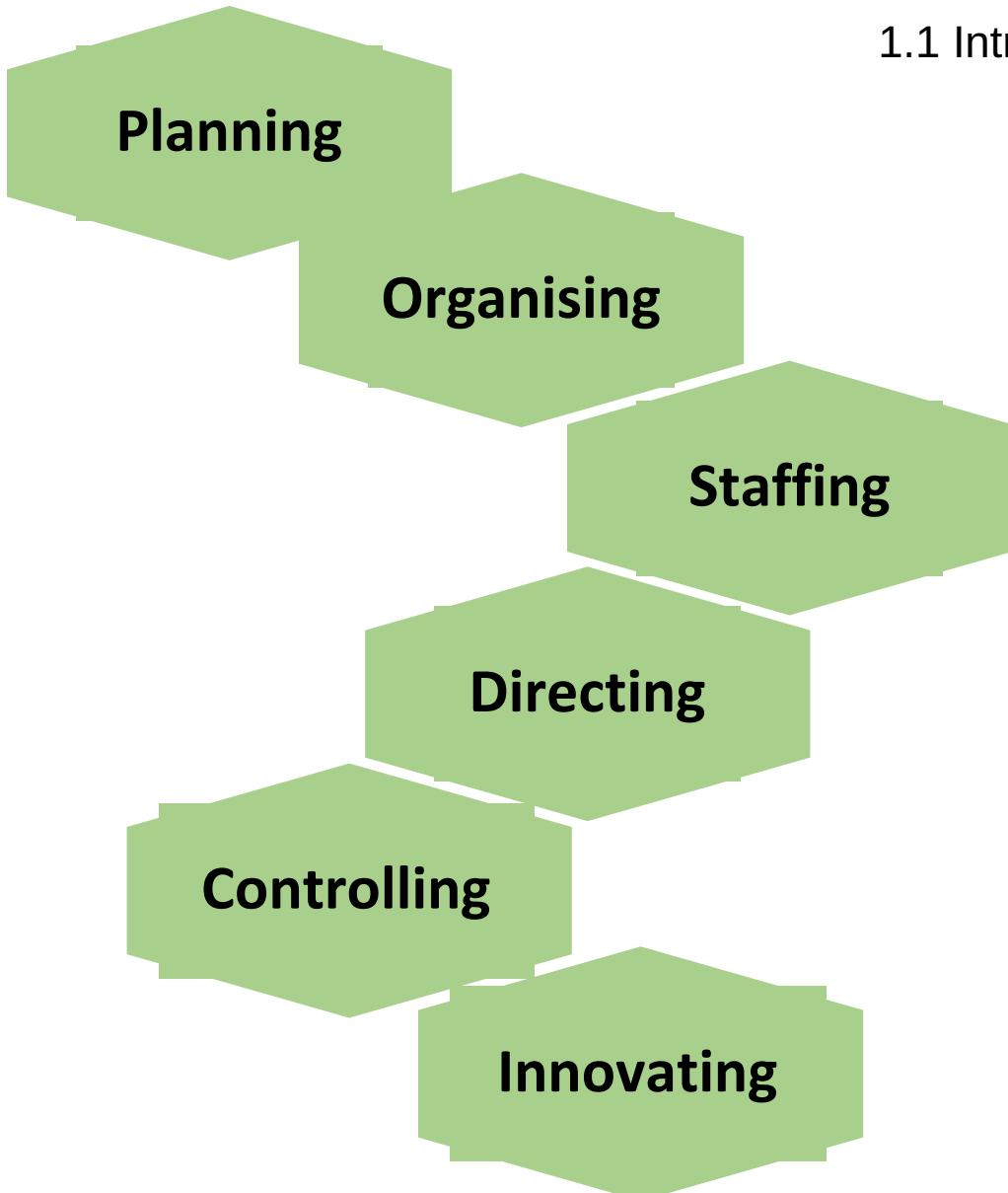
## 1.1 Introduction to Project Management

- Non-routine (e.g. FYP)
- Planning is required
- Specific objectives to be met
- Pre-determined time span (e.g. FYP 9 months)
- Work is carried out for someone, i.e. clients
- Involves several specialisms (e.g. Network specialist, database specialists, UI specialist, etc)
- Involves several phases (e.g. analysis, design, code, test, implement)
- Resources constraints is common (e.g. Time, budget, staffs)



# What is Management?

## 1.1 Introduction to Project Management

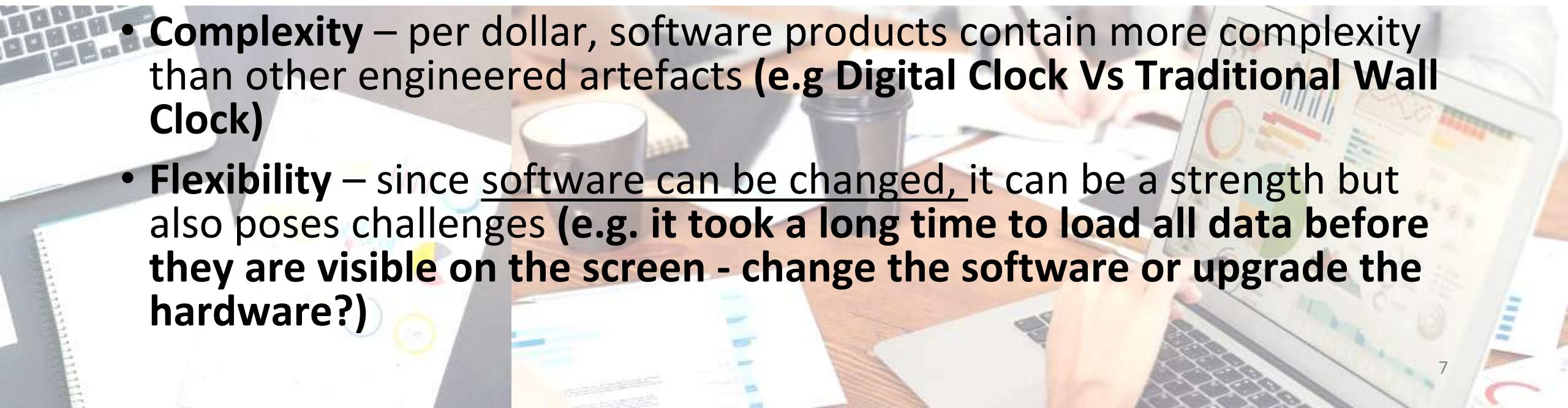


- **Planning** - deciding what to be done (Project Initiation Document [PID] needs to be created)
- **Organising** - making arrangement
- **Staffing** - select personnel
- **Directing** - give instructions
- **Monitoring** - check on progress
- **Controlling** - remedy hold-ups
- **Innovating** - coming up with new solutions

# Software vs Other Types of Projects

## 1.1 Introduction to Project Management

- **Invisibility** – with software, progress is not immediately visible compared to building a bridge
- **Conformity** – software developers have to conform to the requirements of human clients instead of physical laws
- **Complexity** – per dollar, software products contain more complexity than other engineered artefacts (**e.g Digital Clock Vs Traditional Wall Clock**)
- **Flexibility** – since software can be changed, it can be a strength but also poses challenges (**e.g. it took a long time to load all data before they are visible on the screen - change the software or upgrade the hardware?**)



# Triple Constraints in Projects

## 1.1 Introduction to Project Management

- Project managers need to face 3 major constraints (triple constraints):

- Schedule (Time)
- Budget (Cost)
- Quality



- Project managers' mantra:

To develop the system on time, within budget and to the required quality

FYP students, your mantra = To complete the project scope on time and to the required quality

## Challenges in Software Projects

### Challenges faced by **project manager**

- Poor estimates and plans
- Lack of quality standards and measures
- Lack of guidance about making organisational decisions
- Lack of techniques to make progress visible
- Poor role definition – who does what?
- Incorrect success criteria
- **Impossible deadlines**
- **Scope changes (affect ?)**
- **Resource deprivation**

### Challenges faced by **developers**

- Inadequate specification of work
- **Management ignorance of IT**
- Lack of knowledge of application area
- Lack of standards
- Lack of up-to-date documentations
- **Preceding activities not completed on time (This will cause what problem?)**
- Narrow scope of technical expertise
- Changing user requirement
- **Deadline pressure**
- **Lack of training**
- Lack of communication

### Challenges faced by **customers**

- **The software project is behind schedule (problem = ?)** (e.g. need to wait for 1 more month then only can use the software)
- **The developed software is non-functional or does not fulfil the present needs of the organization**
- The cost of the project has exceeded its allotted budget

## 1.2 Project Life Cycle

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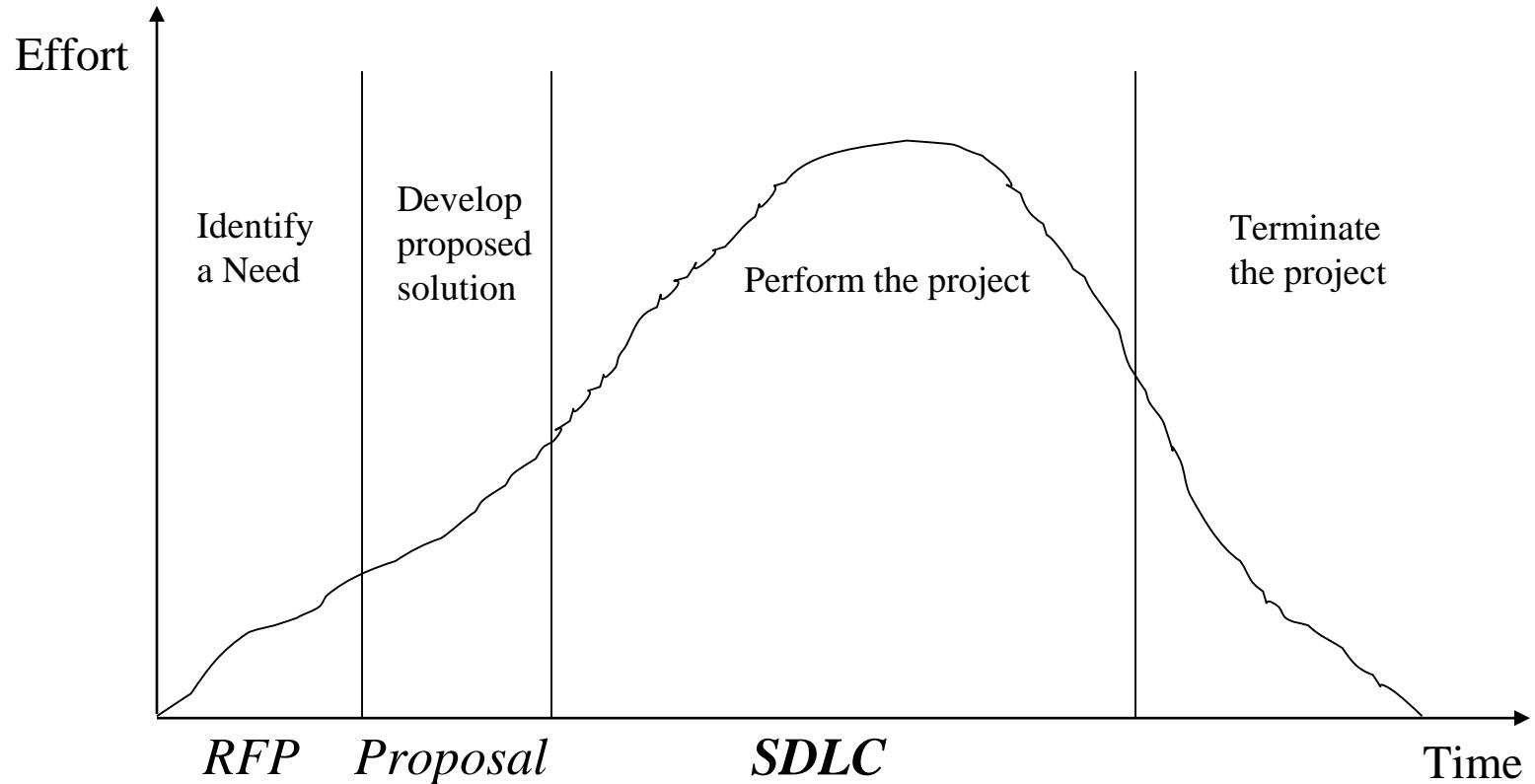
- Generic Project Process Model
- Project Life Cycle Processes
- RFP and Proposals

# Generic Project Process Model

## 1.2 Project Life Cycle

**The project life cycle typically consists of 4 stages:**

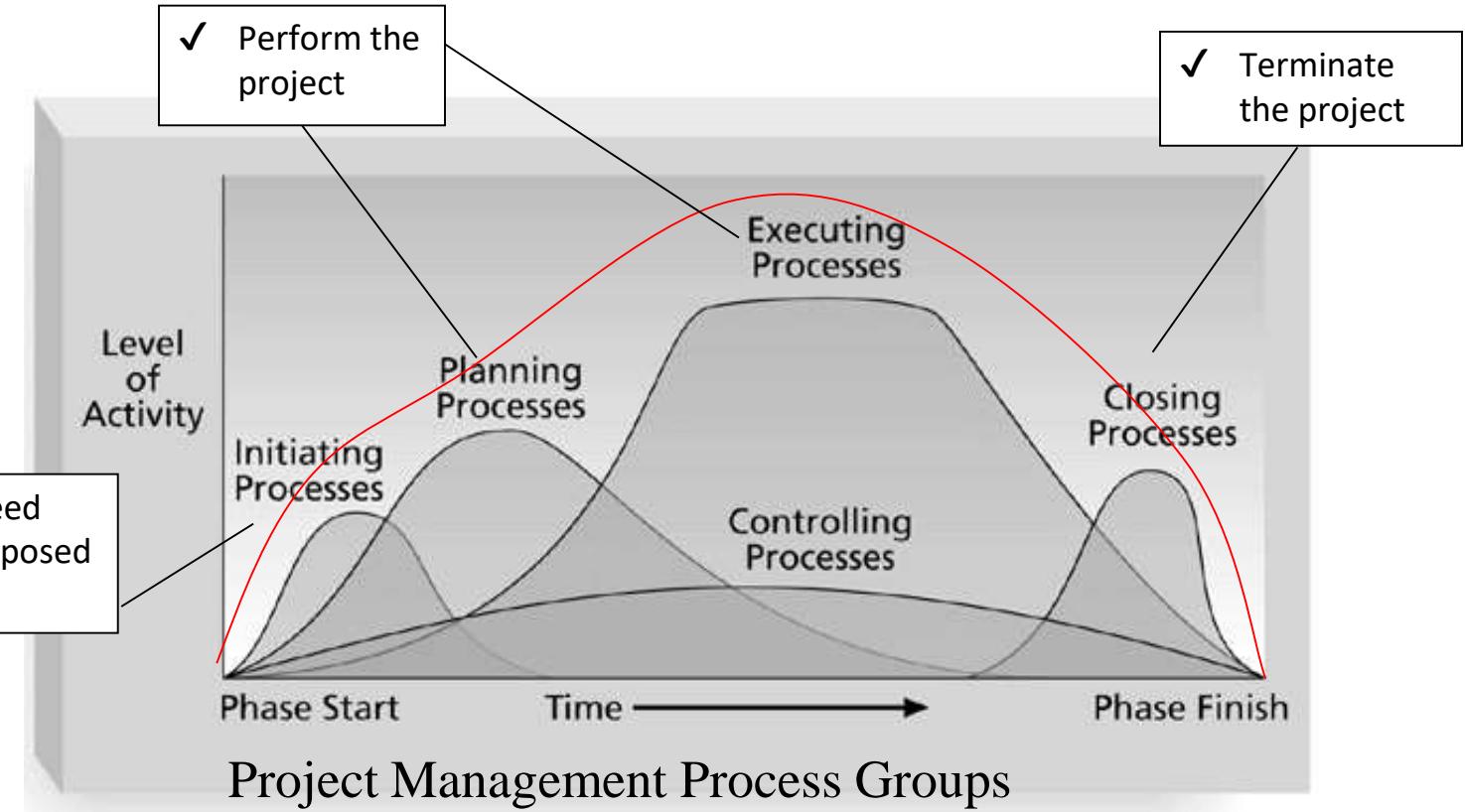
- **Identify a need**
- **Develop proposed solution**
- **Perform the project**
- **Terminate the project**



# Project Life Cycle Processes

## 1.2 Project Life Cycle

- (a) Initiating Processes
- (b) Planning Processes
- (c) Executing Processes
- (d) Monitoring & Controlling Processes
- (e) Closing Processes



**Note:** Project planning is iterative and must be continually reviewed.

# (a) Initiating

## Project Life Cycle Processes

- A **kick-off meeting** is held to establish the customer requirements, goals, needs, and expected benefits.
- **Followed by one or two more meetings to further define and streamline the project requirements.**
- **Output: Project Charter**

*Note: a project charter is a formal project authorization which documents the shared understanding of a **project's scope, development and objectives**, while **also defining the roles and responsibilities of each party involved**. (<https://thedigitalprojectmanager.com/project-charter/>)*



# (b) Planning

Project Life Cycle Processes

- **Create a Project Management Plan (PMP) and kept it up-to-date as the project progresses.**
- PMP **contains** sufficient details to monitor and exercise control over the project execution e.g. **schedules, milestones, project team members, and all other project related information.**
- In maintenance projects, the detailed schedule is dynamically updated as and when maintenance requests are received and delivered.



# (c) Executing

## Project Life Cycle Processes

- Once the plan is in place - execute the project
- The Project Manager evaluates adherence to the project planning process and the work products and services of the process to the applicable requirements, objectives, and standards, and addresses noncompliance.
- By ensuring adherence to the plan, information will be available to accurately identify issues and problems in their early stages and minimize risks.
- **Output:** work results



# (d) Monitoring & Controlling

Project Life Cycle Processes

- During the project execution, the Project Manager monitors the progress against the plan. Reason = **identify issues**
- For this, the Project Manager gathers the information needed, analyzes it and identifies deviations that are significant.
- **Take corrective actions to solve identified issues.** This may include re-planning and establishing new agreements.
- **Output:** overall health of project (e.g. healthy if project is on time)

(What is the overall health of your FYP?)



# (e) Closing

Project Life Cycle Processes

- When the project is completed the Project Manager gathers the project related data and documents.
- Handover project product to the customer, redeploy project resources, conduct post project review.



# Request for Proposal & Proposals

## 1.2 Project Life Cycle

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- **Request for Proposal (RFP)** is a procurement document used to request proposals from prospective vendors of products or services.
- If you were a customer, how would you evaluate the proposals received from software houses?
- **Criteria for evaluating proposal may include:**
  - Approach towards project
  - Experience of the software house
  - Price
  - Schedule
  - Etc.

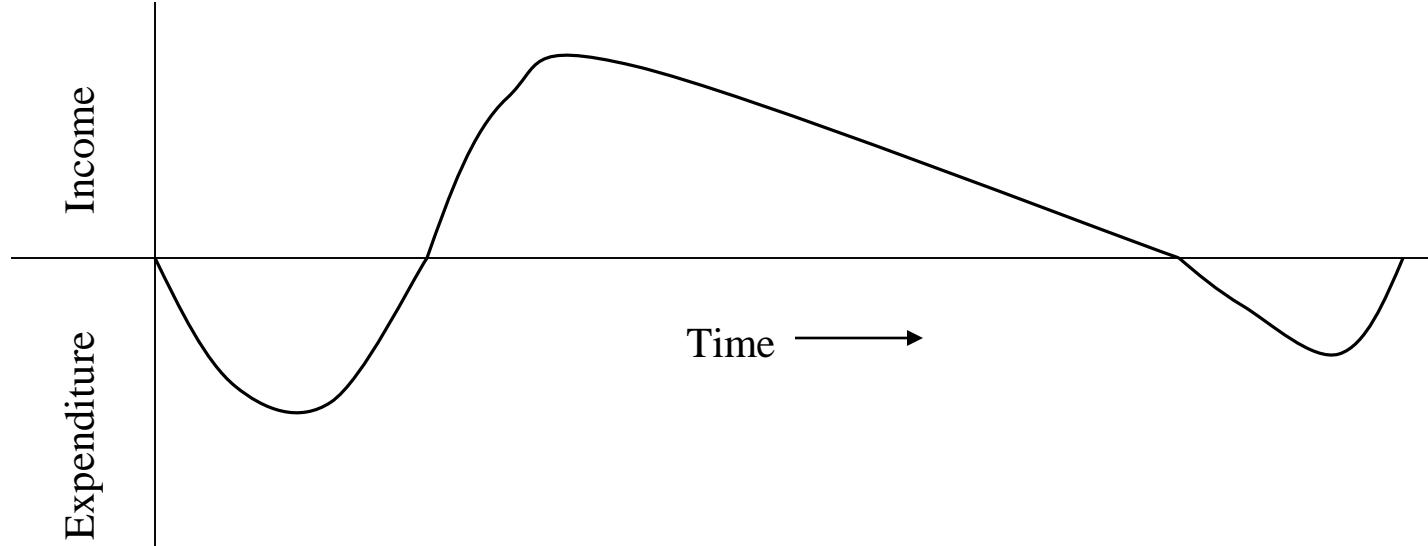
## **1.3 Project Appraisal and Evaluation**

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- Introduction
- Cost & Benefit Analysis
- Net Profit
- Payback Period
- Return on Investment (ROI)
- Net Present Value (NPV)

# Introduction

Typical PLC cash flow



- **Negative cash flow** during Product development
- **Positive cash flow** during the product's operating life
- **Decommissioning cost** at the end of product's life



# Cost & Benefit Analysis

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- A comparative assessment of all the benefits you anticipate from the project and all the costs required to introduce the project, perform it and support the changes resulting from it.
- **Helps you to**
  - Decide whether to undertake a project or decide which of several projects to undertake.
  - Frame appropriate project objectives.
  - Develop appropriate before and after measures of project success.
  - Prepare estimates of the resources required to perform the project work.



# Project Benefits

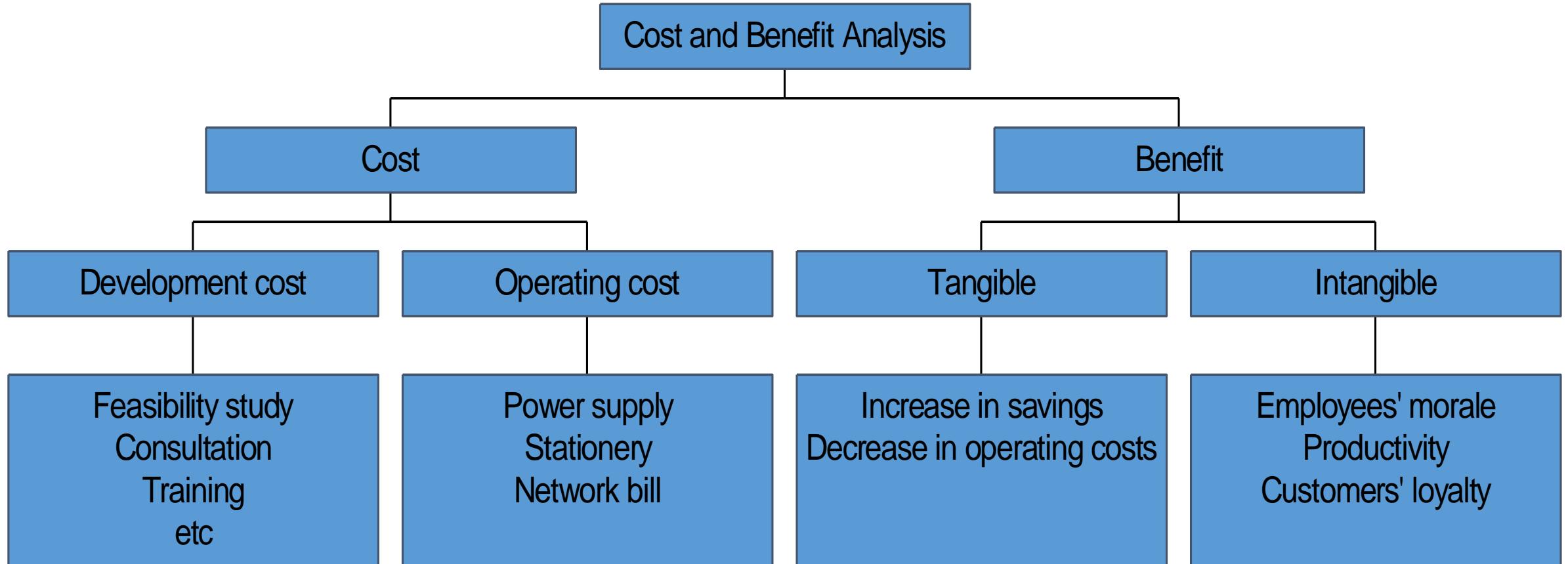
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- Anticipated benefits may be expressed in monetary equivalents (e.g., **reduced operating costs or increased revenue**)
- For benefits that may not be expressed in monetary terms, consider associated benefits. E.g., if your project is to improve staff morale, associated benefits may include **reduced turnover, increased productivity, fewer absences and fewer formal grievances**.



# Cost & Benefit Analysis - Examples

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# Net Profit

## 1.3 Project Appraisal and Evaluation

**Net profit is the difference between total costs and total income over the life of the project.**

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000	-1,000,000	-100,000	-120,000
1	10,000	200,000	30,000	30,000
2	10,000	200,000	30,000	30,000
3	10,000	200,000	30,000	30,000
4	20,000	200,000	30,000	30,000
5	100,000	300,000	30,000	75,000
<b>Net Profit</b>	<b>50,000</b>	<b>100,000</b>	<b>50,000</b>	<b>75,000</b>

Table 1.1 Four project cash flow projections – figures are end of year totals (RM)  
Based on NP alone which project you would approve for development?



# Net Profit

## 1.3 Project Appraisal and Evaluation

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- **Advantages**
  - Simple and intuitive.
- **Disadvantages**
  - Do not consider **risk**
    - E.g. although **Project 2** returns greatest net profit but inherent risks are not identified.
  - Do not consider the **timing of the cash flows**.
    - E.g. **Project 1 & 3** has equal net profit but are both projects equally preferable?
      - **Project 1** has bulk of income occurs late in the life of project. However, having to wait for a return has disadvantage that the investment must be funded for longer.
      - **Project 3** returns a steady income throughout its life.
      - Thus, both projects are not equally preferable.



# Payback Period

1.3 Project Appraisal and Evaluation

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- Calculate the time taken to break even or pay back the initial investment.
- Normally project with the **shortest payback period will be chosen** on the basis that an organization will wish to minimize the time that a project is ‘in debt’.
- Subtract each individual annual cash **inflow** from the initial cash **outflow**, until the payback period has been achieved.



# Payback Period

## 1.3 Project Appraisal and Evaluation

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000	-1,000,000	-100,000	-120,000
1	10,000	200,000	30,000	30,000
2	10,000	200,000	30,000	30,000
3	10,000	200,000	30,000	30,000
4	20,000	200,000	<b>30,000</b>	<b>30,000</b>
5	<b>100,000</b>	<b>300,000</b>	30,000	75,000
Net Profit	<b>50,000</b>	<b>100,000</b>	<b>50,000</b>	<b>75,000</b>

Table 1.2 Four project cash flow projections – figures are end of year totals (RM)

- Considering the payback periods, Project 3 has the shortest payback period.
- But Net Profit analysis shows that **Project 2 and Project 4** are more profitable than Project 3.



# Payback Period

## 1.3 Project Appraisal and Evaluation

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### Advantages:

- Simple to calculate
- Not particularly sensitive to small forecasting errors.

### Disadvantages:

- Ignores the **overall profitability** of the project – in fact, totally ignores any income (or expenditure) once the project has broken even.
- E.g. the payback period for **Project 3** is in year 4 compared to **Project 2** (year 5), **Project 4** (year 4). **However, Project 2 and Project 4 are more profitable than Project 3.**



# Return on Investment (ROI)

## 1.3 Project Appraisal and Evaluation

- Also known as the **Accounting Rate of Return (ARR)**
- Provides a way of comparing the net profitability to the investment required.
- Formula:

$$\text{ROI} = \frac{\text{average annual profit}}{\text{total investment}} \times 100$$



# Return on Investment (ROI)

## 1.3 Project Appraisal and Evaluation

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000	-1,000,000	-100,000	-120,000
1	10,000	200,000	30,000	30,000
2	10,000	200,000	30,000	30,000
3	10,000	200,000	30,000	30,000
4	20,000	200,000	30,000	30,000
5	100,000	300,000	30,000	75,000
<b>Net Profit</b>	50,000	100,000	50,000	75,000
<b>ROI</b>	?	?	?	?

Table 1.3 Four project cash flow projections – figures are end of year totals (RM)

$$\text{ROI} = \frac{\text{average annual profit}}{\text{total investment}} \times 100$$

ROI calculation:

### Project 1

$$\text{ROI} = \frac{50,000}{5} \times 100 = 10\%$$

### Project 2

$$\text{ROI} = \frac{100,000}{5} \times 100 = 2\%$$



# Return on Investment (ROI)

## 1.3 Project Appraisal and Evaluation

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000	-1,000,000	-100,000	-120,000
1	10,000	200,000	30,000	30,000
2	10,000	200,000	30,000	30,000
3	10,000	200,000	30,000	30,000
4	20,000	200,000	30,000	30,000
5	100,000	300,000	30,000	75,000
<b>Net Profit</b>	50,000	100,000	50,000	75,000
<b>ROI</b>	<b>10%</b>	<b>2%</b>	<b>10%</b>	<b>12.5%</b>

Table 1.3 Four project cash flow projections – figures are end of year totals (RM)

Which project is most worthwhile based on ROI alone?



# Return on Investment (ROI)

## 1.3 Project Appraisal and Evaluation

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### Advantages:

- Simple and easy to calculate measure of return on capital
- Considers the timing by averaging the net profit over the number of years.

### Disadvantages:

- Takes no account of the timing of the cash flows.
- This rate of return bears no relationship to the interest rates offered or charged by banks (or any other normal interest rate) since it takes no account of the timing of the cash flows or of the compounding of interest.



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

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- Net present value (NPV) is a method used to determine the current value of all future cash flows generated by a project, including the initial capital investment.
- Takes into account the profitability of a project and timing of the cash flows that are produced.
- 2 views:
  - Receiving RM100 today is better than having to wait until next year to receive it.
    - The present value of RM100 in a year's time is RM91.
    - mean  $Y_1$  (RM100) =  $Y_0$  (RM91),  $Y_0$ = Now,  $Y_1$ =1 year later  
**(assuming Discount rate = 10%)**
  - Invest RM100 in a bank today and have RM110 in a year's time  
**(assuming Discount rate = 10%).**  
Why RM110?



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

$$\text{Present Value} = \frac{\text{Value in year } t}{(1 + r)^t}$$

where

- **r** is the **discount rate** (expressed as a decimal value)
- **t** is the **number of years into the future** that the cash flow occurs

- The present value of a cash flow may be calculated by multiplying the cash flow by **discount factor**.
- Difficulty:
  - What is the appropriate **discount rate**?



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

**Discount Factor =  $1/(1+r)^t$**

Year	Discount Rate (%)					
	5	6	8	10	12	15
1	0.9524	0.9434	0.9259	0.9091	0.8929	0.8696
2	0.9070	0.8900	0.8573	0.8264	0.7972	0.7561
3	0.8638	0.8396	0.7938	0.7513	0.7118	0.6575
4	0.8227	0.7921	0.7350	0.6830	0.6355	0.5718
5	0.7835	0.7473	0.6806	0.6209	0.5674	0.4972

$$1/(1+0.05)^1$$

$$1/(1+0.08)^3$$



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

$$\text{Discount Factor} = 1/(1+r)^t$$

Year	Project 1 Cash Flow (RM)	Discount Factor @ 10%	Discounted Cash Flow
0 (NOW)	-100,000	1.0000	-100,000
1	10,000	0.9091	9,091
2	10,000	0.8264	8,264
3	10,000	0.7513	7,513
4	20,000	0.6830	13,660
5	100,000	0.6209	62,090
Net Profit	RM50,000		<b>NPV: RM618</b>

Applying the discount factors to project



# Net Present Value (NPV)

1.3 Project Appraisal and Evaluation

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## Exercise

1. Using a **10% discount rate**, calculate the NPV for **Project 3**.
2. Based on the NPVs, decide whether **Project 1 or Project 3** is more beneficial to pursue.





# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

Year	Project 3 Cash Flow (RM)	Discount Factor @ 10%	Discounted Cash Flow
0	-100,000	1.0000	-100,000
1	30,000	0.9091	27,273
2	30,000	0.8264	24,792
3	30,000	0.7513	22,539
4	30,000	0.6830	20,490
5	30,000	0.6209	18,627
Net Profit	50,000		NPV: RM13,721

Applying the discount factors to project

Based on NPV: Is Project 3 more beneficial to pursue than Project 1?

A project with higher NPV is more preferable (if all other factors are equal)



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

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- The **discount rate** can be thought of as a **target rate of return**.
- If, for example, we set a target rate of return of 15% we would reject any project that did not display a **NPV > 0** using a 15% discount rate.





# Weighted Scoring Model

## 1.3 Project Appraisal and Evaluation

- Provides an organized process for selecting projects based on many **criterions**.
- Weights** indicates the importance of each criterion.
- NPV, ROI can become one of criterions.

Assign a score  
(0 to 100) to  
each criterion

90 means very  
likely the project  
will meet the  
specified criterion

Criteria (for project selection)	Weight (%)	Project 1	Project 2	Project 3
Support business objectives	10%	80	90	50
Availability of resources	10%	70	70	50
Strong sponsor & customer support	10%	70	90	50
Low risk	5%	50	50	50
High probability of success	15%	90	90	50
NPV	50%	80	90	50
<b>Weighted Project Scores</b>	<b>100%</b>	78	86	50

50  
means  
not really  
sure  
whether  
the  
project  
will meet  
the  
specified  
criteria

Weighted Project Scores for Project 2:  $(10\% * 90) + (10\% * 70) + (10\% * 90) + (5\% * 50) + (15\% * 90) + (50\% * 90) = 86$ .



# Net Present Value (NPV)

## 1.3 Project Appraisal and Evaluation

Year	Project 2 Cash Flow (RM)	Discount Factor @ 10%	Discounted Cash Flow
0	-1,000,000	1.0000	-1,000,000
1	200,000	0.9091	181,820
2	200,000	0.8264	165,280
3	200,000	0.7513	150,260
4	200,000	0.6830	136,600
5	300,000	0.6209	186,270
Net Profit	100,000		NPV: -179,770

Applying the discount factors to project

**Exercise:** Using a discount rate of 9%, calculate the NPV and ROI for Project B.

Project B	Year 0	Year 1	Year 2	Year 3	Total
Costs	100,000	60,000	60,000	50,000	
Discount Factor					
Discounted Costs	100,000				
Benefits	0	80,000	90,000	180,000	
Discount Factor					
Discounted Benefits	0				
Discounted benefits – costs	(100,000)				
Cumulative benefits - costs	(100,000)				
ROI					

**Exercise:** Using a discount rate of 9%, calculate the NPV and ROI for Project B.

$$\text{ROI} = \text{NPV} / \text{Discounted Cost} \times 100\%$$

Project B	Year 0	Year 1	Year 2	Year 3	Total
Costs	100,000	60,000	60,000	50,000	
Discount Factor		0.9174	0.8417	0.7722	
Discounted Costs	100,000	55,044	50,502	38,610	244,156
Benefits	0	80,000	90,000	180,000	
Discount Factor		0.9174	0.8417	0.7722	
Discounted Benefits	0	73,392	75,753	138,996	288,141
Discounted benefits – costs	(100,000)	18,348	25,251	100,386	NPV = 43,985
Cumulative Discounted benefits – costs	(100,000)	(81,652)	(56,401)	43,985	

$$\text{ROI} = \frac{\text{Total Discounted Benefits} - \text{Total Discounted Cost}}{\text{Total Discounted Cost}} \times 100\% \\ = (43,985 / 244,156) \times 100\% = 18.02\% \text{ (the higher the percentage the better)}$$

## 1.4 Knowledge & Attributes of a Project Manager (PM)

- Knowledge of a PM
- Attributes of a PM

# Knowledge of a PM

## 1.4 Knowledge & Attributes of a Project Manager

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### Ten Knowledge Areas



	<b>Initiating</b>	<b>Planning</b>	<b>Executing</b>	<b>M&amp;C</b>	<b>Closing</b>
<b>Integration</b>	Develop Project Charter	Develop PM Plan	Direct & Manage Project Work	<ul style="list-style-type: none"> <li>• M&amp;C Project Work</li> <li>• Perform Integrated Change Control</li> </ul>	Close Project or Phase
<b>Scope</b>		<ul style="list-style-type: none"> <li>• Plan Scope Management</li> <li>• Collect Requirements</li> <li>• Define Scope</li> <li>• Create WBS</li> </ul>		<ul style="list-style-type: none"> <li>• Validate Scope</li> <li>• Control Scope</li> </ul>	
<b>Time</b>		<ul style="list-style-type: none"> <li>• Plan Schedule Management</li> <li>• Define Activities</li> <li>• Sequence Activities</li> <li>• Estimate Activity Resources</li> <li>• Estimate Activity Durations</li> <li>• Develop Schedule</li> </ul>		Control Schedule	
<b>Cost</b>		<ul style="list-style-type: none"> <li>• Plan Cost Management</li> <li>• Estimate Costs</li> <li>• Determine Budget</li> </ul>		Control Costs	
<b>Quality</b>		Plan Quality Management	Perform Quality Assurance	Control Quality	
<b>HR</b>		Plan HR Management	<ul style="list-style-type: none"> <li>• Acquire Project Team</li> <li>• Develop Project Team</li> <li>• Manage Project Team</li> </ul>		
<b>Communications</b>		Plan Communications Management	Manage Communications	Control Communications	
<b>Risk</b>		<ul style="list-style-type: none"> <li>• Plan Risk Management</li> <li>• Identify Risks</li> <li>• Perform Qualitative Risk Analysis</li> <li>• Perform Quantitative Risk Analysis</li> <li>• Plan Risk Responses</li> </ul>		Control risks	
<b>Procurement</b>		Plan Procurement Management	Conduct Procurements	Control Procurements	Close Procurements
<b>Stakeholder</b>	Identify Stakeholders	Plan Stakeholder Management	Manage Stakeholder Expectation	Monitor Stakeholder Engagement	<span style="border: 2px solid red; padding: 2px;">S</span>

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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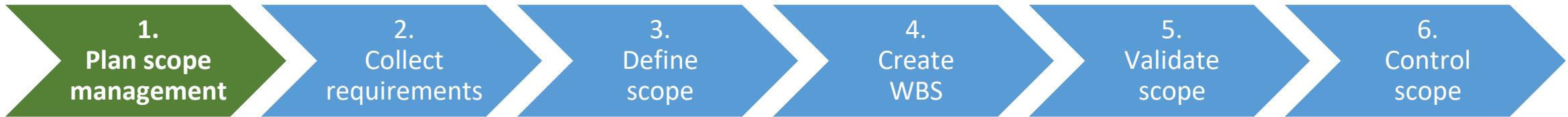


- Includes processes involved in **defining and controlling what work is or is not included in a project.**
- ensures that the project team and stakeholders have the same understanding of deliverable (products) and what processes the project team will use to produce them.
- **6 main processes:**
  1. Plan scope management
  2. Collect requirements
  3. Define scope
  4. Create WBS
  5. Validate scope
  6. Control scope

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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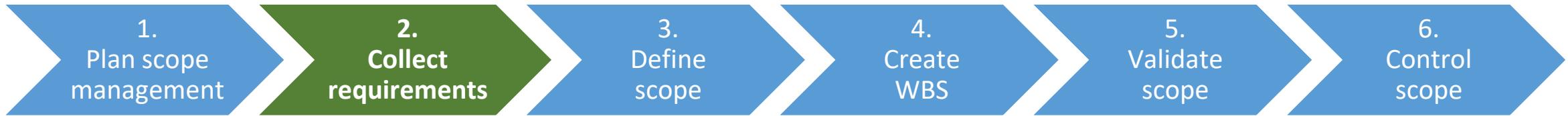
### 1. Plan scope management

- Define, validate, and control project scope
- **Key benefits:** provides guidance and direction on how scope will be managed throughout the project.

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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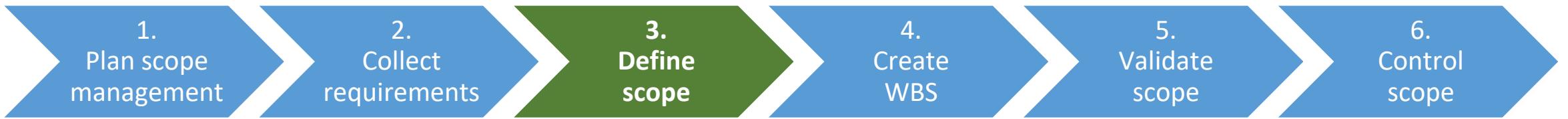
## 2. Collect Requirements

- Define and document the features and functions of the products to be produced during the project **as well as the processes used for creating them.**

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 3. Define Scope

- Review the project charter, requirements documents, and organizational process assets **to create a scope statement, adding more information as requirements are developed and change requests are approved.**

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 4. Create Work Breakdown Structure (WBS)

- Subdivide the major project deliverables into smaller, more manageable components.
- **Depict WBS as a hierarchy of activities.**
- Can be organized around project products, project phase, or using the project management process groups.
- **Guideline:** breakdown the work until each task can be performed by one person within 8-80 hours (1-10 days)

#### 1.0 Concept

- 1.1 Evaluate current systems (12 days) X
- 1.2 Define requirements
  - 1.2.1 Define user requirements (2 days) ✓
  - 1.2.2 Define content requirements
  - 1.2.3 Define system requirements
  - 1.2.4 Define server owner requirements
- 1.3 Define specific functionality
- 1.4 Define risks and risk management approach
- 1.5 Develop project plan
- 1.6 Brief Web development team
- 2.0 Web site design
- 3.0 Web site development
- 4.0 Roll out
- 5.0 Support

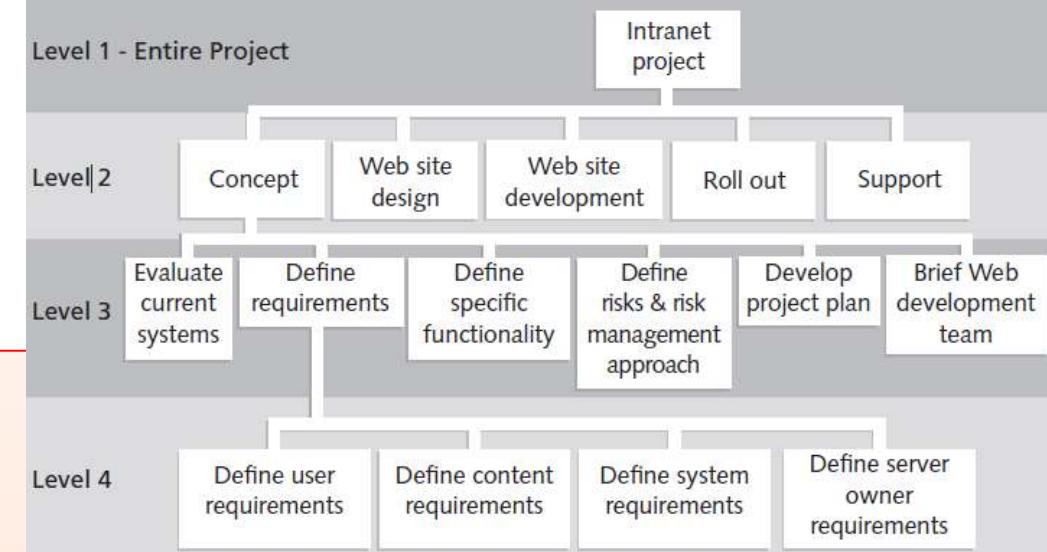
# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

**Sample WBS organized  
by phases/stages in  
OUTLINE  
NUMBERING format**

**Q) There are how  
many phases or  
stages in this  
WBS?**

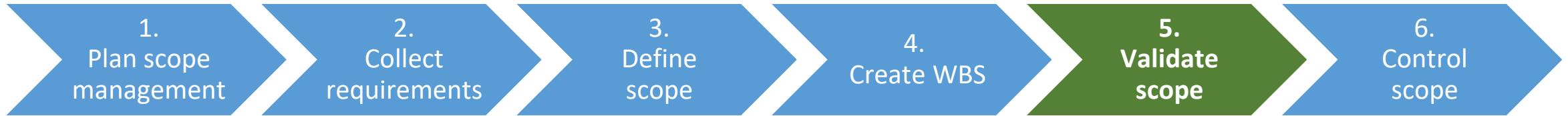
- 1.0 Concept
  - 1.1 Evaluate current systems
  - 1.2 Define requirements
    - 1.2.1 Define user requirements
    - 1.2.2 Define content requirements
    - 1.2.3 Define system requirements
    - 1.2.4 Define server owner requirements
  - 1.3 Define specific functionality
  - 1.4 Define risks and risk management approach
  - 1.5 Develop project plan
  - 1.6 Brief Web development team
- 2.0 Web site design
- 3.0 Web site development
- 4.0 Roll out
- 5.0 Support



# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 5. Validate Scope

- To formalize acceptance of the project deliverables
- Stakeholders (customer/project sponsor) inspect and formally accept deliverable during this process.
- If not acceptable, stakeholder usually request for changes

# Project Scope Management

## 1.4 Knowledge & Attributes of a Project Manager

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## 6. Control Scope

- Control changes to project scope throughout the life of the project.

### 1.0 Concept

- 1.1 Evaluate current systems
  - 1.2 Define requirements
    - 1.2.1 Define user requirements
    - 1.2.2 Define content requirements
    - 1.2.3 Define system requirements
    - 1.2.4 Define server owner requirements
  - 1.3 Define specific functionality
  - 1.4 Define risks and risk management approach
  - 1.5 Develop project plan
  - 1.6 Brief Web development team
- 2.0 Web site design
- 3.0 Web site development
- 4.0 Roll out
- 5.0 Support

5. Control scope

# Project Time Management

## 1.4 Knowledge & Attributes of a Project Manager

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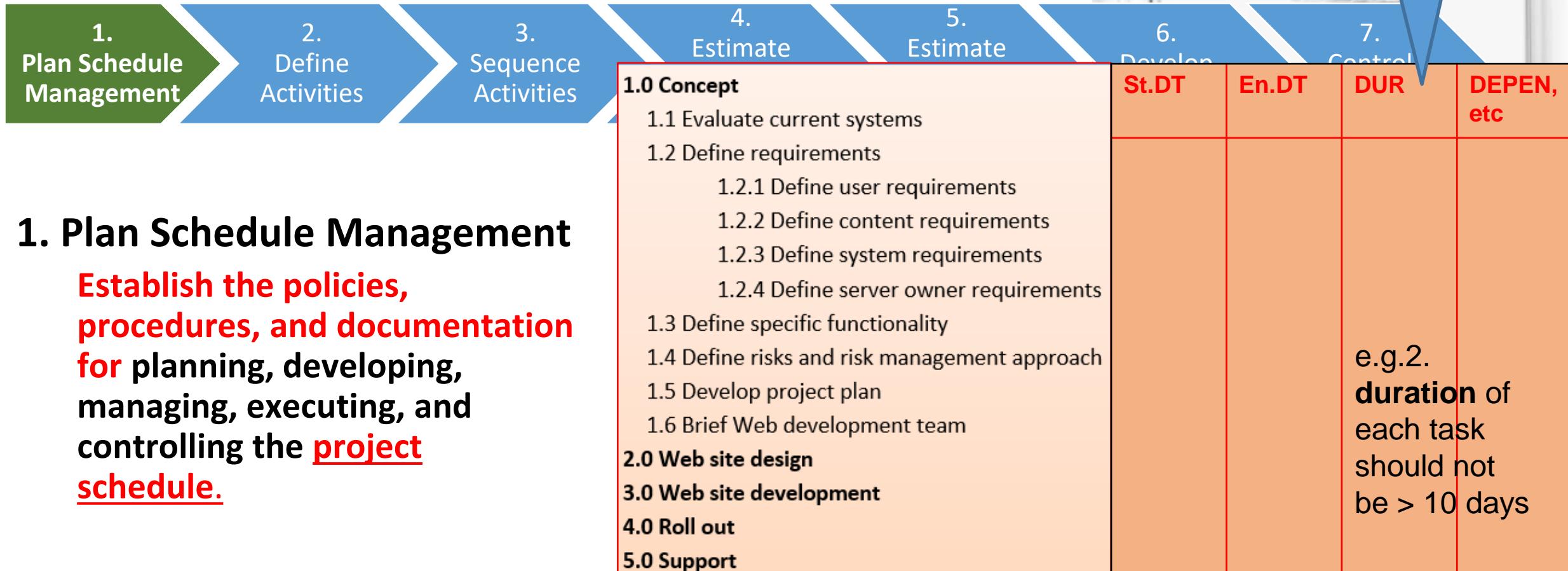
### 7 main processes:

1. Plan Schedule Management
2. Define Activities
3. Sequence Activities
4. Estimate Activity Resources
5. Estimate Activity Durations
6. Develop Schedule
7. Control Schedule



# Project Time Management

## 1.4 Knowledge & Attributes of a Project Manager



# Project Time Management

## 1.4 Knowledge & Attributes of a Project Manager



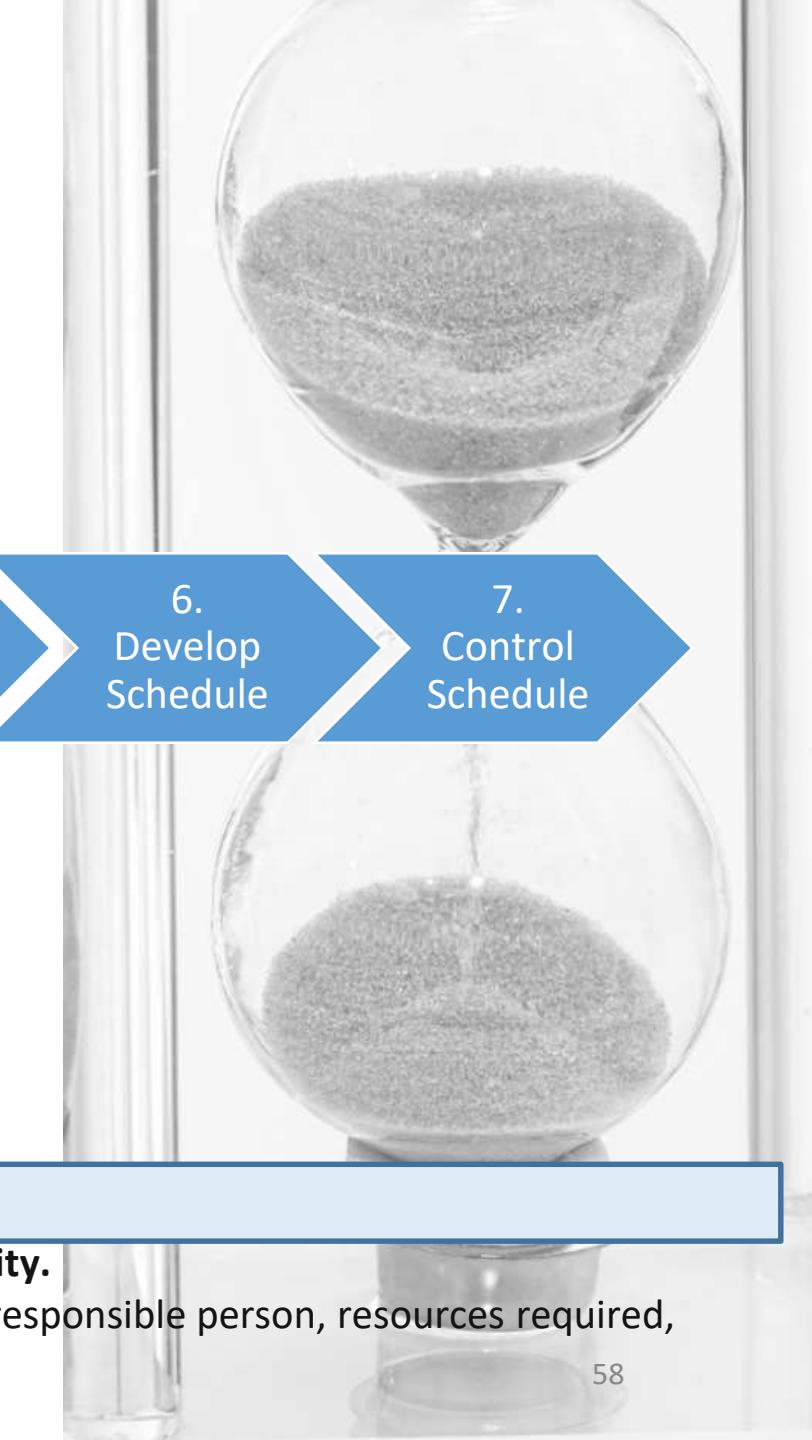
### 2. Define Activities

- Identify the specific activities (from the WBS) that the project team members and stakeholders must perform to produce the project deliverables.
- Outputs: activity list, activity attributes, and milestone list.

What are activity attributes?

Ans – detailed description of an activity.

Examples: description of the activity, responsible person, resources required, type of effort, location, etc



# Project Time Management

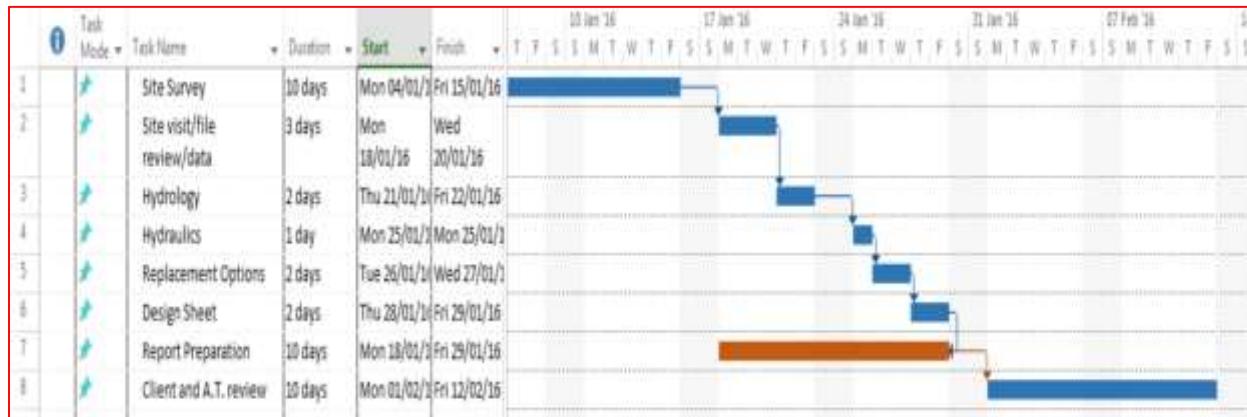
## 1.4 Knowledge & Attributes of a Project Manager

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### 3. Sequence Activities

- Identify and document the relationships between project activities.
- **Main output:** project schedule (Gantt Chart)



# Project Time Management

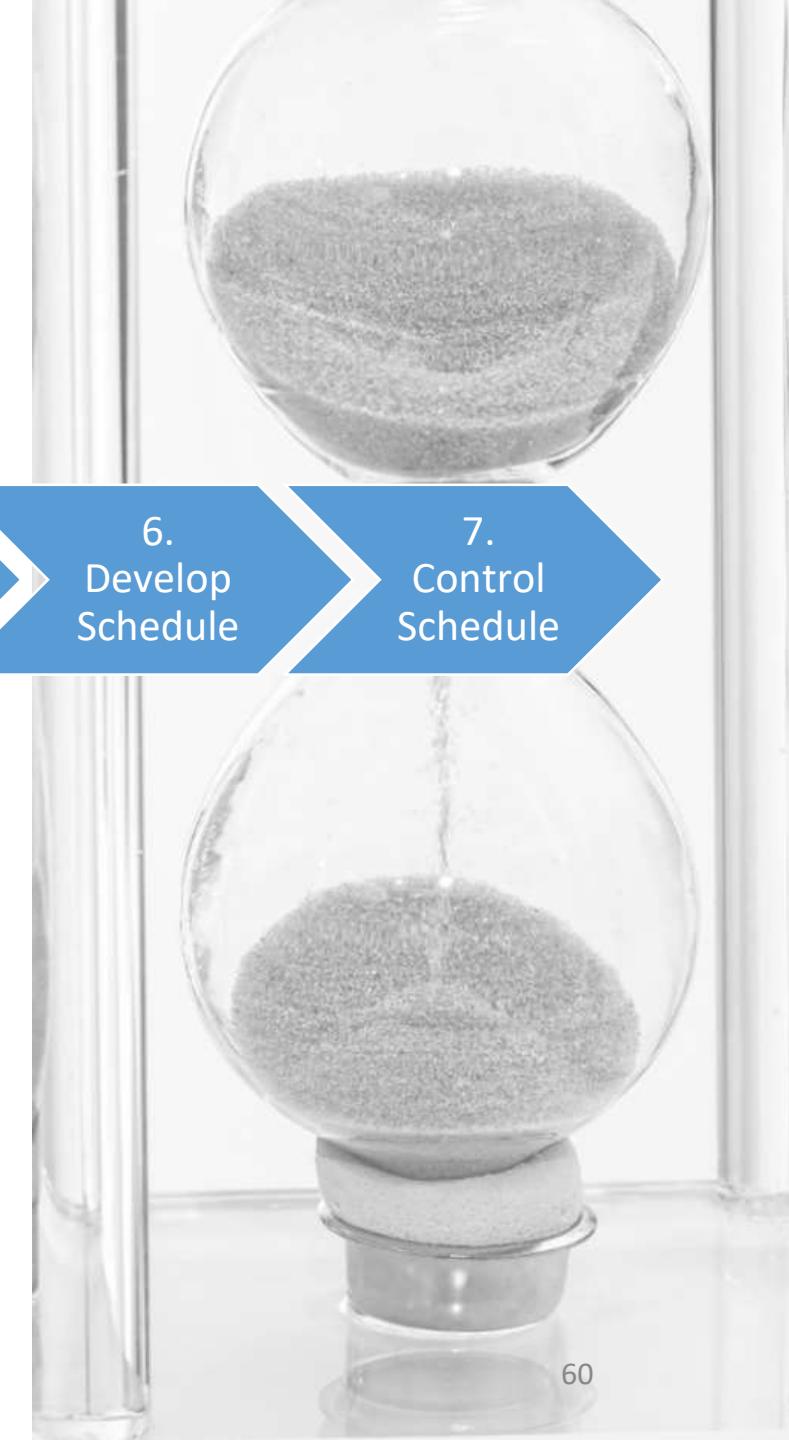
## 1.4 Knowledge & Attributes of a Project Manager

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### 4. Estimate Activity Resources

- Estimate how much resources – people, equipment, and materials – a project team should use to perform activities.
- Outputs: activity resource requirements, resource breakdown structure



# Project Time Management

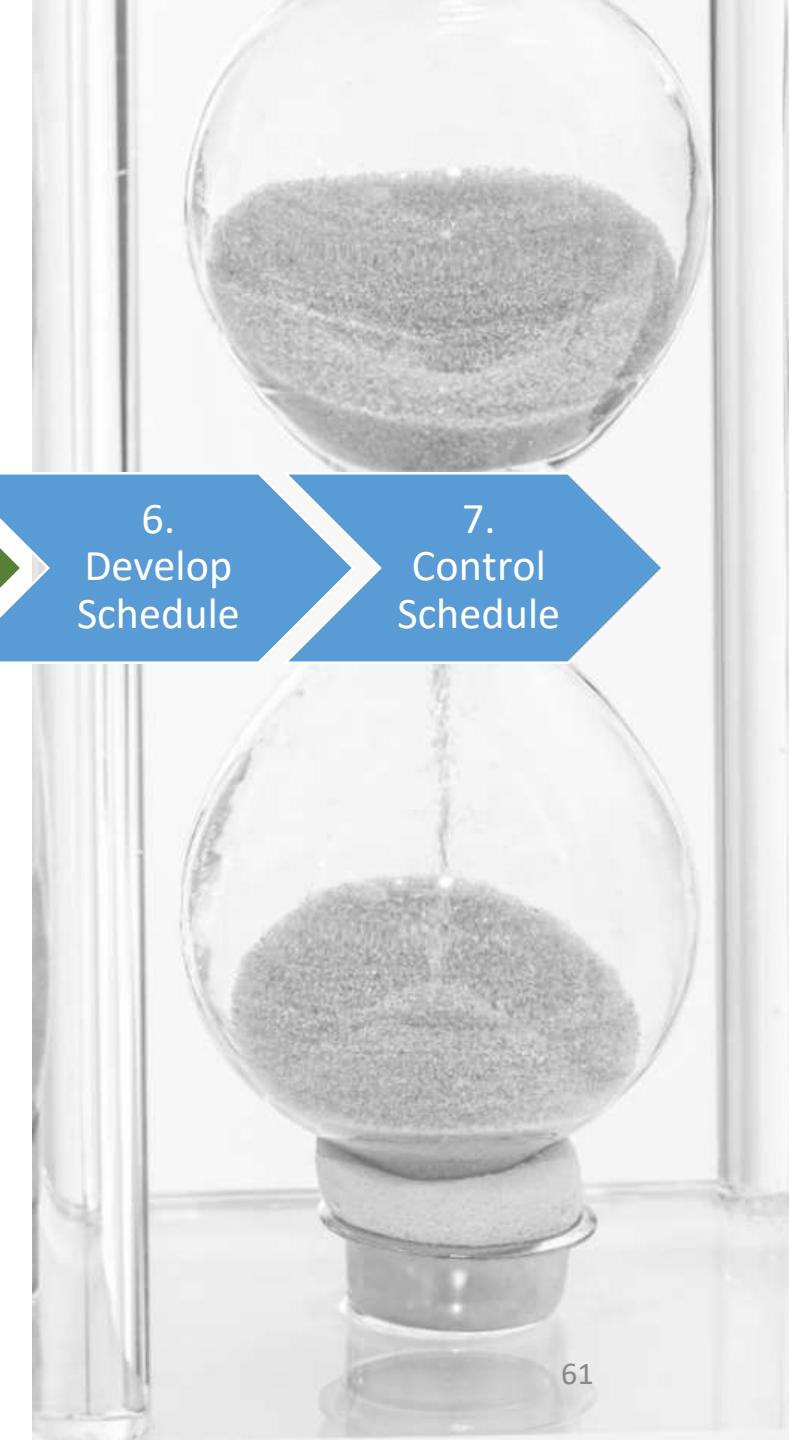
## 1.4 Knowledge & Attributes of a Project Manager

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### 5. Estimate Activity Durations

- Estimate durations needed to complete individual activities.
- Tool and techniques: three-point estimates
- **Main outputs:** activity duration estimates.



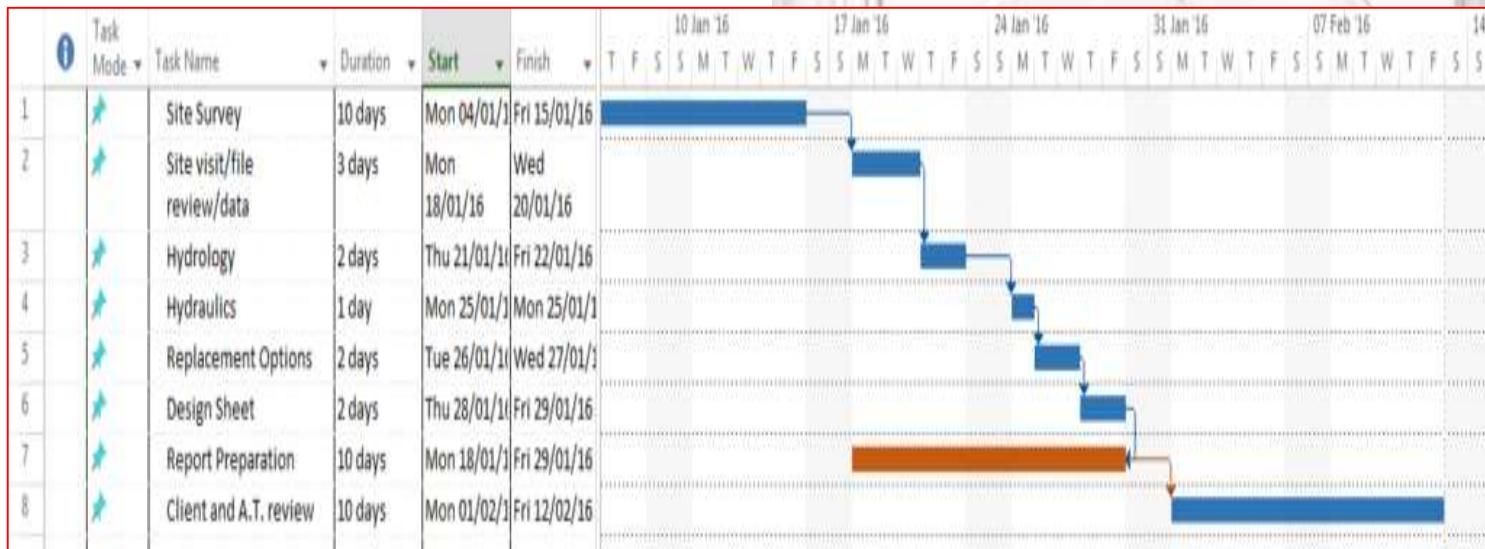
# Project Time Management

## 1.4 Knowledge & Attributes of a Project Manager



## 6. Develop Schedule

- Analyze activity sequences, activity resource estimates, and activity duration estimates to create the project schedule.
- **Outputs:** project schedule, schedule baseline, schedule data, project calendars.



# Project Time Management

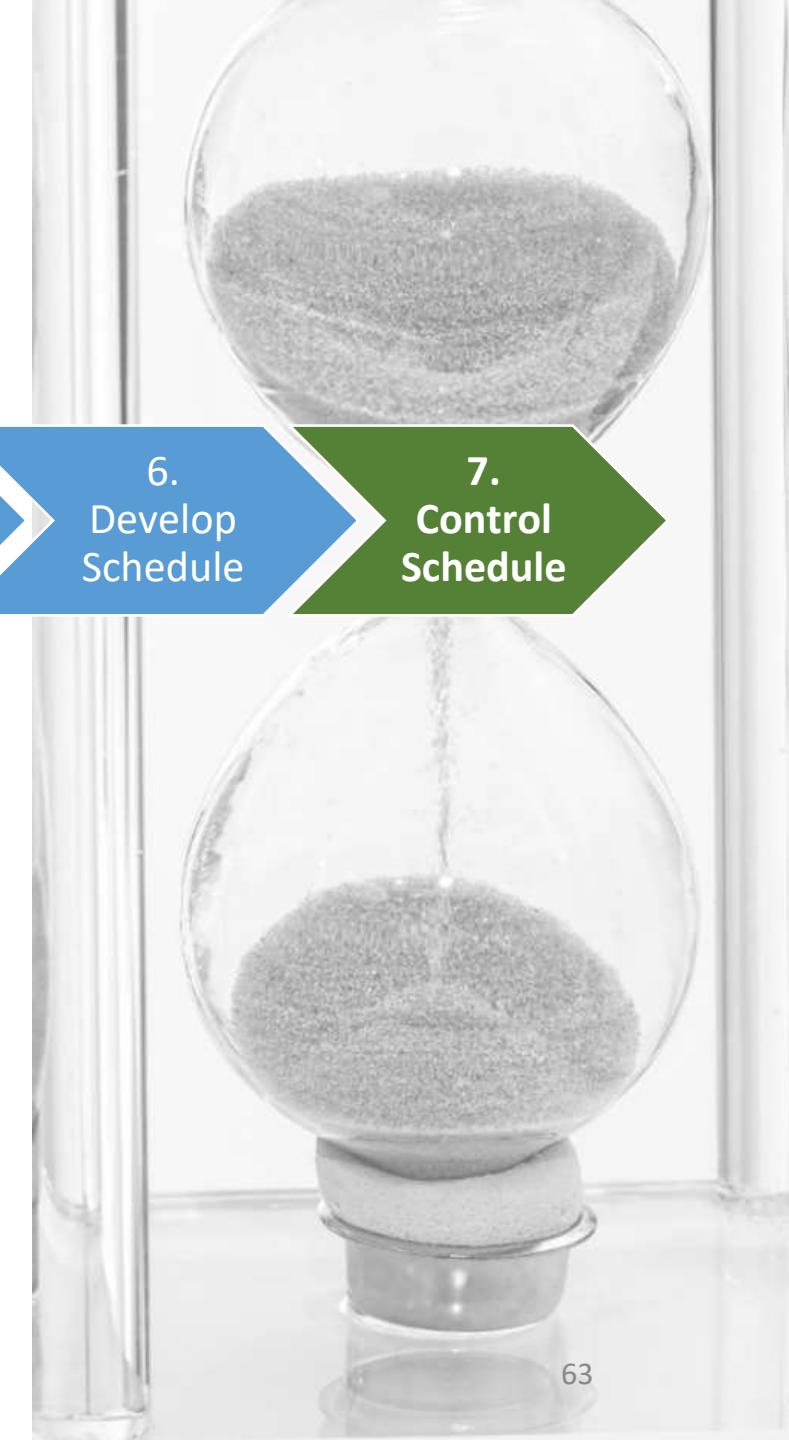
## 1.4 Knowledge & Attributes of a Project Manager

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### 7. Control Schedule

- **Control and manage changes to the project schedule**  
*(Take corrective actions when activities are not on track)*
- Tool and technique: Resource optimization techniques (resource leveling)





# Project Cost Management

## 1.4 Knowledge & Attributes of a Project Manager

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- Includes the processes required **to ensure that a project team completes a project within an approved budget.**
- **4 processes:**
  1. Plan Cost Management
  2. Estimate Cost
  3. Determine Budget
  4. Control Costs



# Project Cost Management

## 1.4 Knowledge & Attributes of a Project Manager

---



### 1. Plan Cost Management

- Establish the policies, procedures, and documentation for **planning, managing, expending, and controlling project costs.**
- **Outputs:** cost management plan.



# Project Cost Management

## 1.4 Knowledge & Attributes of a Project Manager

### 2. Estimate Cost

- To estimate cost need to know all the resources needed to complete the project - E.g. (people , equipment, materials, hardware, software)
- **Outputs:** activity cost estimates & basis of estimates

*(The assumptions made in producing the cost estimate)*

Surveyor Pro Project Cost Baseline Created October 10, 2008

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1. Project Management													
Project manager	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	96,000
Project team members	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	144,000
Contractors		6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	66,300
2. Hardware													
2.1 Handheld devices				30,000	30,000								60,000
2.2 Servers					8,000	8,000							16,000
3. Software													
3.1 Licensed software				10,000	10,000								20,000
3.2 Software development	60,000	60,000	80,000	127,000	127,000	90,000	50,000						594,000
4. Testing			6,000	8,000	12,000	15,000	15,000	13,000					69,000
5. Training and Support													
Trainee cost									50,000				50,000
Travel cost										8,400			8,400
Project team members							24,000	24,000	24,000	24,000	24,000	24,000	144,000
6. Reserves				10,000	10,000	30,000	30,000	60,000	40,000	40,000	30,000	3,540	253,540
Totals	20,000	86,027	92,027	172,027	223,027	198,027	185,027	173,027	148,427	90,027	80,027	53,567	1,521,240



# Project Cost Management

## 1.4 Knowledge & Attributes of a Project Manager

### 3. Determine Budget

- Aggregate the estimated costs of individual activities or work packages to establish an authorized cost baseline.
- Main outputs: **cost baseline(approved budget), project funding reqs**

Surveyor Pro Project Cost Baseline Created October 10, 2008\*

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1. Project Management													
Project manager	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	96,000
Project team members	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	144,000
Contractors		6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	66,300
2. Hardware													
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3. Software													
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3.2 Software development	60,000	60,000	80,000	127,000	127,000	90,000	50,000						594,000
4. Testing		6,000	8,000	12,000	15,000	15,000	13,000						69,000
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Project team members						24,000	24,000	24,000	24,000	24,000	24,000	24,000	144,000
6. Reserves			10,000	10,000	30,000	30,000	60,000	40,000	40,000	30,000	3,540		253,540
Totals	20,000	86,027	92,027	172,027	223,027	198,027	185,027	173,027	148,427	90,027	80,027	53,567	1,521,240



# Project Cost Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 4. Control Costs

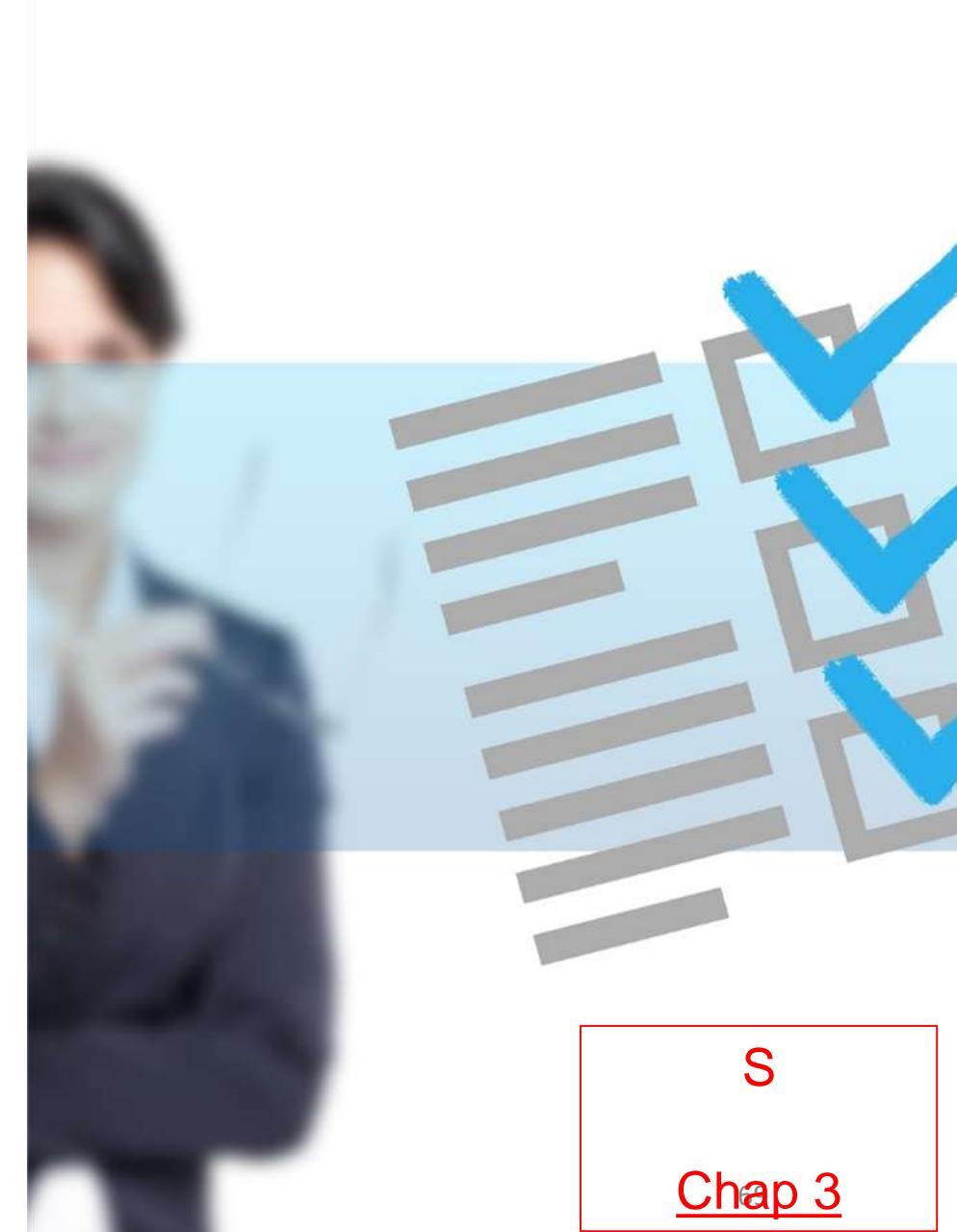
- Control changes to the project budget.
- **Tool and Technique: Earned Value Management (EVM)**  
To determine whether a project is
  - On time
  - Within budget
- Main outputs: work performance measurements, cost forecasts.

# Project Quality Management

## 1.4 Knowledge & Attributes of a Project Manager

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- To ensure that the project will satisfy the needs for which it was undertaken.
- 3 processes
  1. Plan Quality Management
  2. Perform Quality Assurance
  3. Control Quality



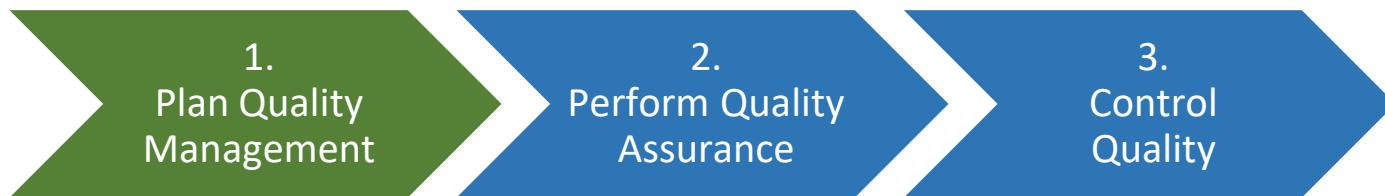
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Chap 3

# Project Quality Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 1. Plan Quality Management

- Identify which **quality standards** are relevant to the project and how to satisfy those standards.
- Quality standards for IT project, e.g. allow the system growth, reasonable response time, the system produces consistent and accurate information.
- Main outputs: quality management plan, quality metrics, quality checklists, process improvement plan.

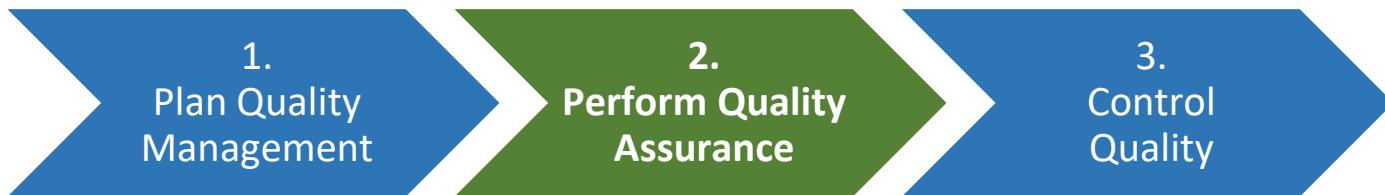
Note:

**metric** is a standard of measurement, e.g. failure rates of products produced, availability of goods and services, customer satisfaction ratings.

# Project Quality Management

## 1.4 Knowledge & Attributes of a Project Manager

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## 2. Perform Quality Assurance

- Periodically evaluate overall project performance to ensure that the project will satisfy the relevant quality standards.

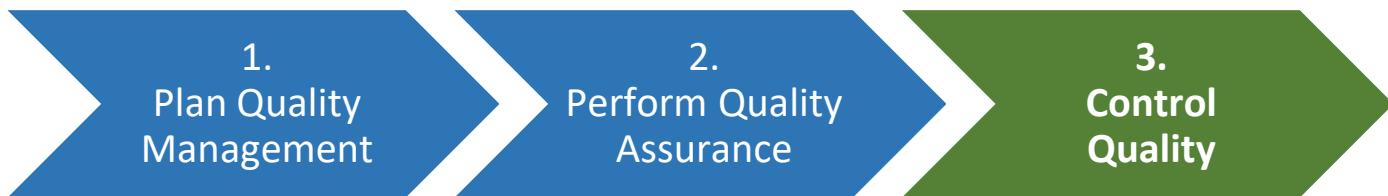
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Chap 3

# Project Quality Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 3. Control Quality

- Monitor and record results of executing the quality activities to assess performance and recommend necessary changes.

S

Chap 3



# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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- Includes the processes required to make the most effective use of the people involved in a project.
- Includes all project *stakeholders*: sponsors, customers, project team members, support staff, suppliers supporting the project, etc.
- **4 processes:**
  1. **Plan HR Management**
  2. **Acquire Project Team**
  3. **Develop Project Team**
  4. **Manage Project Team**



# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 1. Plan HR Management

- Identify and document project resources, roles, responsibilities, and reporting relationships.
- Establish an organization structures for the project:
  - i. The Functional Structure
  - ii. The Project Structure
  - iii. The Matrix Structure
- Output: HR plan



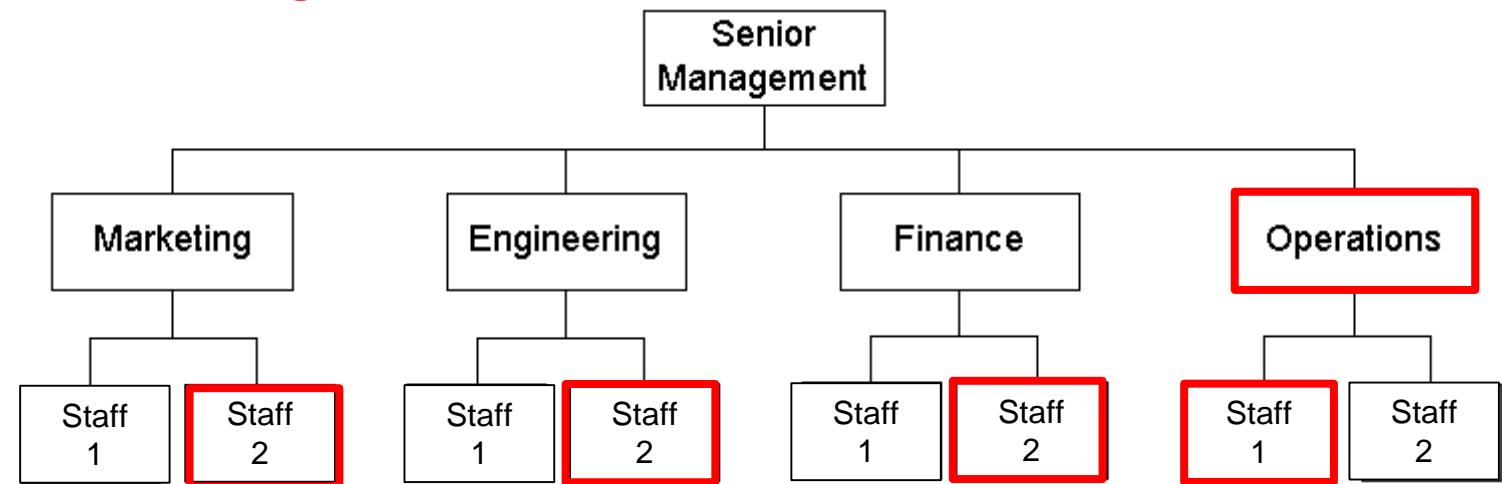
# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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### Organization structures for managing projects

#### (i) Functional Organizational Structure



Project can be managed using the **existing organization structure**

**E.g. Transfer equipment to new office**

This project is managed by the **Operations manager** and assisted by a personnel from every other departments



# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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Organization structures for managing projects

### (i) **Functional Organizational Structure**

#### Pros

- Clear definition of authority
- Eliminates duplication
- Encourages specialization
- Clear career paths

#### Cons

- May lack customer orientation
- “Silos” create longer decisions cycles
- Conflicts across functional areas
- Project leaders have little power



# Project Human Resource Management

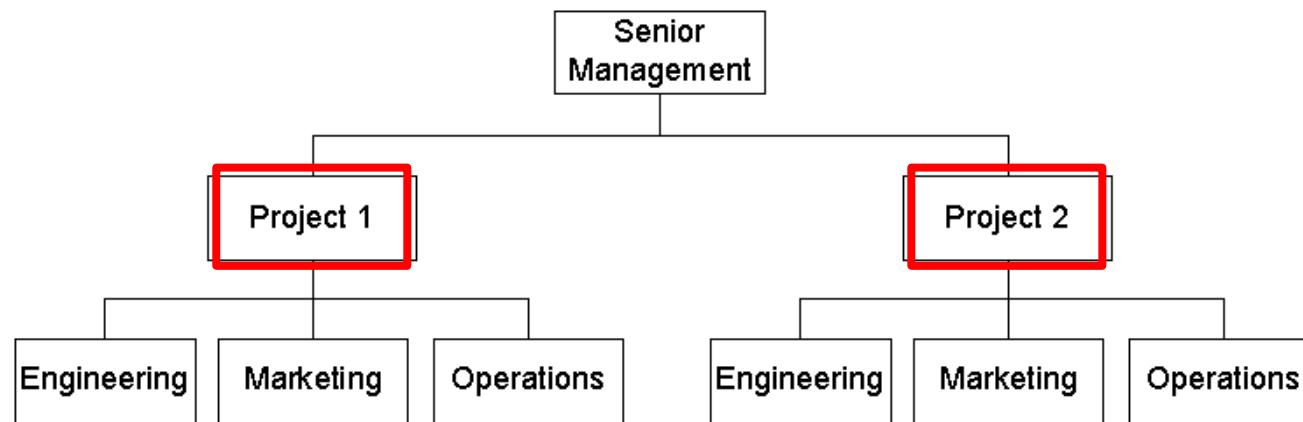
## 1.4 Knowledge & Attributes of a Project Manager

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Organization structures for managing projects

### (ii) Project Organizational Structure

- Project managers report to the CEO
- Examples: **companies that hire people specifically to work on particular projects** such as defense, architectural, engineering, and consulting companies.





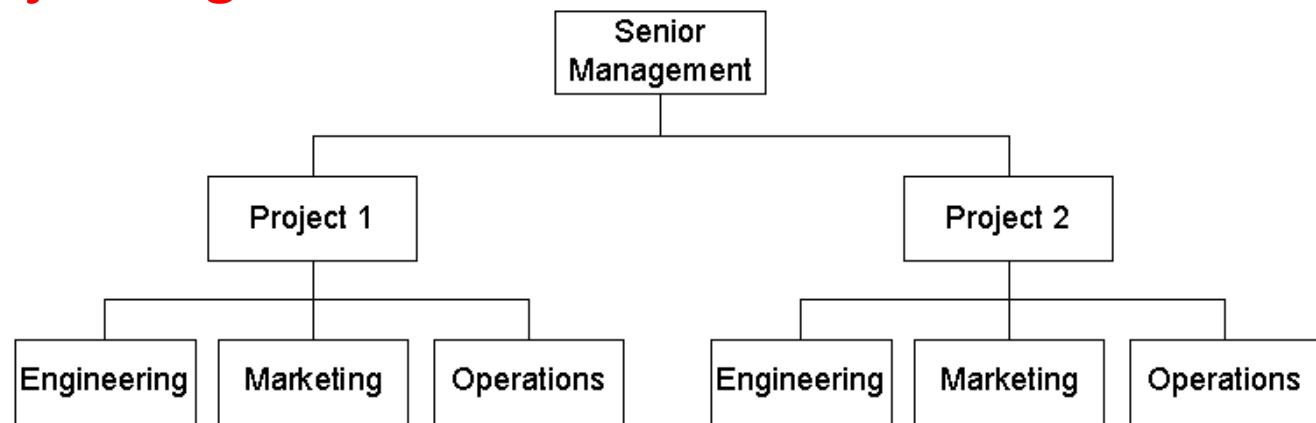
# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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Organization structures for managing projects

### (ii) Project Organizational Structure



#### Pros

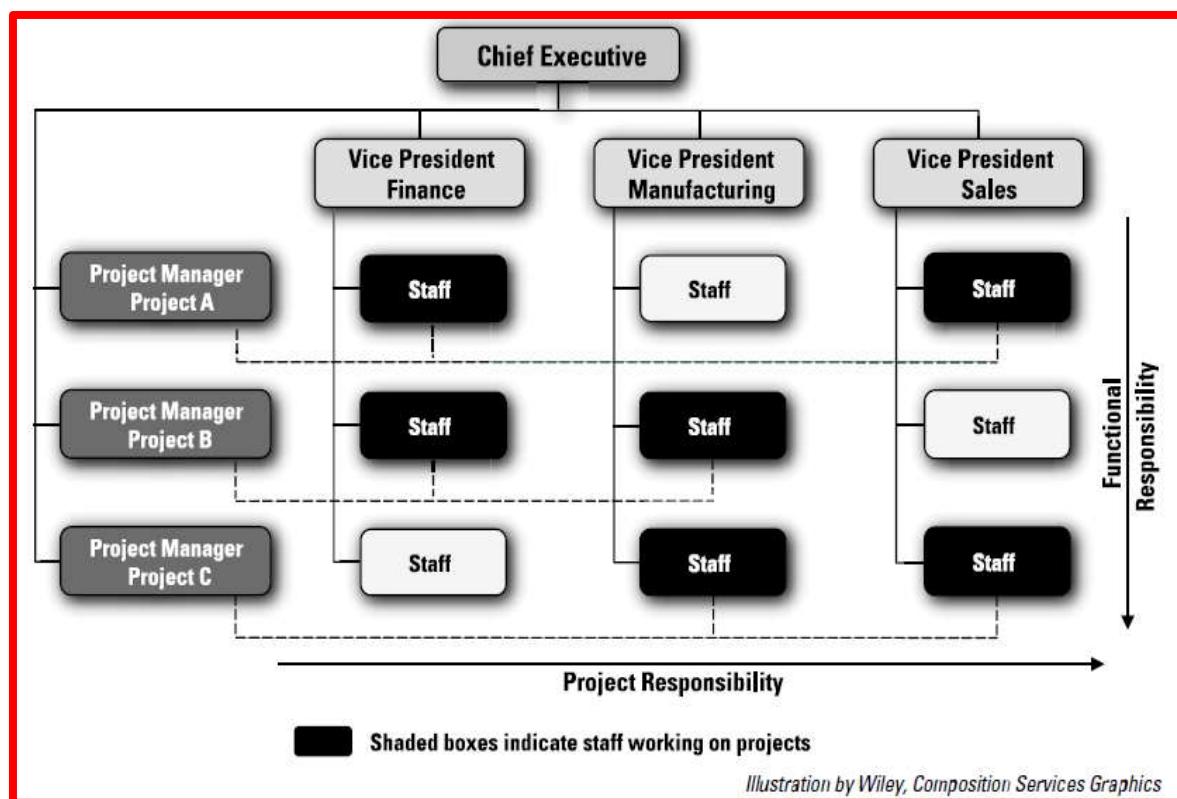
- Unity of command
- Highly responsive to project's objectives/ customer needs

#### Cons

- Duplication of facilities
- Cost inefficiency of resources

# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager



Organization structures for managing projects

### (iii) Matrix Organizational Structure

- The middle ground between functional and project structures.
- **Staff often report to both a functional manager and one or more project managers.**
- E.g. IT personnel at many companies split their time between two or more projects, but they report to their manager in the IT department.
- **Project managers often have staff from various functional areas working on their projects. (E.g Project C \_\_\_\_\_ )**

	% Work Complete	Task Name	Duration	Start	Finish	Predecessor	Resource Names
1	100%	First Increment	14 wks	Wed 1/4/20	Tue 7/7/20		
2	100%	Analysing Stage	2.4 wks	Wed 1/4/20	Thu 16/4/20		
3	100%	Interview Stakeholders	2 days	Wed 1/4/20	Fri 3/4/20		Tan Kuan Tiong
4	100%	Define system requirements	2 days	Fri 3/4/20	Tue 7/4/20	3	Tan Kuan Tiong, Jonathan Jasper Wong
5	100%	Validate and Prioritize requirements	4 days	Tue 7/4/20	Mon 13/4/20	4	Tan Kuan Tiong
6	100%	Resolve requirement conflicts	3 days	Mon 13/4/20	Thu 16/4/20	5	Jonathan Jasper Wong Jing Jyeh, Tan Kuan Tiong
7	100%	Designing Stage	3.6 wks	Thu 16/4/20	Mon 11/5/20	2	
8	100%	Data Design	6 days	Thu 16/4/20	Fri 24/4/20	6	Lioow Ze Ming[50%], Cheng Chia Shun[50%]
9	100%	Architecture Design	2 days	Fri 24/4/20	Tue 28/4/20	8	Cheng Chia Shun[50%], Jackie Chan[50%]
10	100%	Interface Design	4 days	Tue 28/4/20	Mon 4/5/20	9	Lioow Ze Ming[50%], Jackie Chan[50%]
11	100%	Procedural Design	2 days	Mon 4/5/20	Wed 6/5/20	10	Cheng Chia Shun[50%], Lioow Ze Ming[50%]
12	100%	Review Prototype	3 days	Wed 6/5/20	Mon 11/5/20	11	Tan Kuan Tiong, Lioow Ze Ming
13	100%	Coding Stage	4 wks	Mon 11/5/20	Fri 5/6/20	7	
14	100%	Develop Scheduling Module	9 days	Mon 11/5/20	Fri 22/5/20	12	Cheng Chia Shun[30%], Lioow Ze Ming[70%]
15	100%	Develop Database	5 days	Fri 22/5/20	Fri 29/5/20	14	Cheng Chia Shun[30%], Lioow Ze Ming[70%]
16	100%	Develop Auto-Scheduling Module	4 days	Fri 29/5/20	Thu 4/6/20	15	Cheng Chia Shun[50%], Tan Kuan Tiong
17	100%	Testing Stage	2.8 wks	Fri 5/6/20	Wed 24/6/20	13	
18	100%	Unit Test	2 days	Fri 5/6/20	Tue 9/6/20	16	Tan Kuan Tiong, Lioow Ze Ming[50%]
19	100%	Module Test	2 days	Tue 9/6/20	Thu 11/6/20	18	Cheng Chia Shun[50%], Jonathan Jasper Wong Jing Jyeh
20	100%	System Test	3 days	Fri 12/6/20	Mon 22/6/20	19	Lioow Ze Ming[50%], Tan Kuan Tiong[50%]
21	100%	Acceptance Test	2 days	Mon 22/6/20	Wed 24/6/20	20	Cheng Chia Shun
22	0%	Testing Completed	0 wks	Wed 24/6/20	Wed 24/6/20		Tan Kuan Tiong
23	100%	Deploying Stage	1.6 wks	Wed 24/6/20	Fri 3/7/20	17	
24	100%	Install Scheduling Software	2 days	Wed 24/6/20	Fri 26/6/20	21	Jonathan Jasper Wong Jing Jyeh[50%], Cheng Chia Shun, Tan Kuan Tiong
25	100%	Configure System and Hardware	2 days	Fri 26/6/20	Tue 30/6/20	24	
26	100%	Deploy Success	0 wks	Tue 30/6/20	Tue 30/6/20	25	Tan Kuan Tiong
27	100%	Train staff to use the software	3 days	Tue 30/6/20	Fri 3/7/20	26	Jonathan Jasper Wong Jing Jyeh
28	100%	Maintenance Stage	0.6 wks	Fri 3/7/20	Tue 7/7/20	23	
29	100%	In-service Inspection and Testing	2 days	Fri 3/7/20	Tue 7/7/20	27	Jonathan Jasper Wong Jing Jyeh[50%], Tan Kuan Tiong
30	100%	Complete Maintenance	0 days	Tue 7/7/20	Tue 7/7/20	29	

# an Resource Management

ibutes of a Project Manager



## 2. Acquire Project Team

- Get the needed personnel assigned to work on the project
- Tool and techniques:
  - a. Resource assignment
  - b. Resource loading
  - c. Resource leveling
- Outputs: project staff assignments, resource calendars.

6	☛	prepare project plan
6	☛	Analysis
6	☛	user requirement collection
6	☛	Analyze requirement
6	☛	Design
6	☛	Database Design
6	☛	UML model
6	☛	Code Development
6	☛	Coding
6	☛	Testing
6	☛	Module Testing

## Tool & techniques for project team acquisition

### Resource assignment

To assign particular personnel to their projects or to acquire additional human resources needed to staff the project.

- PM with strong influencing & negotiating skills are often good at getting internal people to work on their projects.
- Main outputs: project staff assignments, resource availability information, updates to the staffing management plan, project team directory.

### Resource loading

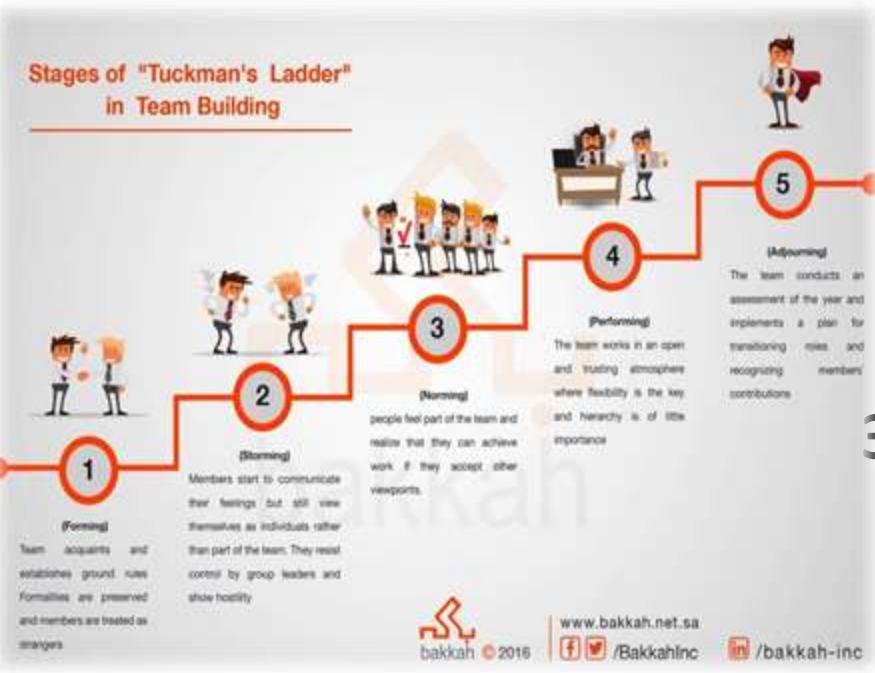
- Amount of individual resources an existing schedule requires during specific time periods.
- Help PM and individuals to develop schedules.
- Overallocation: more resources than are available are assigned to perform work at a given time. E.g. individuals have to work 24 hours a day to meet the allocated schedule.

### Resource leveling

- A technique for resolving resource conflicts (overallocation & underallocation).
- Purpose: to create a smoother distribution of resource usage.
- PM examine the PERT chart for areas of slack or float, and to identify resource conflicts.
- E.g. remove overallocations by delaying noncritical tasks, which does not result in an overall schedule delay.
- Therefore, resource leveling aims to minimize period-by-period variations in resource loading by shifting tasks within their slack allowances.

# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager



### 3. Develop Project Team

- **Purpose:** to ensure that people can work together more effectively to improve project performance.
- Main outputs: team performance assessments, enterprise environmental factors updates.
- **The Tuckman 5 stages of team development:**
  - a. Forming (*first stage*)
  - b. Storming
  - c. Norming
  - d. Performing
  - e. Adjourning (*last stage*)

# The Tuckman's 5 stages of Team Development

1.4.1 e. Project HR Management

## Forming

- Team is form and members are **introduce** to each other
- This stage is necessary but **little work is achieved**

## Storming

- People test each other and there is often **conflict** within the team
- Team members have **different opinions** for how the team should operate.

## Norming

- This stage is achieved when team members have developed a **common working method, cooperation and collaboration** (*little or no more conflict and mistrust within the team*)

## Performing

- **Unity** in team is established
- Problems are brought up, discussed and then **solved**
- Level of work performance is **high**; Productivity at its optimum

## Adjourning

- The team is **dissolved** after all works have been successfully completed and reaches its goals.

# Project Human Resource Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 4. Manage Project Team

- **Track team member performance, motivating team members, providing timely feedback, resolving issues and conflicts, and coordinating changes** to help enhance project performance.

PM must ensure that people **can work together as a team** to achieve project goals

# Project Communication Management

## 1.4 Knowledge & Attributes of a Project Manager

---

- Ensure timely and appropriate generation, **collection, dissemination, and storage of project information.**
- **3 processes:**
  1. Plan Communications Management
  2. Manage Communications
  3. Control communications



# Project Communication Management

## 1.4 Knowledge & Attributes of a Project Manager



### What a Project Communication Plan should contain?

Description	Frequency	Method	Audience	Owner
Name of the communication	How often it will happen	Method of communication	Who will receive the communication	Who is responsible
Project team meeting	Daily	Meeting	Project team	Project manager
Stakeholder update	Monthly	Email newsletter	Stakeholders	Project manager
Board meeting	Every two weeks	Meeting	Project board	Project manager
Contribution to department newsletter	Quarterly	Section of newsletter	Wider development	Project manager to deliver to department administration

This is for collecting project information to...

### 1. Plan Communication Management

- Develop an appropriate approach and **plan for project communications** based on stakeholder's information needs & requirements, & available organizational assets.
- Key benefit: identifies and documents the approach to communicate most effectively and efficiently with stakeholders.

This is to disseminate project info to stakeholders. PM keep project stakeholders informed of project progress by emailing newsletter to them

# Project Communication Management

## 1.4 Knowledge & Attributes of a Project Manager

1. Plan Communications Management		2. Manage Communications		3. Control communications
Description	Frequency	Method	Audience	Owner
Name of the communication	How often it will happen	Method of communication	Who will receive the communication	Who is responsible
Project team meeting	Daily	Meeting	Project team	Project manager
Stakeholder update	Monthly	Email newsletter	Stakeholders	Project manager
Board meeting	Every two weeks	Meeting	Project board	Project manager
Contribution to department newsletter	Quarterly	Section of newsletter	Wider development	Project manager to deliver to department administration

## 2. Manage Communications

- Create, collect, disseminate, store, retrieve, and ultimately dispose project information in accordance to the communication management plan.
- Key benefit: enables an efficient and effective communications flow between project stakeholders.

# Project Communication Management

## 1.4 Knowledge & Attributes of a Project Manager



Description	Frequency	Method	Audience	Owner
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Contribution to department newsletter	Quarterly	Section of newsletter	Wider development	Project manager to deliver to

A good communication plan will ensure that customers, team members, and other stakeholders have the information to do their jobs

## 3. Control Communications

- Monitor and control communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.

(E.g. project stakeholders expect to be informed on monthly basis the project progress, if . . . )

- Key benefit: ensures an optimal information flow among all communication participants, at any moment in time.



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager

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- 6 major processes:
  1. Plan Risk Management
  2. Identify Risk
  3. Perform Qualitative Risk Analysis
  4. Perform Quantitative Risk Analysis
  5. Plan Risk Response
  6. Control Risk



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



### 1. Plan Risk Management

- Decide how to approach and plan the risk management activities for the project.
- By reviewing the project scope statement; cost, schedule, and communications management plans; enterprise environmental factors; and organizational process assets
- Main output: risk management plan



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



## 2. Identify Risk

- Determine which risks are likely to affect a project and documenting the characteristics of each
- Main output: the start of a risk register



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



### 3. Perform Qualitative Risk Analysis

- Prioritize risks based on their probability and impact of occurrence.
- After identifying risks, various tools and techniques can be used by project teams to rank risks and update information in the risk register
- Main output: risk register updates.

S / Ch 5



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



### 4. Perform Quantitative Risk Analysis

- Numerically estimate the **effects** of risks on project objectives.
- Main output: risk register updates.



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



## 5. Plan Risk Responses

- Take steps to enhance opportunities and reduce threats to meeting project objectives.
- Using outputs from the preceding risk management processes, project teams can develop **risk response strategies** that often result in updates to the risk register, project management plan, and other project documents as well as risk-related contract decisions

S / Ch 5



# Project Risk Management

## 1.4 Knowledge & Attributes of a Project Manager



## 6. Control Risk

- Monitor identified and residual risks, identify new risks, carry out risk response plans, and evaluate the effectiveness of risk strategies throughout the life of the project.
- Main outputs: change requests and updates to the risk register.

# Project Procurement Management

## 1.4 Knowledge & Attributes of a Project Manager

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- Includes the processes required to **acquire goods and services for a project from an outside source (often known as supplier/vendor/contractor/seller).**
- Organizations can be either the buyer or seller of products or services under a contract.
- **3 main processes in Procurement Management:**
  1. Plan Procurement Management
  2. Conduct Procurement
  3. Control Procurement

# Project Procurement Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 1. Plan Procurement Management involve:

- Decide what & when to outsource, determine the type of contract, and describe the work for potential sellers.  
*(Sellers: contractors, suppliers, providers)*
- **Outputs:** procurement management plan, statements of work, make-or-buy decisions, procurement documents, source selection criteria, and change requests.



# Project Procurement Management

## 1.4 Knowledge & Attributes of a Project Manager

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## 2. Conduct Procurement

- Obtain seller responses, selecting sellers, and awarding contracts.
- **Main output:** Selected seller(s), agreement, change request



# Project Procurement Management

## 1.4 Knowledge & Attributes of a Project Manager

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### 3. Control Procurement

- Manage relationships with sellers, monitoring contract performance, and making changes as needed and closing out contracts
- **Main outputs:** Work performance info, change request, procurement documentation updates & closed procurement.





# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager

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- Includes the processes required to identify **the people, groups, or organizations that could impact or be impacted by the project**, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.
- **4 processes:**
  1. Identify Stakeholders
  2. Plan Stakeholder Engagement
  3. Manage Stakeholder Engagement
  4. Monitor Stakeholder Engagement



# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager



### 1. Identify Stakeholders

- Identify the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyze and document relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.
- **Output: stakeholder register.**



# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager

### 1. Identify Stakeholders

Identify the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyze and document relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success. **Output: Stakeholder register.**

Name	Position	Internal/ External	Project Role	Contact Information
Stephen	VP of Operations	Internal	Project sponsor	stephen@globaloil.com
Betsy	CFO	Internal	Senior manager, approves funds	betsy@globaloil.com
Chien	CIO	Internal	Senior manager, PM's boss	chien@globaloil.com
Ryan	IT analyst	Internal	Team member	ryan@globaloil.com
Lori	Director, Accounting	Internal	Senior manager	lori@globaloil.com
Sanjay	Director, Refineries	Internal	Senior manager of largest refinery	sanjay@globaloil.com
Debra	Consultant	External	Project manager	debra@gmail.com
Suppliers	Suppliers	External	Supply software	suppliers@gmail.com

Can you add one stakeholder?

(Schwalbe,  
2019)



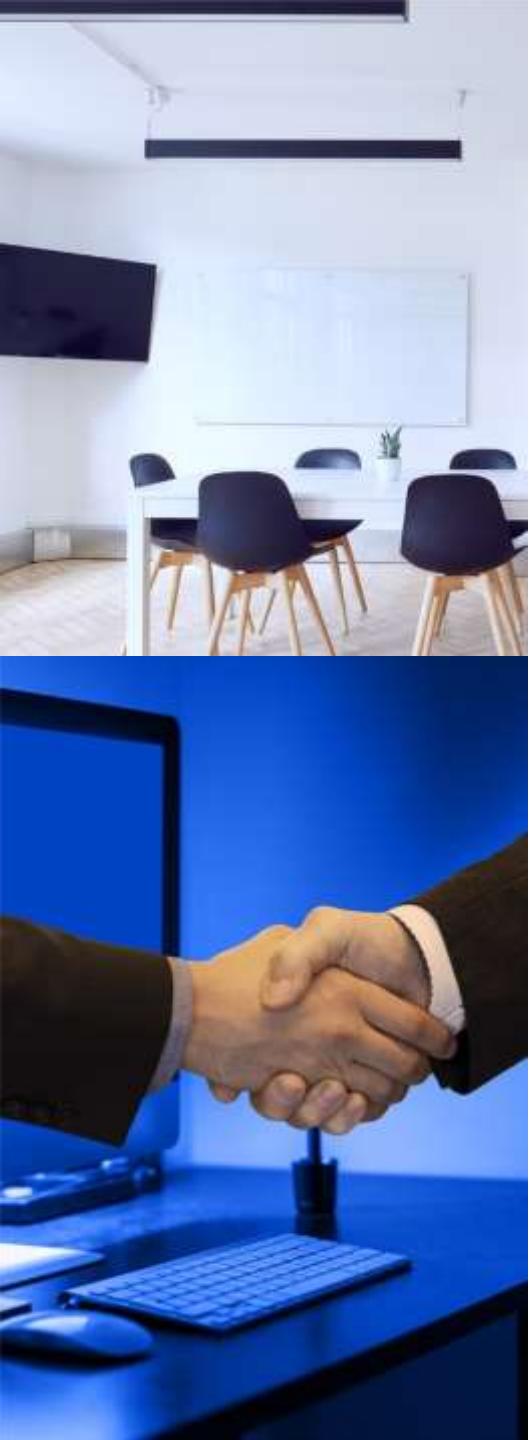
# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager



### 2. Plan Stakeholder Management

- **Develop appropriate management strategies to effectively engage stakeholders throughout the project life cycle**, based on the analysis of their needs, interests, and potential impact on project success.
- **Output: stakeholder management plan.**



# Project Stakeholder Management

## 2. Plan Stakeholder Management

**Develop appropriate management strategies to effectively engage stakeholders throughout the project life cycle**, based on the analysis of their needs, interests, and potential impact on project success. **Output: stakeholder management plan.**

Name	Power/ Interest	Current Engagement	Potential Management Strategies
Stephen	High/high	Leading	Stephen can seem intimidating due to his physical stature and deep voice, but he has a great personality and sense of humor. He previously led a similar refinery upgrade program at another company and knows what he wants. Manage closely and ask for his advice as needed. He likes short, frequent updates in person.
Chien	High/ medium	Resistant	Chien is a very organized yet hardheaded man. He has been pushing corporate IT standards, and the system the PM and sponsor (Debra and Stephen) like best goes against those standards, even though it's the best solution for this project and the company as a whole. Need to convince him that this is okay and that people still respect his work and position.
Ryan	Medium/ high	Supportive	Ryan has been with the company for several years and is well respected, but he feels threatened by Debra. He also resents her getting paid more than he does. He wants to please his boss, Chien, first and foremost. Need to convince him that the suggested solution is in everyone's best interest.



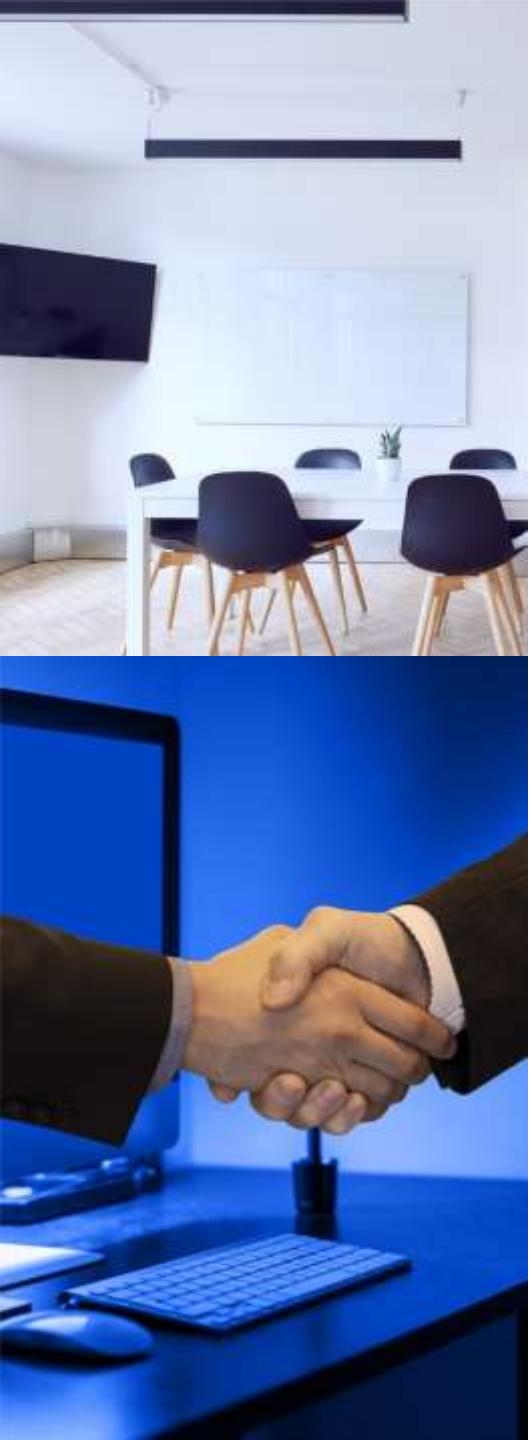
# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager



### 3. Manage Stakeholder Engagement

- **Communicate and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle.**
- **Output: issue log, change requests.**



# Project Stakeholder Management

## 1.4 Knowledge & Attributes of a Project Manager



### 4. Monitor Stakeholder Engagement

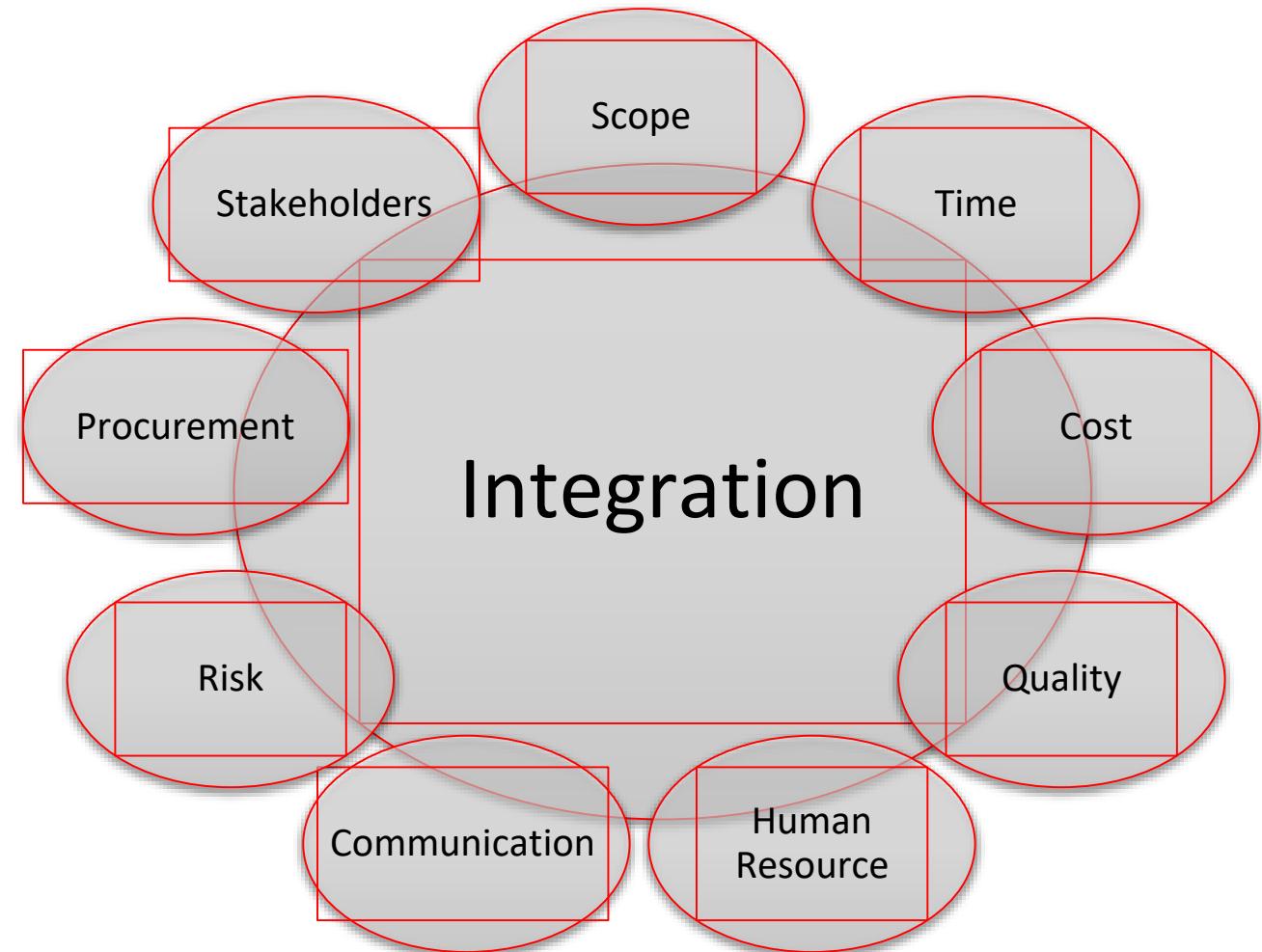
- Monitoring stakeholder relationships and adjusting plans and strategies for engaging stakeholders as needed.
- **Main output: work performance information & change request**

# Knowledge of a Project Manager

## 1.4 Knowledge & Attributes of a Project Manager

## Quick Review

### Ten Knowledge Areas

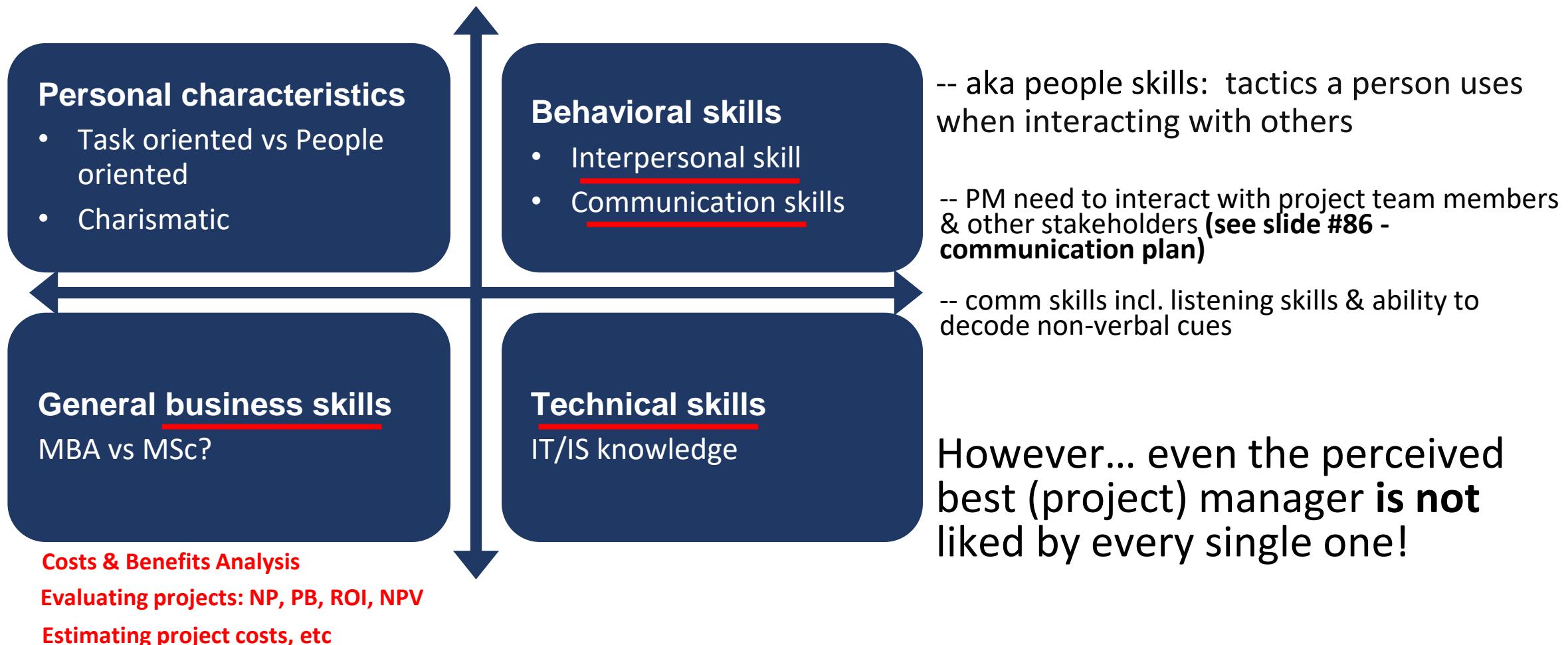


	Initiating	Planning	Executing	M&C	Closing
Integration	Develop Project Charter	Develop PM Plan	Direct & Manage Project Work	<ul style="list-style-type: none"><li>• M&amp;C Project Work</li><li>• Perform Integrated Change Control</li></ul>	Close Project or Phase
Scope		<ul style="list-style-type: none"><li>• Plan Scope Management</li><li>• Collect Requirements</li><li>• Define Scope</li><li>• Create WBS</li></ul>		<ul style="list-style-type: none"><li>• Validate Scope</li><li>• Control Scope</li></ul>	
Time		<ul style="list-style-type: none"><li>• Plan Schedule Management</li><li>• Define Activities</li><li>• Sequence Activities</li><li>• Estimate Activity Resources</li><li>• Estimate Activity Duration</li><li>• Develop Schedule</li></ul>		Control Schedule	
Cost		<ul style="list-style-type: none"><li>• Plan Cost Management</li><li>• Estimate Costs</li><li>• Determine Budget</li></ul>	<b>Summary Processes / Area in Project Life Cycle</b>		Control Costs
Quality		Plan Quality Management	Perform Quality Assurance	Control Quality	
HR		Plan HR Management	<ul style="list-style-type: none"><li>• Acquire Project Team</li><li>• Develop Project Team</li><li>• Manage Project Team</li></ul>		
Communications		Plan Communications Management	Manage Communications	Control Communications	
Risk		<ul style="list-style-type: none"><li>• Plan Risk Management</li><li>• Identify Risks</li><li>• Perform Qualitative Risk Analysis</li><li>• Perform Quantitative Risk Analysis</li><li>• Plan Risk Responses</li></ul>		Control risks	
Procurement		Plan Procurement Management	Conduct Procurements	Control Procurements	Close Procurements

# Attributes of a Project Manager (PM)

## 1.4 Knowledge & Attributes of a Project Manager

### What are skills needed to be a PM



# Leading vs Managing

## 1.4 Knowledge & Attributes of a Project Manager

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- The overriding function of **management** is to provide **order and consistency to organizations**, whereas the primary function of **leadership** is to produce **change and movement**.
- Leadership can be defined as the process of **moving** a group(s) in some direction through mostly non-coercive means
- Effective leadership is defined as leadership that produces **movement** in the long-term best interests of the group(s) (Kotter, 1988).
- Thus, leadership is defined as the ability to influence people toward the attainment of goals

# 1.5 Project Management Failure

Project Objectives Vs Business Objectives

Causes of Project Failures

Critical Success Factor (CSF)



# Introduction

## 1.5 Project Management Failure

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### Project Objectives

Is the **targets** that the project team is expected to achieve such as delivering:

- **the agreed functionality,**
- **to the required level of quality,**
- **on time and within budget**

### Business Objectives

For all the resources & efforts put in, **Return generated > costs**

### 3 Scenarios

1. A project meet the project objectives and meet the business objectives
2. A project meet the project objectives but fail to meet the business objectives
3. A project fail to meet the project objectives but successfully meet the business objectives

# Introduction

## 1.5 Project Management Failure

---

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E.g. a computer game is delivered on time and within budget but then not selling well.

e.g. benefits gained somehow exceeds the costs

**Conclusion:** Which projects you will considered as success and is/are failures?

# Project Failure vs Business Failure

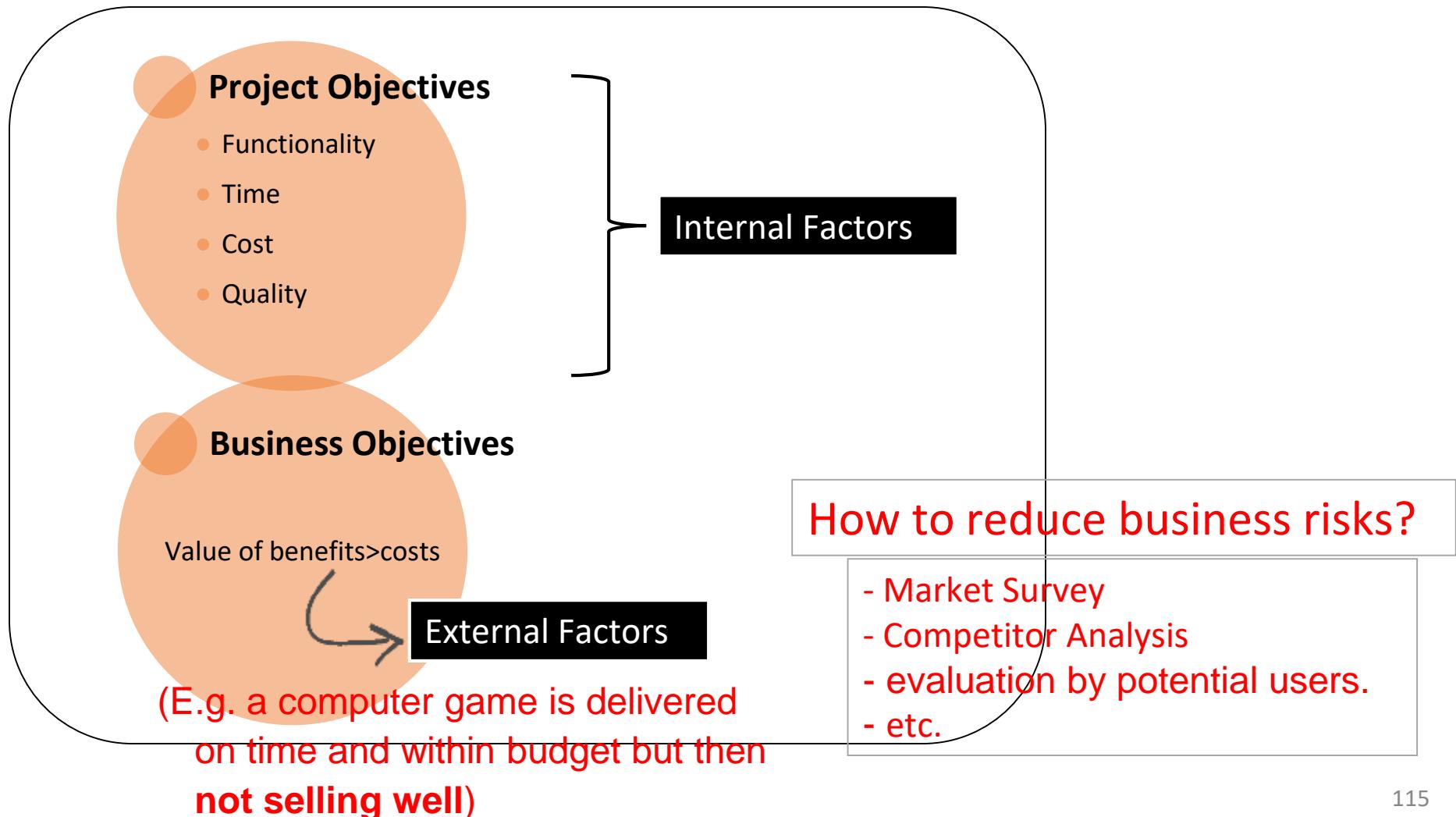
## 1.5 Project Management Failure

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- A project is considered fail when:
  - It does not satisfy the requirement of stakeholders
  - It does not meet the objectives of the project – time, budget, quality
- A project can be successfully delivered but then be a business failure
- On the other hand, a project could be late and over budget (fail to meet project objectives) but its deliverables generate benefits that outweigh the initial expenditure (successfully meet the business objectives).
- How to reduce business risks? (E.g. a computer game is delivered on time and within budget but then not selling well)  
Carry out market surveys, competitor analysis, focus groups, prototyping and evaluation by potential users.

# Project Failure vs Business Failure

## 1.5 Project Management Failure



# Causes of Project Failure

## 1.5 Project Management Failure

- Inadequacies or defects in project management will contribute to project failures.
- Failures in project management may be categorized according to 3 levels:
  - a. Level 1 - Failures in the Project Management Context
  - b. Level 2 - Failures in the Project Management System
  - c. Level 3 - Failures in Planning and Control Processes

### Level 1 : project management context

Lack of top management support

Wrong approaches or models

project objectives, stakeholders

### Level 2: Project Management System

PM experiences

Conflict, teamwork

time, budget, quality

### Level 3: Planning & control

Inadequate communication, project planning, poor estimation, scheduling etc, omission of user involvement

### Other Factors

Poor team development  
PM too optimistic  
Over-allocation resources  
Organization culture :no team work,  
External factor: government enforce new laws

# Level 1: Failures in the Project Management Context

## 1.5 Project Management Failure

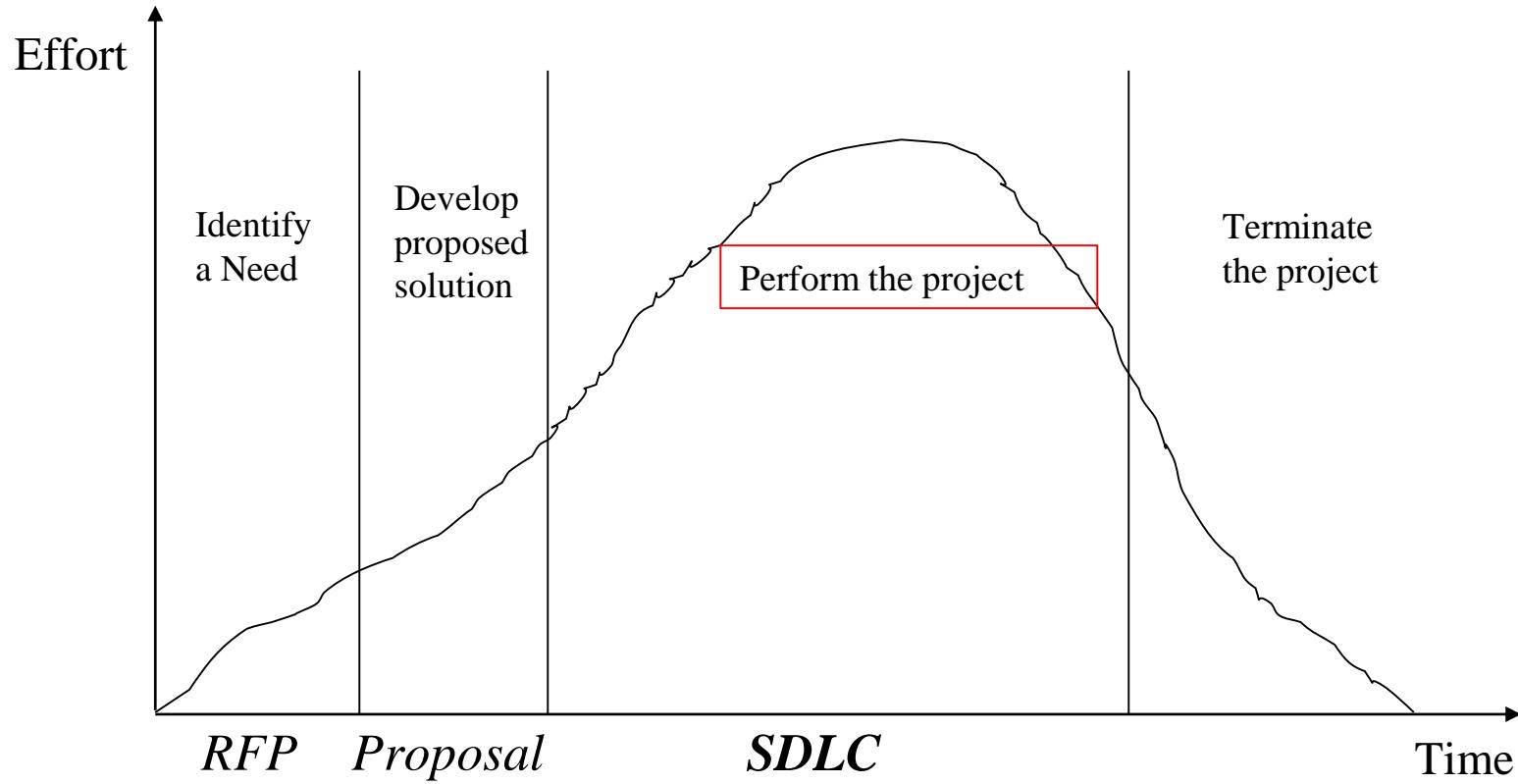
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- Inappropriate “fit” of project organisation to project objectives, project tasks, top management, and environment at large. For example,
  - A game software needs project organizational structure which includes marketing personnel to promote it after accomplished. However, members of the team are assigned to the project without regards to proper skills and experience. Top management also does not yield adequate responsibility or authority to the project manager.
- Not using appropriate project process model
  - E.g. **Prototyping** is used in a large and complex system development which cannot capture the user requirements effectively.
- Lack of top management support
  - Lack of support from **financial department** (no funding from the organization).
  - **Lack of support from sales and marketing department** (not willing to assign personnel to promote new games software)

# Level 2: Failures in the Project Management System

## 1.5 Project Management Failure

- Traceable to project leadership, philosophy and practice
- Include wrong project manager, neglect of systems approach in the project life cycle, and misuse of project management techniques
- Examples:
  - the **project manager is unable to control conflicts**
  - Hardware, software, resources and facilities are viewed independently without relation to their overall project objectives – **poor resource planning**



# Level 3: Failures in Planning & Control Processes

## 1.5 Project Management Failure

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- Include inadequate communication, planning, poor estimation, scheduling etc. and lack of user involvement
- Examples:
  - Information about scope, objectives, responsibility and acceptance criteria not documented early in the project
  - The behaviour of the project team discourages user involvement

# **Other factors** that contribute to project failure

## 1.5 Project Management Failure

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- Poor team development
- PM too optimistic
- Under-allocation resources
- Organization culture e.g. no team work, no sharing of information between employees
- External factors e.g. government enforce new laws

# Critical Success Factors (CSFs)

## 1.5 Project Management Failure

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- A key area where satisfactory performance is required for the organization to achieve its goals
- A means of identifying the tasks and requirements needed for success
- At the lowest level, CSFs become concrete requirements
- A means to prioritize requirements
- **Make sure you have the support of top management.**
- **Manage the project scope effectively.**
- **competent and experienced project teams**
- **Etc**

# Summary

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1.1 Introduction to Project Management

1.2 Project Life Cycle

1.3 Project Appraisal and Evaluation

1.4 Knowledge and Attributes of a Project Manager

1.5 Project Management Failure