ENGR3450 – Project Management

Week 4

The Project Planning

Integration Management – Risk Management

2019, İzmir

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Agenda today

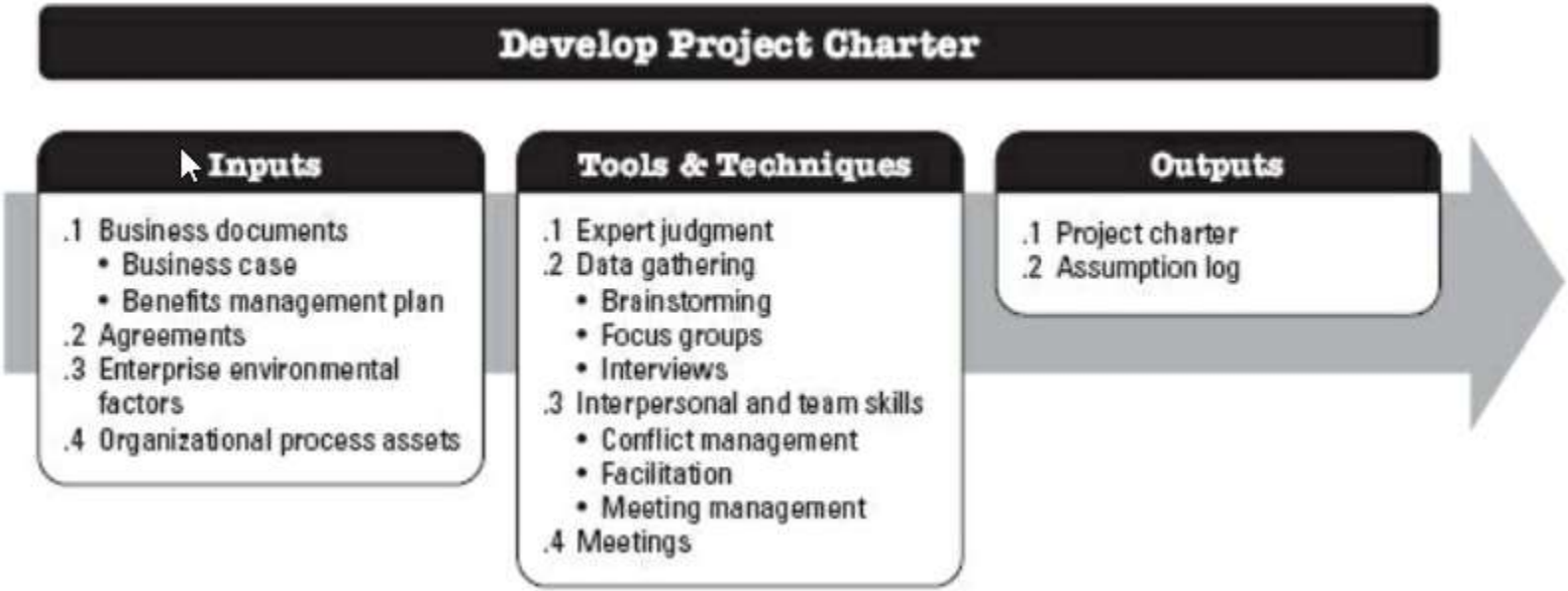
- The Project Charter and Management Plan
- WBS – Work Breakdown Structure
  - First project work – 5 Pts
  - **Gannt chart** of your project
  - Agile Methods
- Direct and Manage
- Monitor and Control
- Risk Planning

- Project work 1 (Charter and WBS)

1. Develop Project Charter
2. Develop Project Management Plan
3. Direct and Manage Project Work
4. Manage Project Knowledge
5. Monitor and Control Project Work
6. Perform Integrated Change Control
7. Close Project or Phase

Project Charter

Develop Project Charter is the process of developing a document that formally authorizes the existence of a project and provides the project manager with the **authority** to apply organizational resources to project activities.



Launch meeting

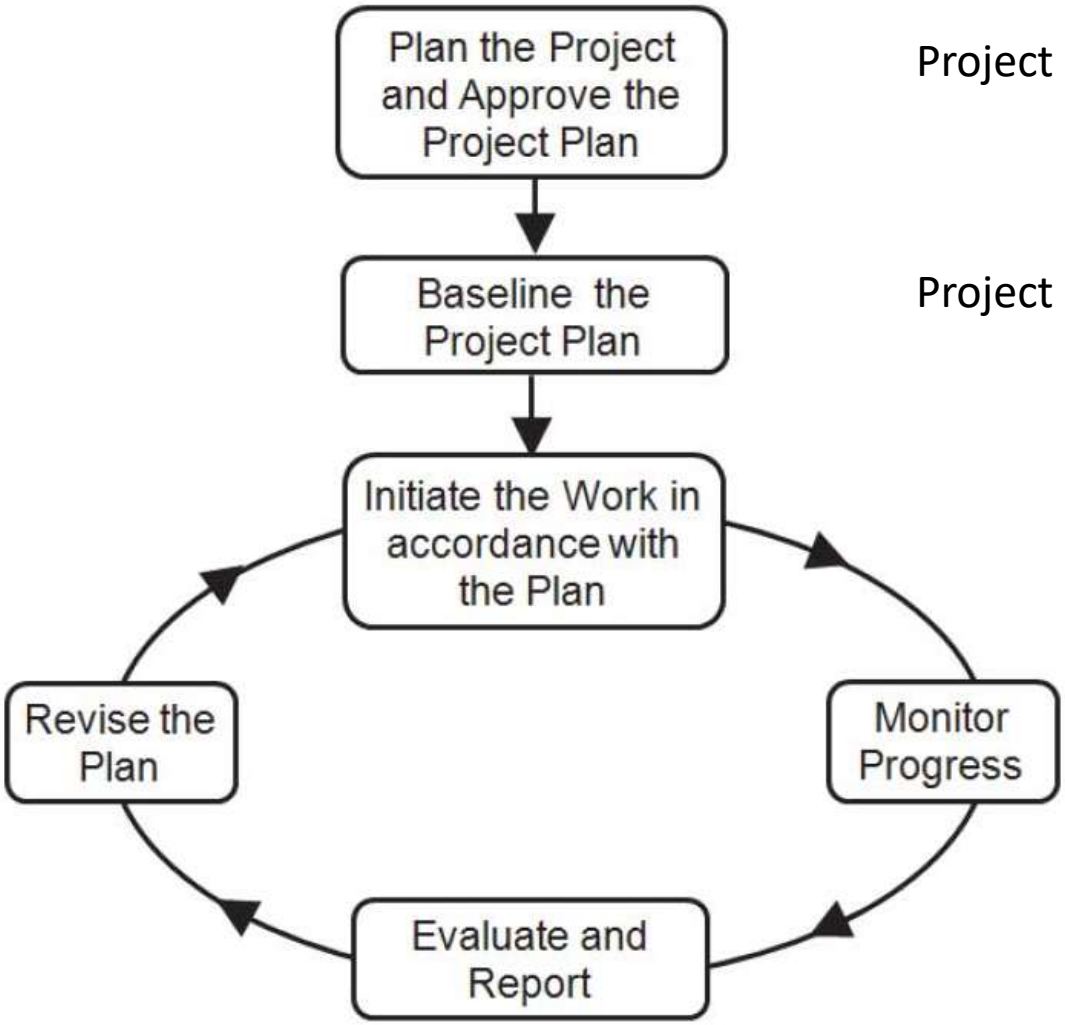
- Objectives (well defined)
  - Suitable with vision-mission
  - Analysis and design
  - Scope detailed in charter
- Touching and short (30 min)
  - Risks redefined (60 min)
- Risk Management plan
  - (PMBOK Ch 11)
- Re- observe charter
- Outside Clients permeations

Launch Meeting
Charter Elements Review

- Purpose, objectives
- Schedule
  - Milestones
- Resources
- Stakeholders
- Risk management plans
- Evaluation Methods

PM Should Make them believe

Responsibilities of PM



Project Charter

Project Management Plan

Planning Work Order

No	PLANNING (This is the only process group with a set order)	Knowledge Area
1	Determine development approach, life cycle, and how you will plan for each knowledge areas	Integration, Scope, Schedule, Cost, Quality, Resource, Communcations, Risk, Procurement, Stakeholder
2	Define and prioritize requirements	Scope
3	Create Project Scope Statement	Scope
4	Assess what to purchase and create procurement documents	Procurement
5	Determne planning team	Integration
6	Create WBS and WBS dictionary	Scope
7	Create activity list	Schedule
8	Create network diagram	Schedule
9	Estimate resource requirements	Resource
10	Estimate activity durations and costs	Schedule , Cost
11	Determine Critical Path	Schedule
12	Develop Schedule	Schedule
13	Develop Budget	Cost
14	Determine Quality Standards, processes, and, metrics	Quality
15	Determine team charter and all roles and responsibilities	Integration, Scope, Schedule, Cost, Quality, Resource, Communcations, Risk, Procurement, Stakeholder
16	Plan communications and stakeholder engagement	Communications, Stakeholder
17	Perform risk identification, qualitative and quantitative risk anlaysis, and risk response planning	Risk
18	Go back -- Iterations	Integration, Scope, Schedule, Cost, Quality, Resource, Communcations, Risk, Procurement, Stakeholder
19	Finalize procurement strategy and documents	Procurement
20	Create change and configuration management plans	Integration
21	Finalize all management plans	Integration, Scope, Schedule, Cost, Quality, Resource, Communcations, Risk, Procurement, Stakeholder
22	Develop realistic and sufficient project management plan and baselines	Integration, Scope, Schedule, Cost, Quality, Resource, Communcations, Risk, Procurement, Stakeholder
23	Gain formal approval of the plan	Integration
24	Hold kickoff meeting	Integration
25	Request Changes	Schedule, Risk, Procurement

1. Develop Project Charter
2. Develop Project Management Plan
3. Direct and Manage Project Work
4. Manage Project Knowledge
5. Monitor and Control Project Work
6. Perform Integrated Change Control
7. Close Project or Phase

Project Management Plan

Develop Project Management Plan is the process of defining, preparing, and coordinating all plan components and consolidating them into an integrated project management plan.

1. Develop Project Charter
2. Develop Project Management Plan
3. Direct and Manage Project Work
4. Manage Project Knowledge
5. Monitor and Control Project Work
6. Perform Integrated Change Control
7. Close Project or Phase

Project Management Plan

Project Management Plan	Project Documents	
1. Scope management plan	1. Activity attributes	19. Quality control measurements
2. Requirements management plan	2. Activity list	20. Quality metrics
3. Schedule management plan	3. Assumption log	21. Quality report
4. Cost management plan	4. Basis of estimates	22. Requirements documentation
5. Quality management plan	5. Change log	23. Requirements traceability matrix
6. Resource management plan	6. Cost estimates	24. Resource breakdown structure
7. Communications management plan	7. Cost forecasts	25. Resource calendars
8. Risk management plan	8. Duration estimates	26. Resource requirements
9. Procurement management plan	9. Issue log	27. Risk register
10. Stakeholder engagement plan	10. Lessons learned register	28. Risk report
11. Change management plan	11. Milestone list	29. Schedule data
12. Configuration management plan	12. Physical resource assignments	30. Schedule forecasts
13. Scope baseline	13. Project calendars	31. Stakeholder register
14. Schedule baseline	14. Project communications	32. Team charter
15. Cost baseline	15. Project schedule	33. Test and evaluation documents
16. Performance measurement baseline	16. Project schedule network diagram	
17. Project life cycle description	17. Project scope statement	
18. Development approach	18. Project team assignments	

If too much; prefer Agile methods

Project Management Plan

- The process for managing **change**
- A plan for communicating with and managing **stakeholders**
- Specifying the process for setting key characteristics of the project deliverable (technically referred to as **configuration management**)
- Establishing the **cost baseline** for the project and developing a plan to manage project costs
- Developing a plan for managing the **human resources** assigned to the project
- Developing a plan for **continuously monitoring** and improving project work processes
- Developing guidelines for **procuring** project materials and resources
- Defining the **project's scope** and establishing practices to manage the project's scope
- Developing the **Work Breakdown Structure**
- Developing practices to manage the **quality** of the project deliverables
- Defining how project **requirements** will be managed
- Establishing practices for managing **risk**
- Establishing the schedule baseline and developing a plan to manage the project's **schedule**

Project Management in practice

Being able to discuss objectively

1. What was the source of the problem here?

   (Root cause analysis)

2. How might a Project Charter as described above have helped avoid these shortcomings?

3. What would you suggest to recover the project?

Project Management in practice

Whole brain approach

Center of the paper coated wall

Figure 6-1a Begin mind mapping with statement of project's objective.

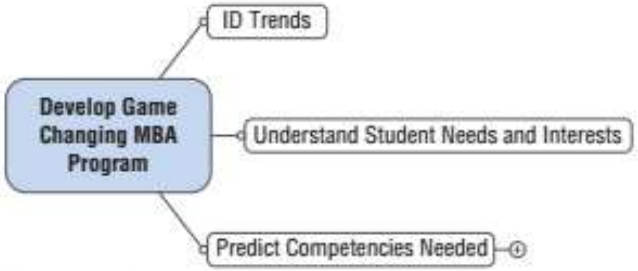


Figure 6-1b Major tasks branch off from project goal.

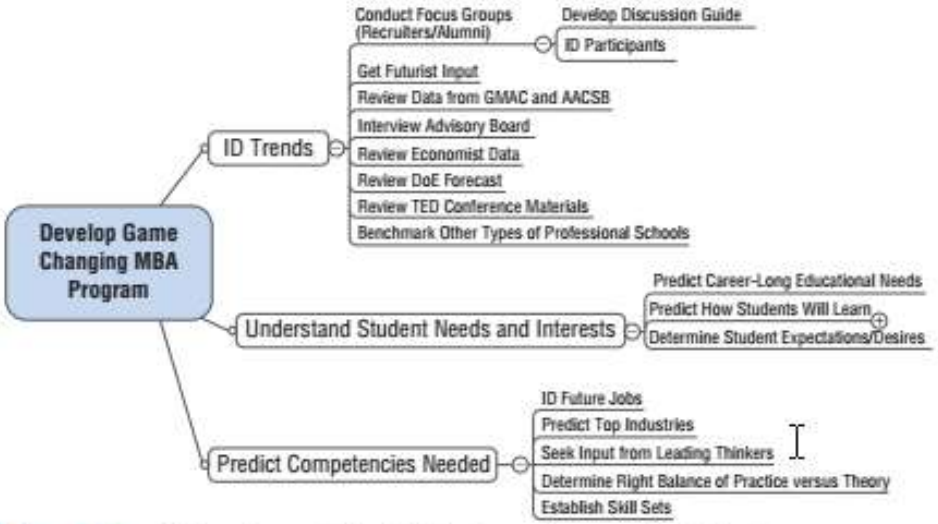


Figure 6-1c Major tasks are further broken down into more detailed tasks.

Project Management in practice

Whole brain approach

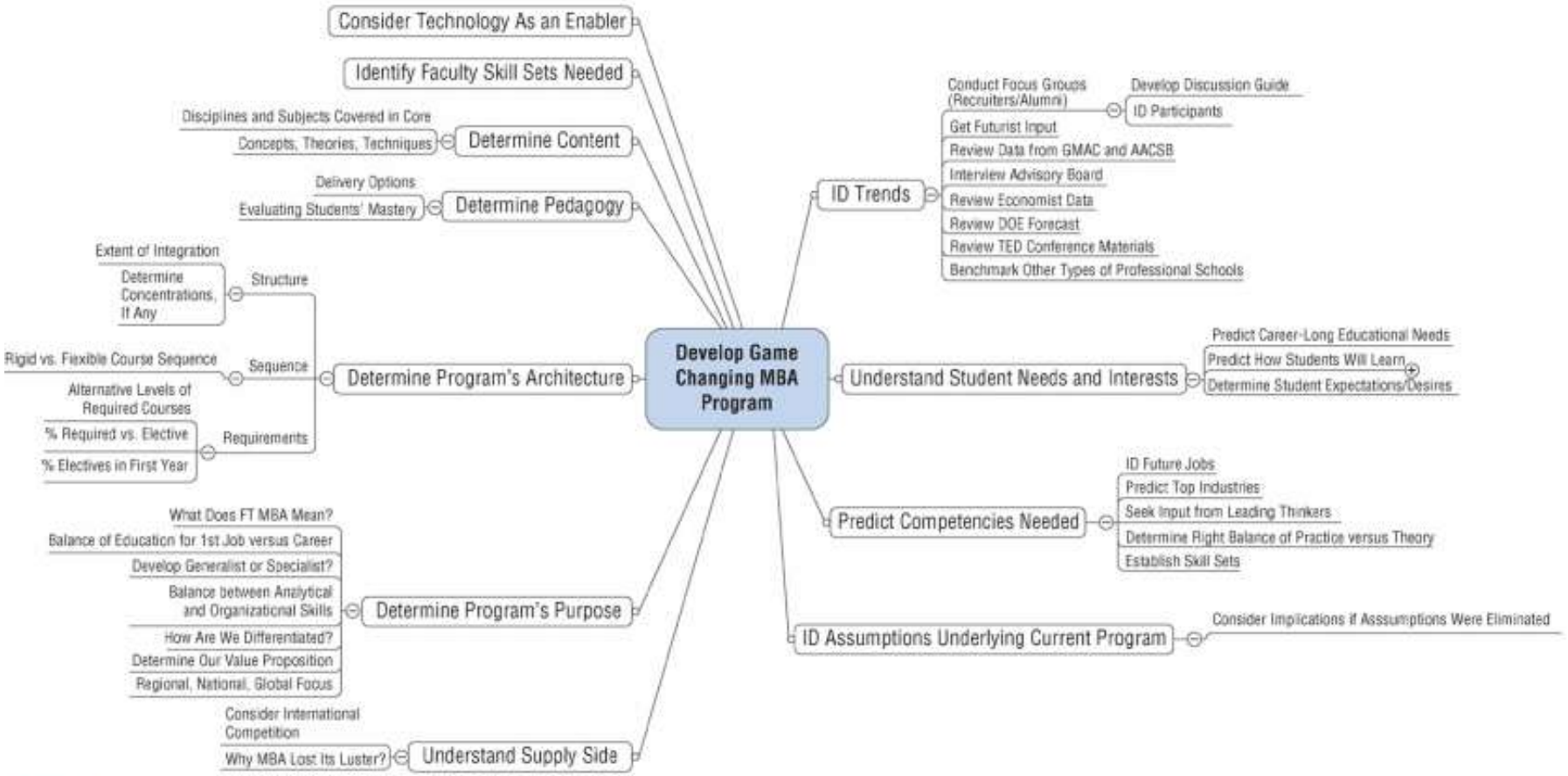
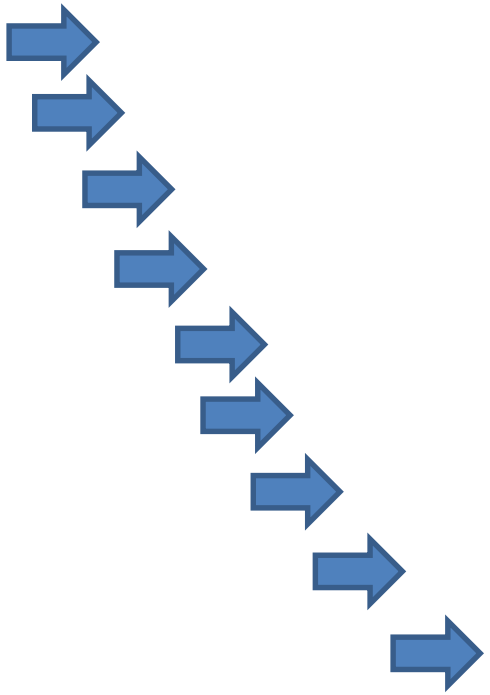


Figure 6-2 Final mind map for full-time MBA project.

Project Planning in Action

Life Cycle Sample for developing software

- Concept evaluation
- Requirements identification
- Design
- Implementation
- Test
- Integration
- Validation
- Customer test and evaluation
- Operations and maintenance



WBS – Work Breakdown Structure

Figure 6-3 Hierarchical planning.

WBS – Work Breakdown Structure

1.0. Chemical Process Facility

1.1. Construction Work

1.1.1. Preparation of the site and laying the foundation

1.1.2. Steelworks

1.1.3. Delivery of the site

1.2. Mechanical Engineering Work

1.2.1. Installing equipment

1.2.2. Ductwork

1.2.3. Pipework

1.3. Electrical & Electronics Engineering Work

1.3.1. Instrumentation

1.3.2. Electrical apparatus

WBS – Work Breakdown Structure

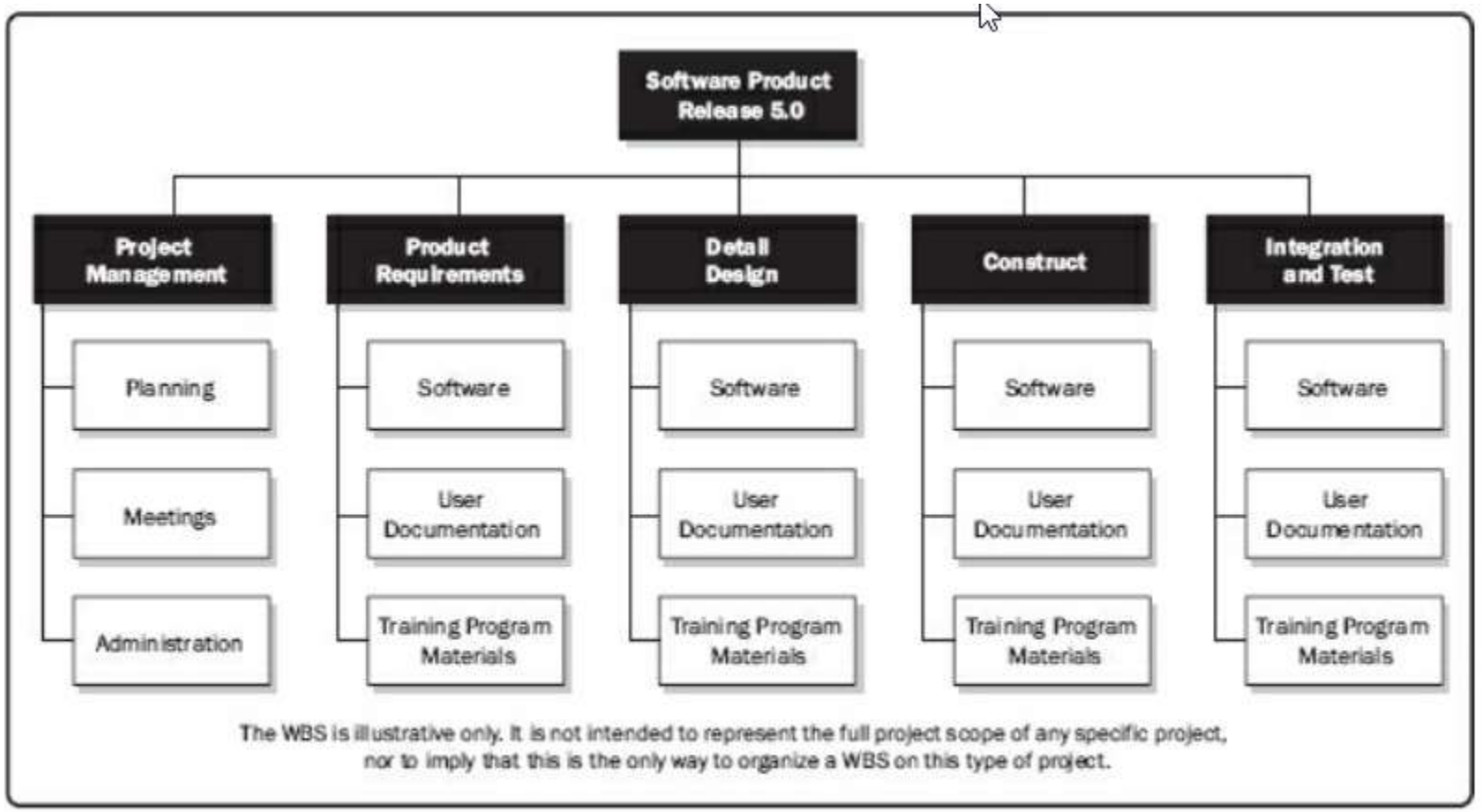


Figure 5-13. Sample WBS Organized by Phase

WBS – Work Breakdown Structure

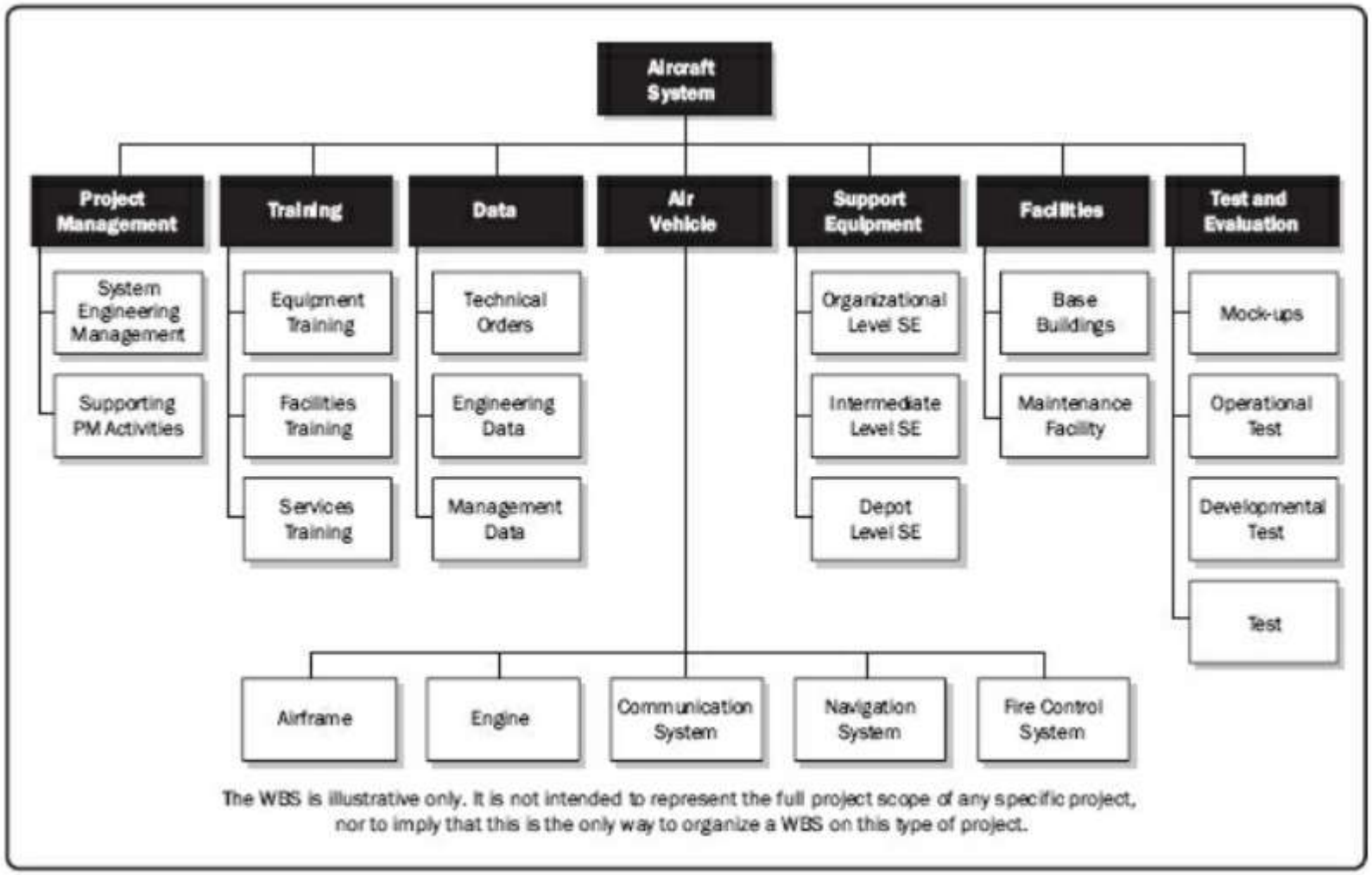
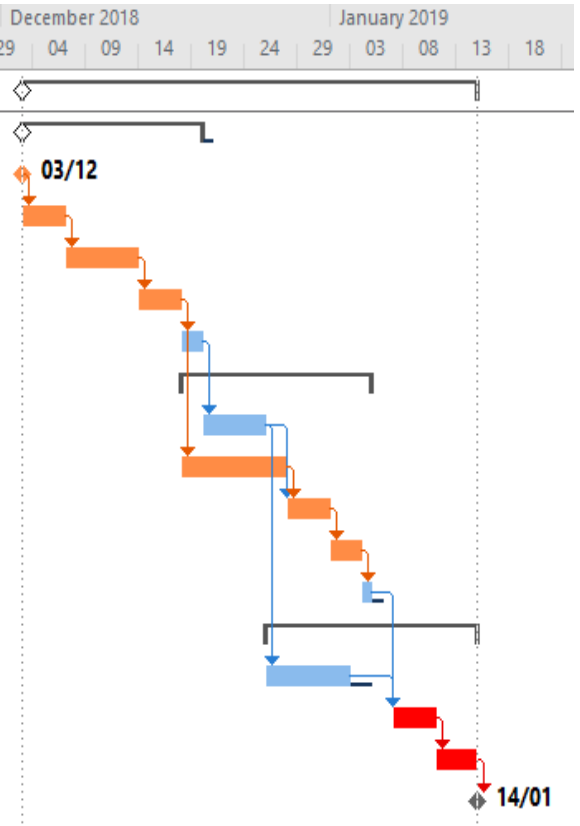


Figure 5-14. Sample WBS with Major Deliverables

WBS – Work Breakdown Structure

	Task Name	Dura	Start	Finish	Total Slack	Predec
1	**Bid for Facility Extaension**	**31 d**	**03 Dec '18**	**14 Jan '19**	**0 d**	
2	**Technical Specifications**	**13 d**	**03 Dec '18**	**19 Dec '18**	**1 d**	
3	Approval to bid	0 d	03 Dec '18	03 Dec '18	1 d	
4	Determine Installation Requirements	4 d	03 Dec '18	06 Dec '18	1 d	3
5	Create Technical Specification	5 d	07 Dec '18	13 Dec '18	1 d	4
6	Identify Supplier Components	2 d	14 Dec '18	17 Dec '18	1 d	5
7	Validate Technical Spesification	2 d	18 Dec '18	19 Dec '18	2 d	6
8	**Delivery Plan**	**14 d**	**18 Dec '18**	**04 Jan '19**	**0 d**	
9	Document Deliver Methodology	4 d	20 Dec '18	25 Dec '18	2 d	7
10	Obtain Quotes From Suppliers	8 d	18 Dec '18	27 Dec '18	1 d	6
11	Crete the Project Schedule	3 d	28 Dec '18	31 Dec '18	1 d	9,10
12	Create the project schedule	3 d	01 Jan '19	03 Jan '19	1 d	11
13	Rewew thw Delivery Plan	1 d	04 Jan '19	04 Jan '19	1 d	12
14	**Bid Document**	**14 d**	**26 Dec '18**	**14 Jan '19**	**0 d**	
15	Create Draft of Bid Document	6 d	26 Dec '18	02 Jan '19	2 d	9
16	Review Bid Document	4 d	07 Jan '19	10 Jan '19	0 d	13,15
17	Finalize and Submit Bid Document	2 d	11 Jan '19	14 Jan '19	0 d	16
18	Bid Document Submitted	0 d	14 Jan '19	14 Jan '19	0 d	17



WBS Sample (Meredith Ch 6)

WBS

Career Day				
Steps	**Responsibility**	**Time (weeks)**	**Prec.**	**Resources**
1. Contact Organizations				
a. Print forms	Secretary	6	–	Print shop
b. Contact organizations	Program manager	15	1.a	Word processing
c. Collect display information	Office manager	4	1.b	
d. Gather college particulars	Secretary	4	1.b	
e. Print programs	Secretary	6	1.d	Print shop
f. Print participants' certificates	Graduate assistant	8	–	Print Shop
2. Banquet and Refreshments				
a. Select guest speaker	Program manager	14	–	
b. Organize food	Program manager	3	1.b	Caterer
c. Organize liquor	Director	10	1.b	Dept. of Liquor Control
d. Organize refreshments	Graduate assistant	7	1.b	Purchasing
3. Publicity and Promotion				
a. Send invitations	Graduate assistant	2	–	Word processing
b. Organize gift certificates	Graduate assistant	5.5	–	
c. Arrange banner	Graduate assistant	5	1.d	Print shop
d. Contact faculty	Program manager	1.5	1.d	Word processing
e. Advertise in college paper	Secretary	5	1.d	Newspaper
f. Class announcements	Graduate assistant	1	3.d	Registrar's office
g. Organize posters	Secretary	4.5	1.d	Print shop
4. Facilities				
a. Arrange facility for event	Program manager	2.5	1.c	
b. Transport materials	Office manager	.5	4.a	Movers

Project Work 1 – A

1. Select the Project Topic (You may select any topic or look at samples on next page)

   Use brain storming and mapping with your team.

   Keep the term project small and agile. If it is not small, take a part of the selected bigger project. (Example: Roof of a warehouse instead of the whole) Number of tasks and subtasks should not exceed 30 for being agile.

Project Samples

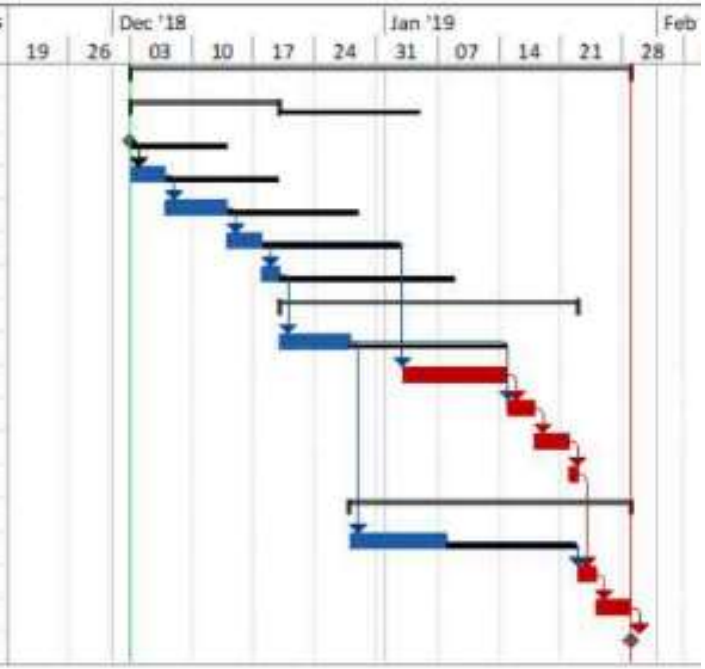
- Construction (Residential or commercial)
  - New Building
    - House, cottage, pool, barn, warehouse, solar farm, wind turbine, etc.
  - Renovate
    - House, flat, barn, pool, kitchen, bathroom, road, bike line, etc.
- Software development
  - Quiz, ledger, group management, electric bike rental system
- New marketing campaign
  - Product, political, new juice brand, etc.
- New production line or redesign for improvement
  - Automatic(sensor opening) trash box, battery, baklava line electric scooter with GSM and GPS, etc.
- Design
  - Electric bike, a new course, blue-tooth guitar, bike rental system

Project groups may have projects of the same name but with different attributes and properties.

Gannt Chart

Wilson International Bid
OzBuild

ID	Task Name	Dur	Start	Finish	Total Slack	Predecessors
1	**Bid For Facility Extension**	**38d**	**03 Dec '18**	**28 Jan '19**	**0d**	
2	**Technical Specification**	**13d**	**03 Dec '18**	**19 Dec '18**	**9d**	
3	Approval to Bid	0d	03 Dec '18	03 Dec '18	9d	
4	Determine Installation Requiremen	4d	03 Dec '18	06 Dec '18	9d	3
5	Create Technical Specification	5d	07 Dec '18	13 Dec '18	9d	4
6	Identify Supplier Components	2d	14 Dec '18	17 Dec '18	9d	5
7	Validate Technical Specification	2d	18 Dec '18	19 Dec '18	11d	6
8	**Delivery Plan**	**21d**	**20 Dec '18**	**22 Jan '19**	**0d**	
9	Document Delivery Methodology	4d	20 Dec '18	27 Dec '18	11d	7
10	Obtain Quotes from Suppliers	8d	03 Jan '19	14 Jan '19	0d	6
11	Calculate the Bid Estimate	3d	15 Jan '19	17 Jan '19	0d	9,10
12	Create the Project Schedule	3d	18 Jan '19	21 Jan '19	0d	11
13	Review the Delivery Plan	1d	22 Jan '19	22 Jan '19	0d	12
14	**Bid Document**	**21d**	**28 Dec '18**	**28 Jan '19**	**0d**	
15	Create Draft of Bid Document	6d	28 Dec '18	07 Jan '19	11d	9
16	Review Bid Document	2d	23 Jan '19	24 Jan '19	0d	13,15
17	Finalize and Submit Bid Document	2d	25 Jan '19	28 Jan '19	0d	16
18	Bid Document Submitted	0d	28 Jan '19	28 Jan '19	0d	17



Task
Milestone
Summary
Deadline
Critical
Progress
Total Float
Neg Float

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Page 1 of 1
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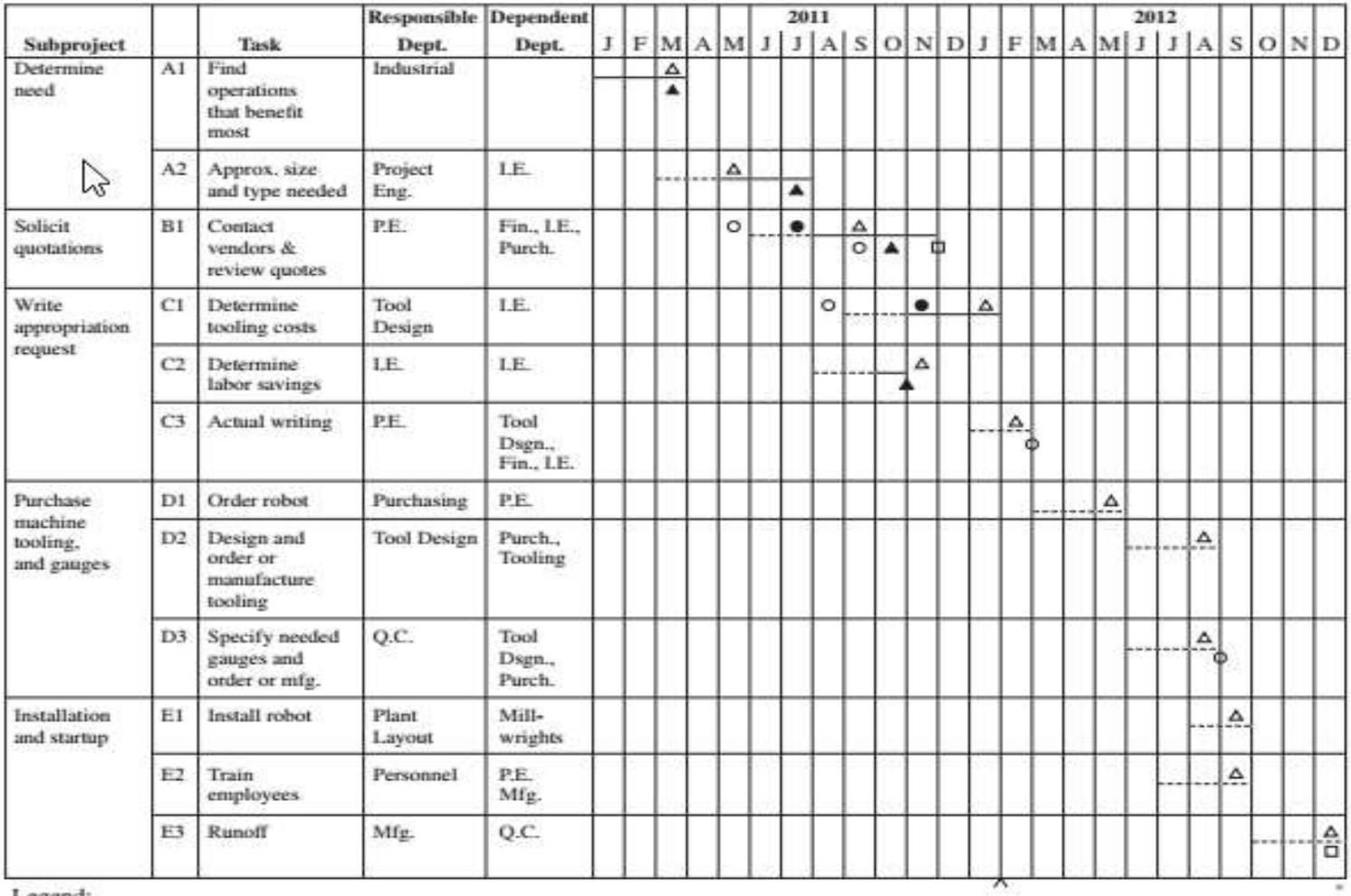
Gannt Chart – on the wall



Legend:

• Project completion □ Contractual commitment △ Planned completion ▲ Actual completion

^ Status date ○ Milestone planned ● Milestone achieved --- Planned progress — Actual progress

Note: As of Jan. 31, 2012, the project is one month behind schedule. This is due mainly to the delay in task C1, which was caused bythe late completion of A2.

Agile Project Management

- Small project teams
- Smaller sub projects if necessary
- Well defined responsibilities of HR
  - Simple responsibility chart
  - Frequent meetings
  - Use of software as Smartsheet https://www.smartsheet.com/

Direct And Manage

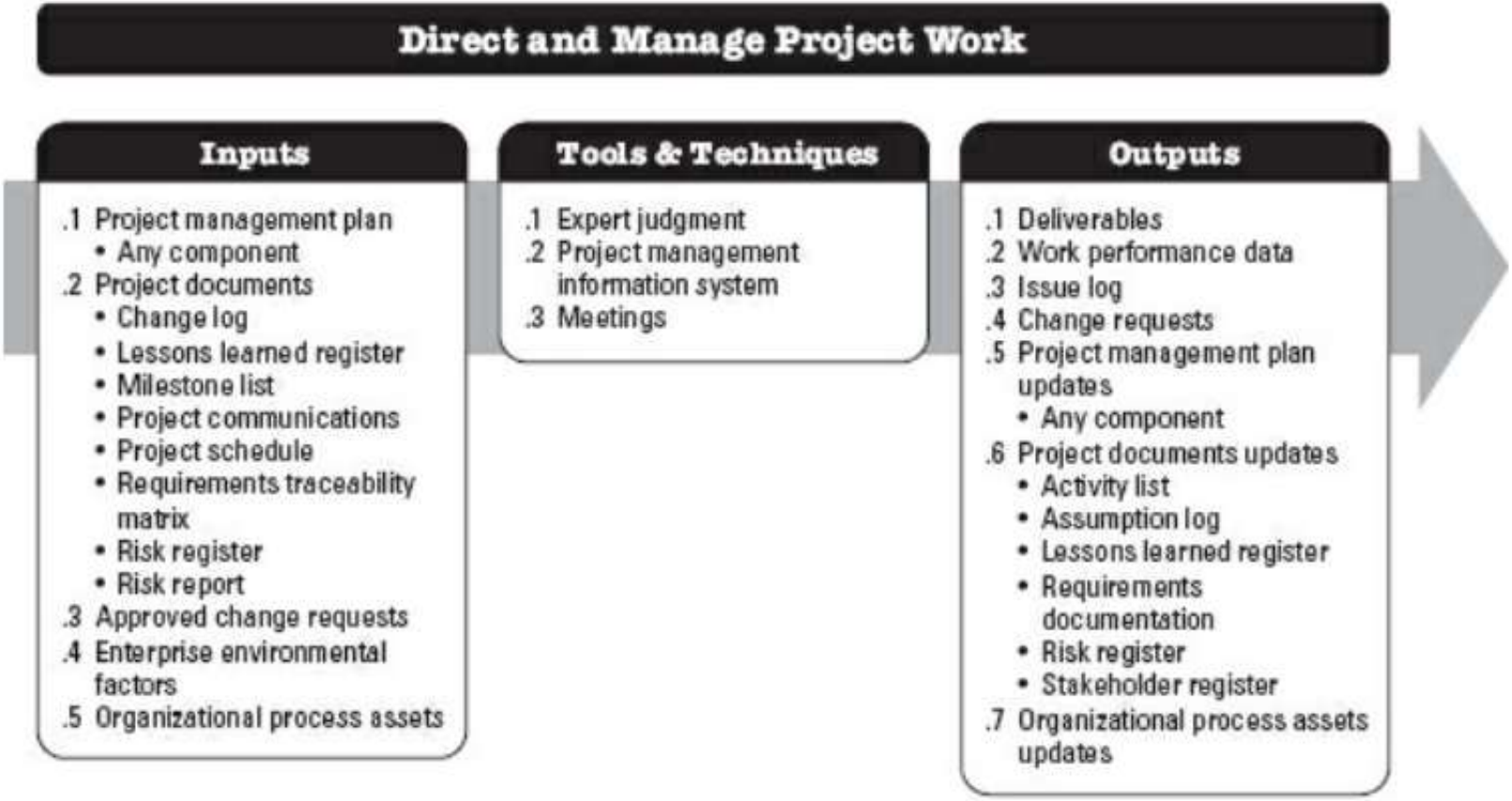


Figure 4-6. Direct and Manage Project Work: Inputs, Tools & Techniques, and Outputs

Manage Knowledge

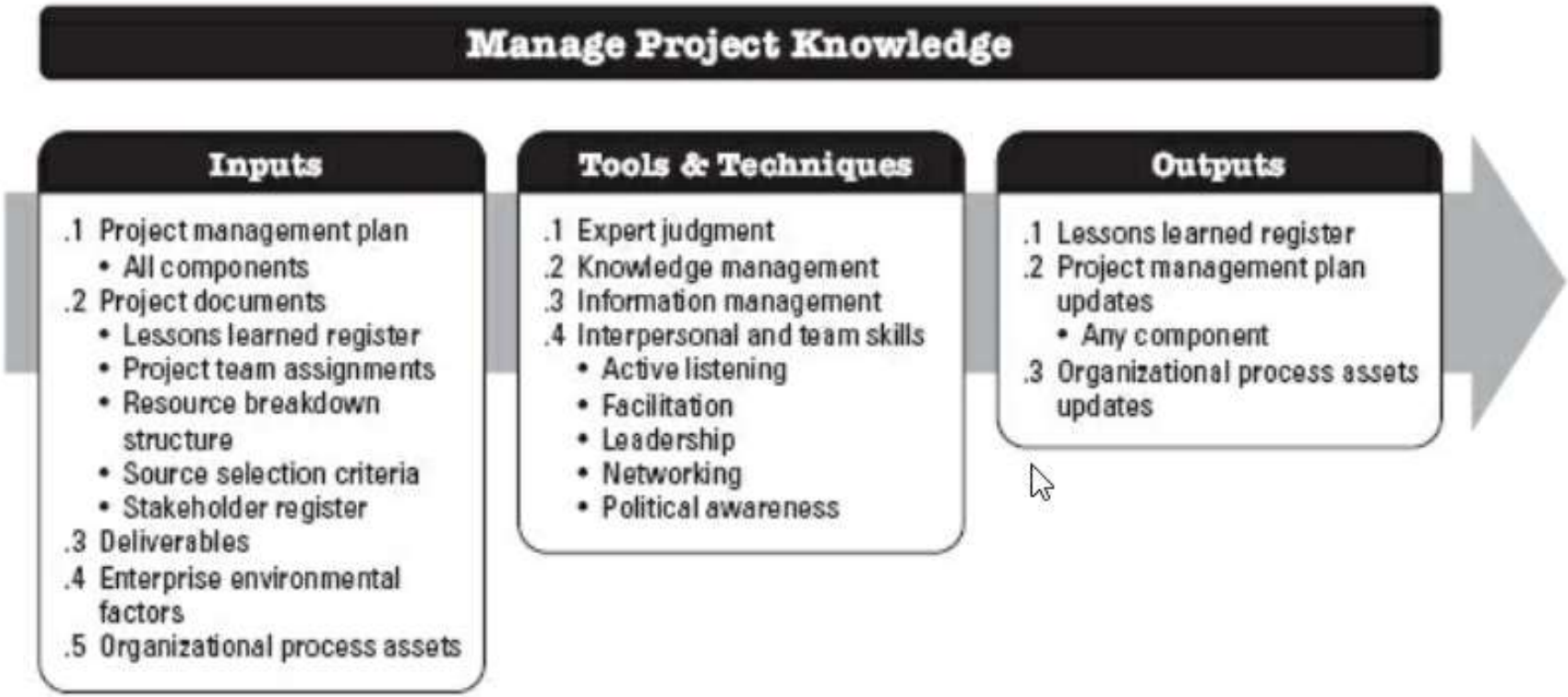
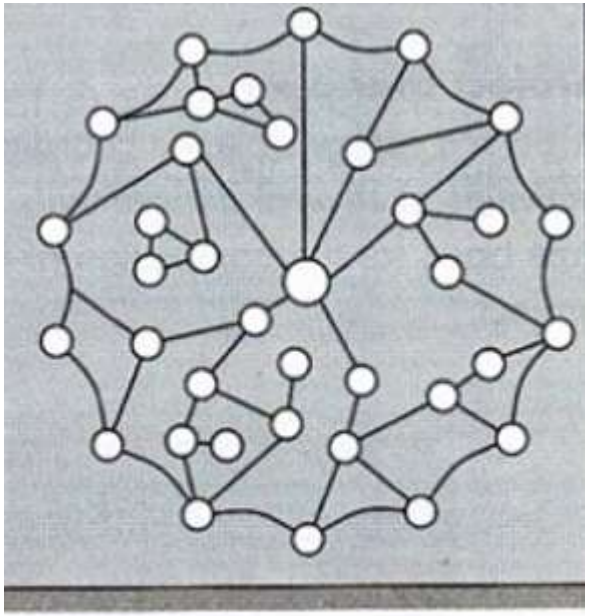


Figure 4-8. Manage Project Knowledge: Inputs, Tools & Techniques, and Outputs

Manage Knowledge

Knowledge is NOT only written documents



New Workplace
Learning Organization

Monitor and Control

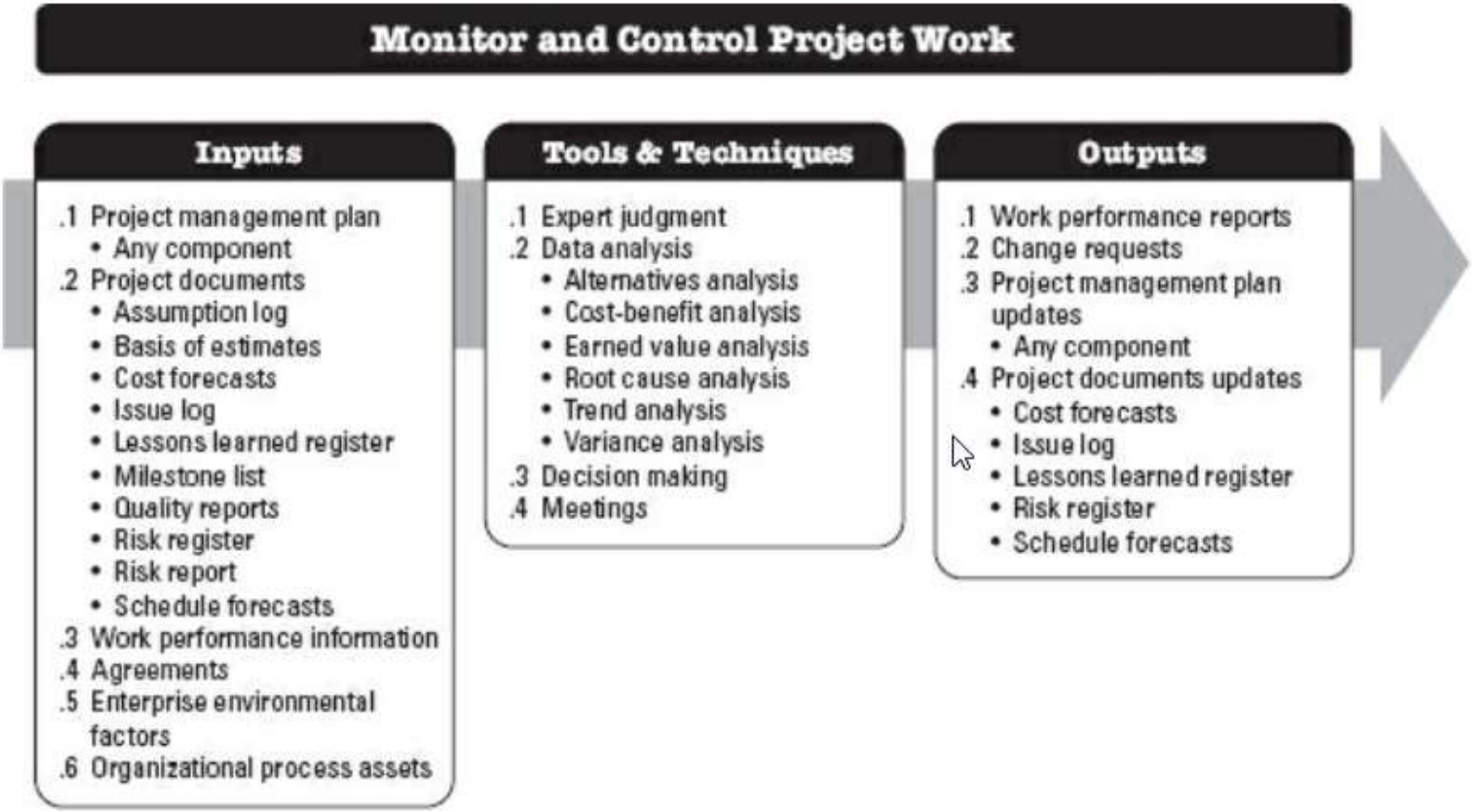


Figure 4-10. Monitor and Control Project Work: Inputs, Tools & Techniques, and Outputs

Integrated Change Control

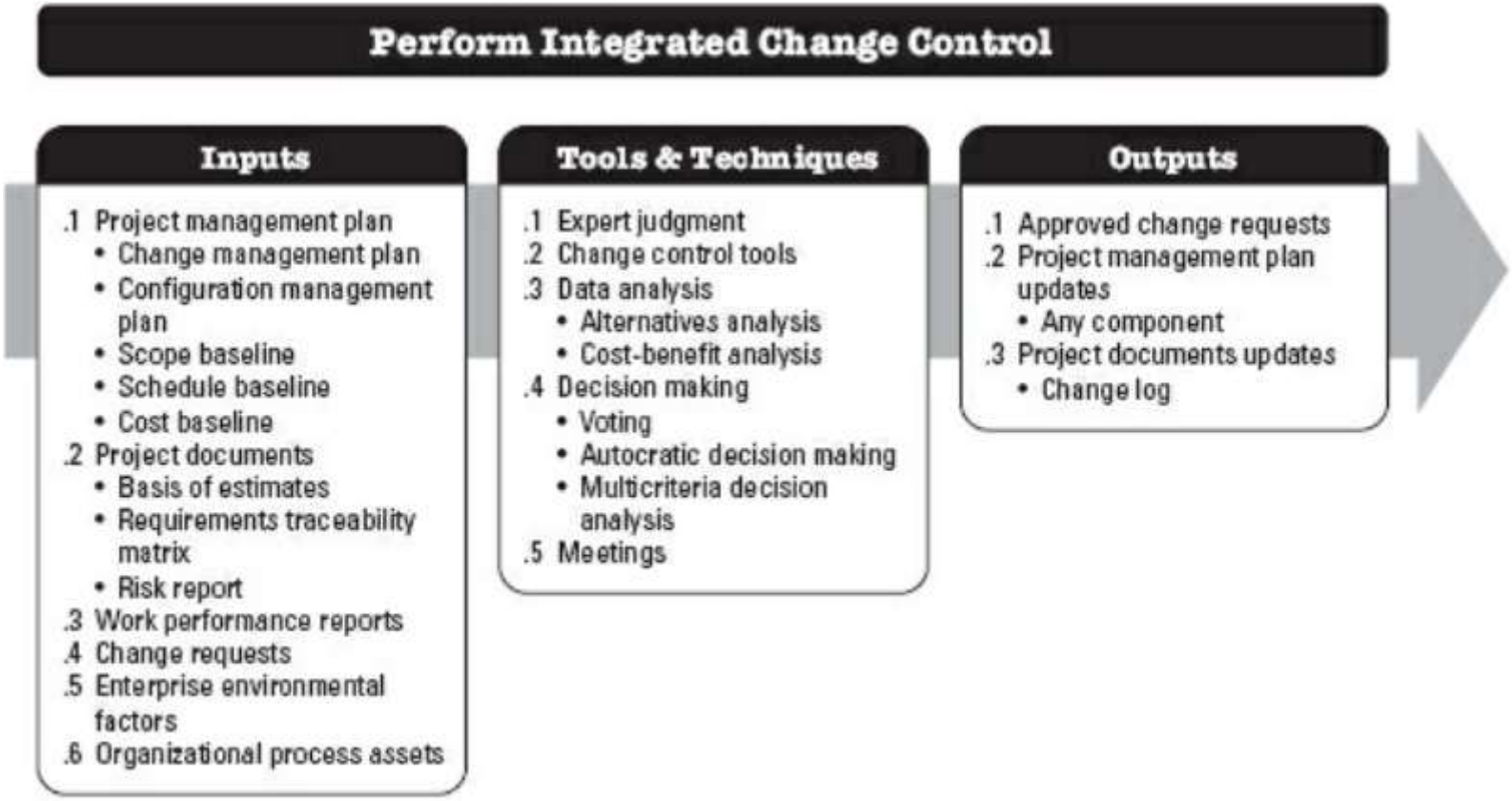
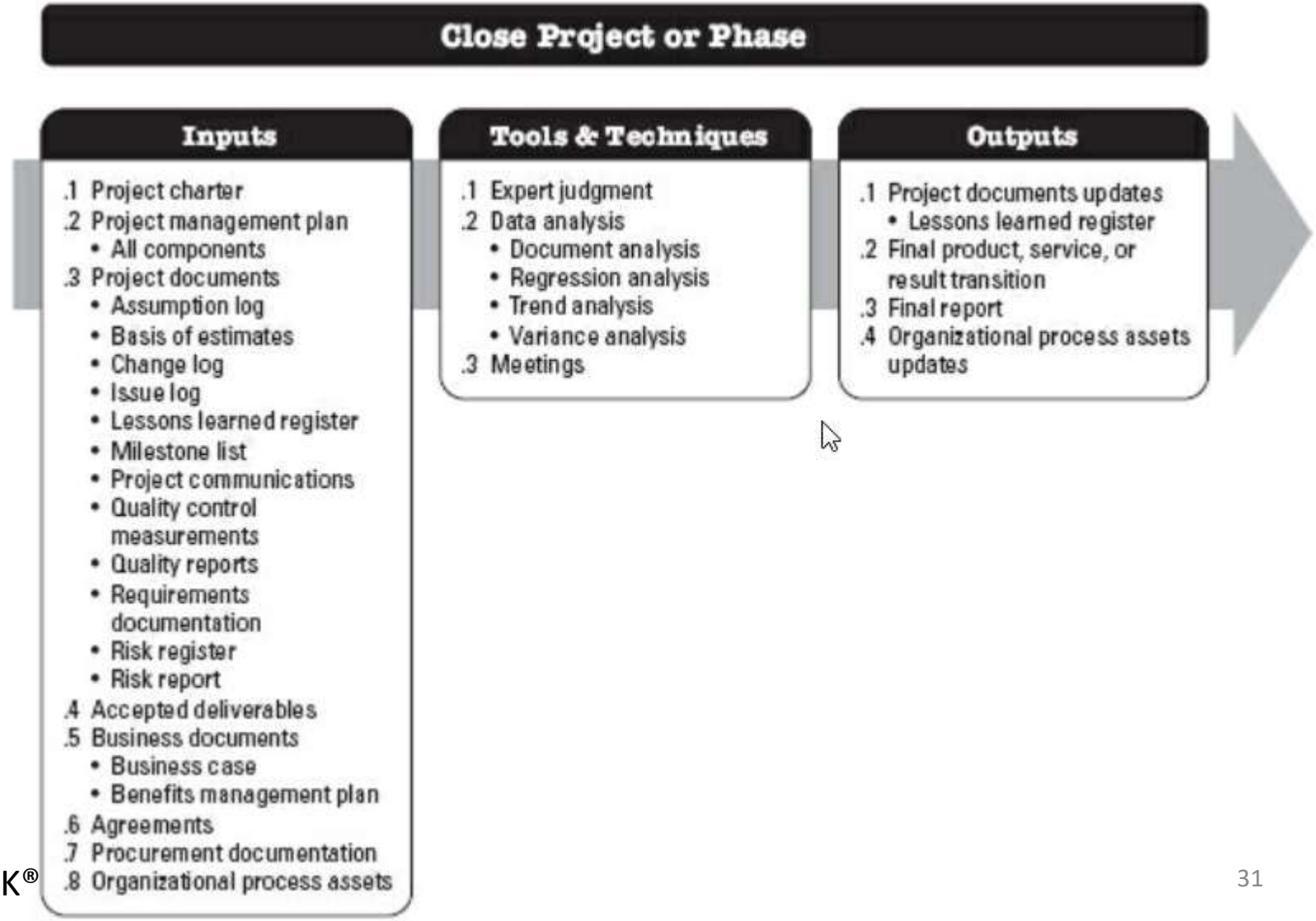


Figure 4-12. Perform Integrated Change Control: Inputs, Tools & Techniques, and Outputs

Close Project or Phase



Risk Planning

Identification of risks

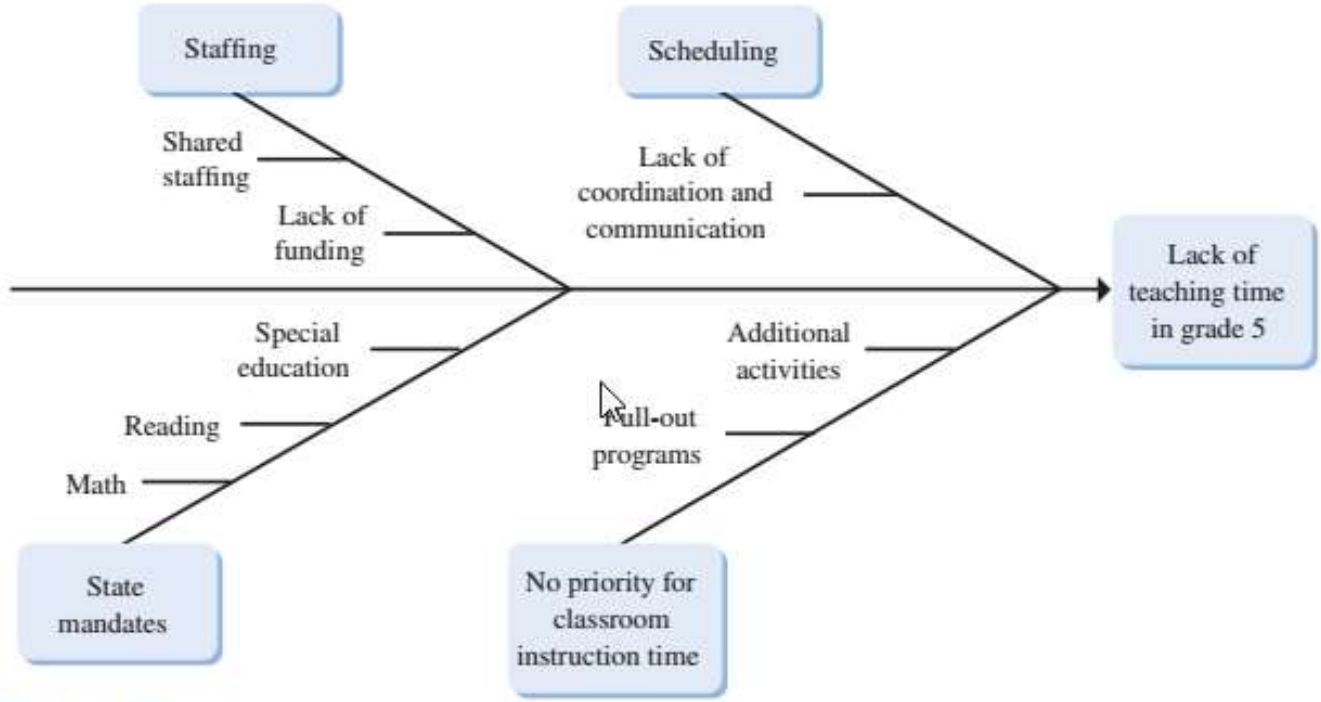


Figure 6-11 Fishbone diagram to identify potential factors.

Risk Planning

Qualitative Analysis

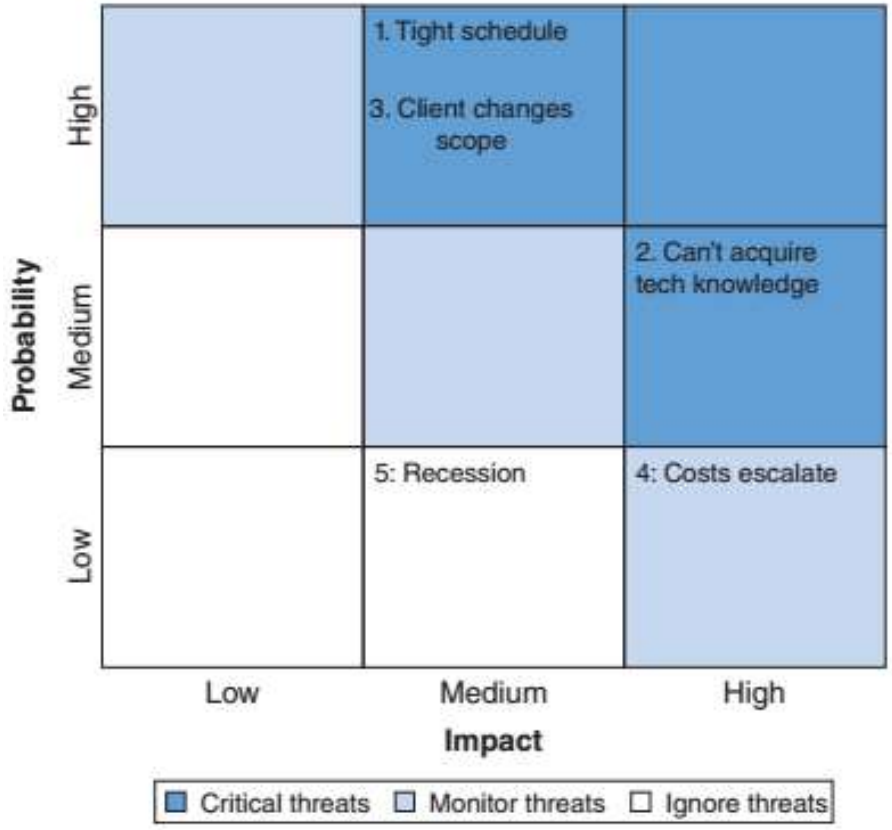


Figure 6-12 Risk Matrix.

Risk Planning

Quantitative Analysis

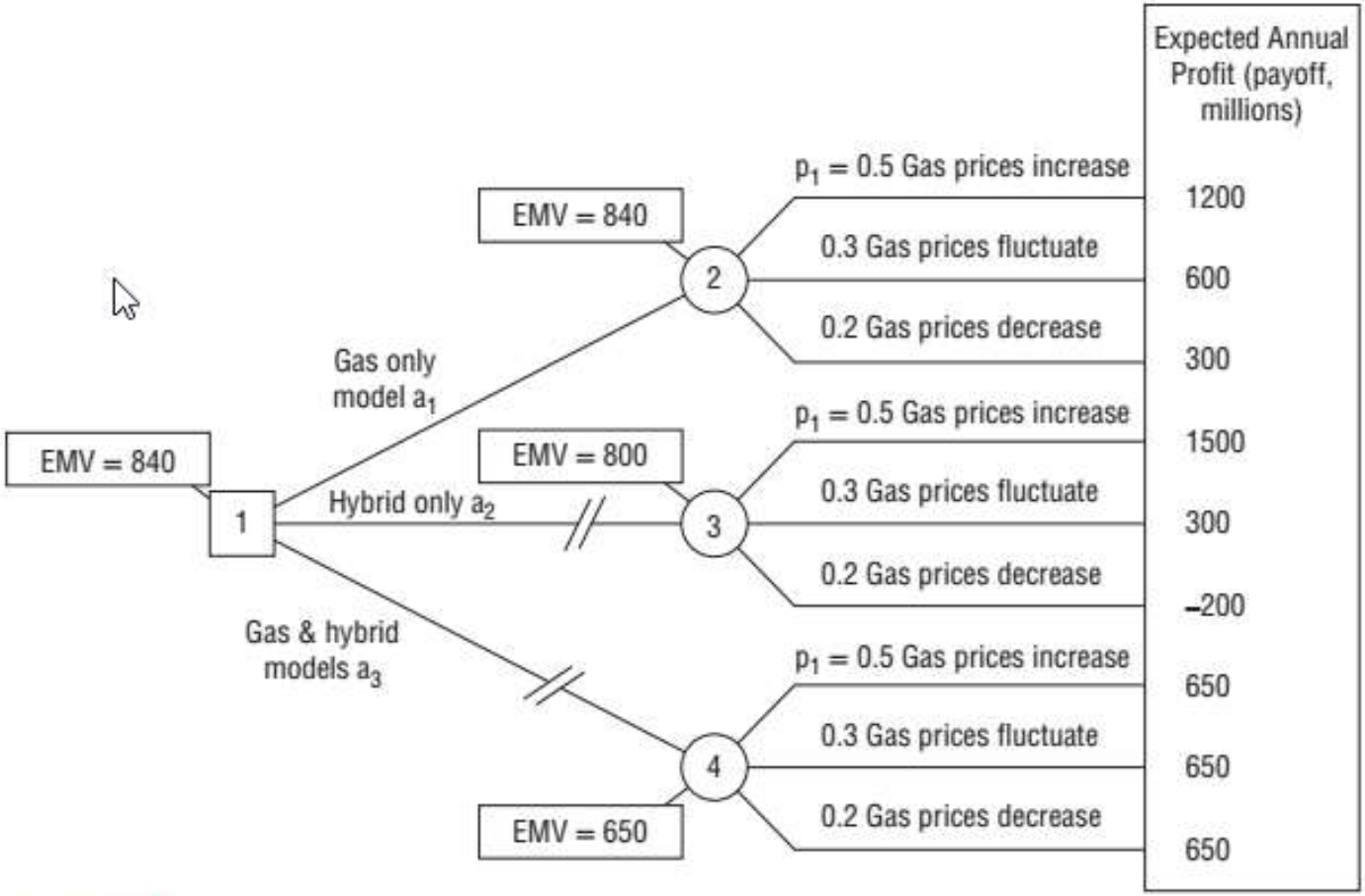
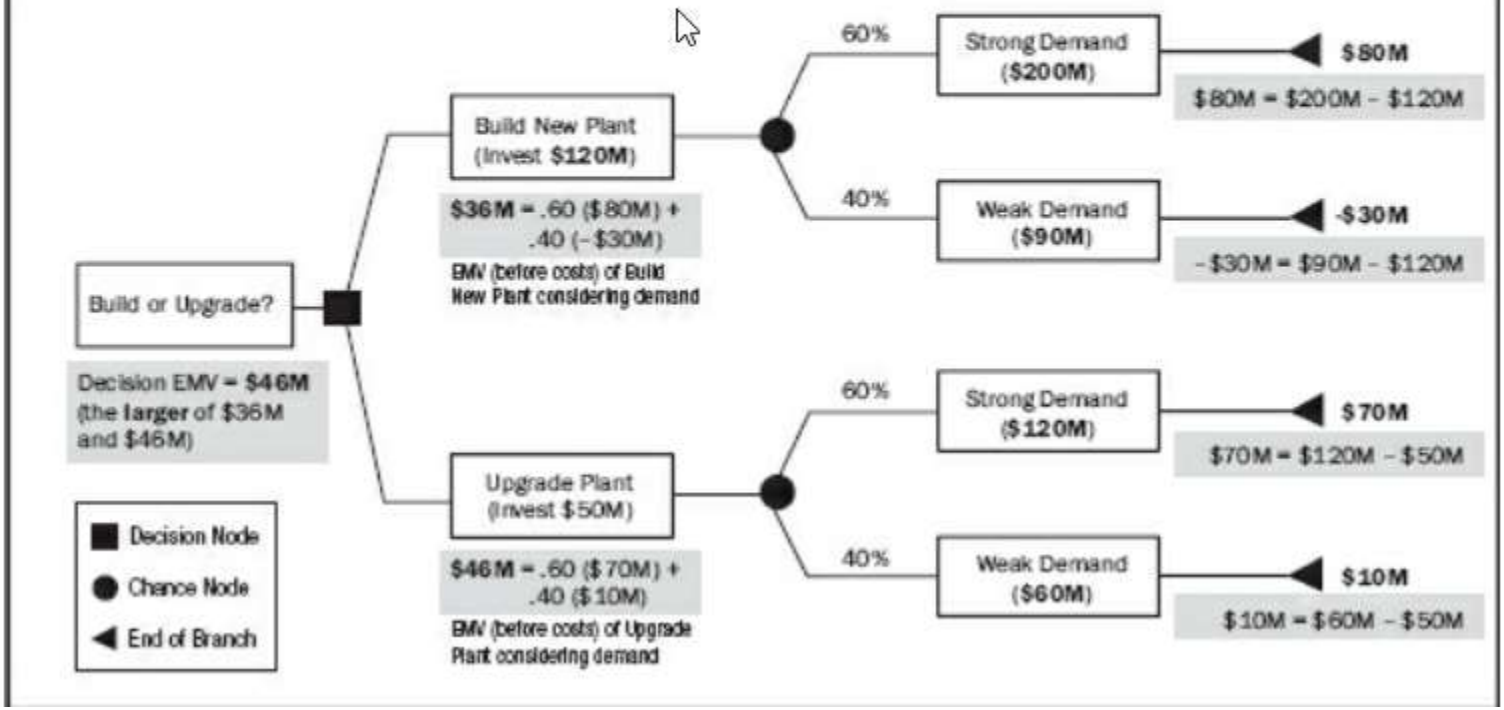
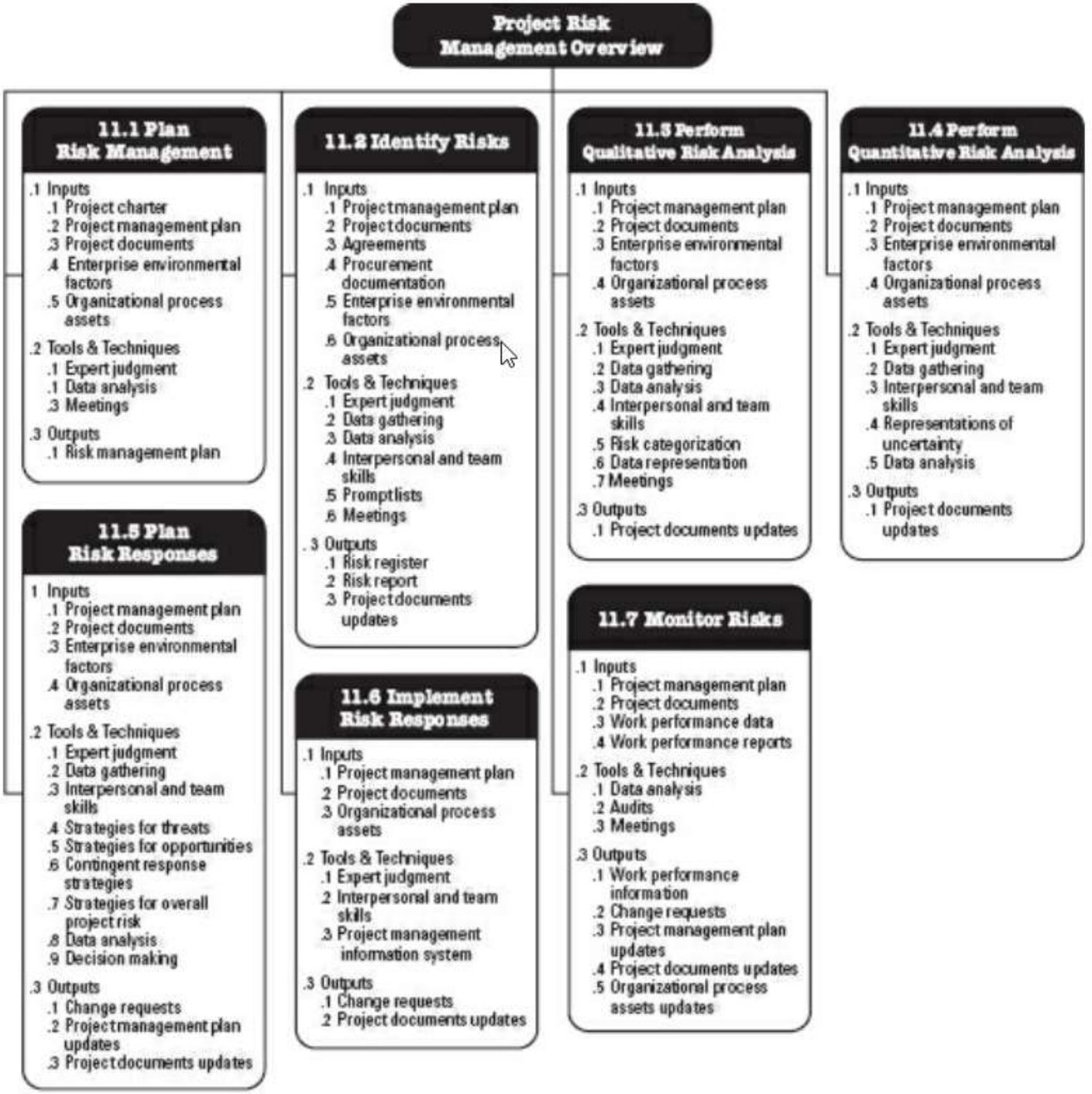


Figure 6-13 Decision tree based on expected monetary value (EMV).

Decision tree sample

Decision Definition	Decision Node	Chance Node	Net Path Value
Decision to be Made	**Input:** Cost of Each Decision **Output:** Decision Made	**Input:** Scenario Probability, Reward if it Occurs **Output:** Expected Monetary Value (EMV)	**Computed:** Payoffs minus Costs along Path




Project Risk Management Overview
11.1 Plan Risk Management
.1 Inputs
.1 Project charter
.2 Project management plan
.3 Project documents
.4 Enterprise environmental factors
.5 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.1 Data analysis
.3 Meetings
.3 Outputs
.1 Risk management plan
11.2 Identify Risks
.1 Inputs
.1 Project management plan
.2 Project documents
.3 Agreements
.4 Procurement documentation
.5 Enterprise environmental factors
.6 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Data gathering
.3 Data analysis
.4 Interpersonal and team skills
.5 Prompt lists
.6 Meetings
. 3 Outputs
.1 Risk register
.2 Risk report
.3 Project documents updates
11.3 Perform Qualitative Risk Analysis
.1 Inputs
.1 Project management plan
.2 Project documents
.3 Enterprise environmental factors
.4 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Data gathering
.3 Data analysis
.4 Interpersonal and team skills
.5 Risk categorization
.6 Data representation
.7 Meetings
.3 Outputs
.1 Project documents updates
11.4 Perform Quantitative Risk Analysis
.1 Inputs
.1 Project management plan
.2 Project documents
.3 Enterprise environmental factors
.4 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Data gathering
.3 Interpersonal and team skills
.4 Representations of uncertainty
.5 Data analysis
.3 Outputs
.1 Project documents updates
11.5 Plan Risk Responses
1 Inputs
.1 Project management plan
.2 Project documents
.3 Enterprise environmental factors
.4 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Data gathering
.3 Interpersonal and team skills
.4 Strategies for threats
.5 Strategies for opportunities
.6 Contingent response strategies
.7 Strategies for overall project risk
.8 Data analysis
.9 Decision making
.3 Outputs
.1 Change requests
.2 Project management plan updates
.3 Project documents updates
11.6 Implement Risk Responses
.1 Inputs
.1 Project management plan
.2 Project documents
.3 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Interpersonal and team skills
.3 Project management information system
.3 Outputs
.1 Change requests
.2 Project documents updates
11.7 Monitor Risks
.1 Inputs
.1 Project management plan
.2 Project documents
.3 Work performance data
.4 Work performance reports
.2 Tools & Techniques
.1 Data analysis
.2 Audits
.3 Meetings
.3 Outputs
.1 Work performance information
.2 Change requests
.3 Project management plan updates
.4 Project documents updates
.5 Organizational process assets updates

For Midterm Exam

From Chapter 6 of Meredith
Solve End of Chapter Problems 4 – 5
You may apply Problem 3 to your project.

Do not forget Project Work 1 – 5 Pts

1. Create the **Project Charter as Word document** to be confirmed by your Instructor.

2. Create **first WBS draft (task list) for your project in MS-Project**
   (You may need to complete workshop 2 first to learn about creating tasks and subtasks within MS-project)

3. Upload files to lectures.yasar.edu.tr

Sample Problems for Exam

4. The yearly demand for a seasonal, profitable item follows the distribution:

Demand (units)	*Probability*
1,000	.20
2,000	.30
3,000	.40
4,000	.10

A manufacturer is considering launching a project to produce this item and could produce it by one of three methods:

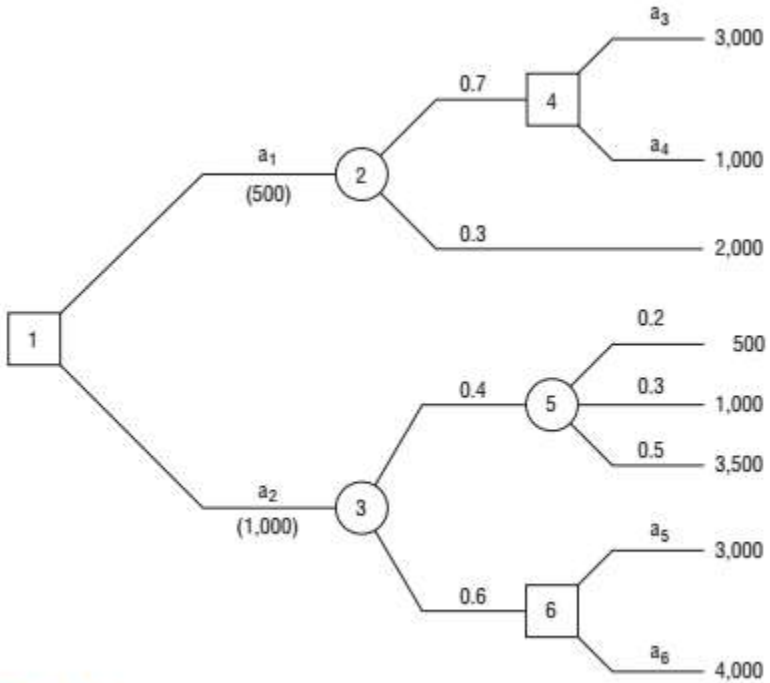
a. Use existing tools at a cost of $6 per unit.

b. Buy cheap, special equipment for $1,000. The value of the equipment at the end of the year (salvage value) is zero. The cost would be reduced to $3 per unit.

c. Buy high-quality, special equipment for $10,000 that can be depreciated over four years (one fourth of the cost each year). The cost with this equipment would be only $2 per unit.

Set up this project as a decision tree to find whether the manufacturer should approve this project, and if so, which method of production to use to maximize profit. *Hint:* Compare total annual costs. Assume production must meet all demand; each unit demanded and sold means more profit.

5. Given the decision tree below for a two-stage (decision) project to enter a joint venture, find the best alternatives (among a_1-a_6 in the figure) and their expected values. The outcomes shown are *revenues* and the investment expenses are in parentheses. Node 4 represents the situation where alternative a_1 was chosen, and then the top outcome with a 70 percent probability occurred; note that there is no choice of alternative if the 30 percent probability outcome occurred. Similarly with Node 5.



Problem 5 Decision Tree.

Fish bone Exercise

3. You might not have realized it, but getting a college degree is a project. Assume you are in a degree program in college and are concerned about getting your degree. Create a fishbone (cause–effect) diagram, with "failure to get degree" as the problem outcome. Identify at least four possible threat risks for this problem to occur. Then for each threat list at least three reasons/factors for how that threat could conceivably come to pass. Finally, review your diagram to estimate probabilities and impacts of each threat to getting your degree. Based on this analysis, what threats and factors should you direct your attention to, as the project manager of your project to get your degree.

Sample Problems for Exam

Problem 1: Your company wants to decide between Investment A, which will cost $100K upfront, and Investment B, which will cost $150K upfront. If the economy performs well, Investment A will bring in $750K for your company, but if the economy performs poorly, then it will lose $250K for your company. If the economy performs well, Investment B will bring in $850K for your company, but if the economy performs poorly, then it will lose $300K for your company. There's a 60% chance of a strong market and a 40% chance of a weak market.

Problem 2: You are asked to choose between two projects A or B based on the highest gain (or the lowest loss). A will cost U.S. $650,000 and B will cost U.S. $467,000. There is a 56% chance that project A will be successful, which will result in a gain of U.S. $1,800,000. If project A fails there will be a loss of U.S. $900,000. There is a 67% project B will be successful. If Project B fails there will be a loss of U.S. $670,000. Based on this information, what is the minimum gain of project B in order to be a better option than project A?

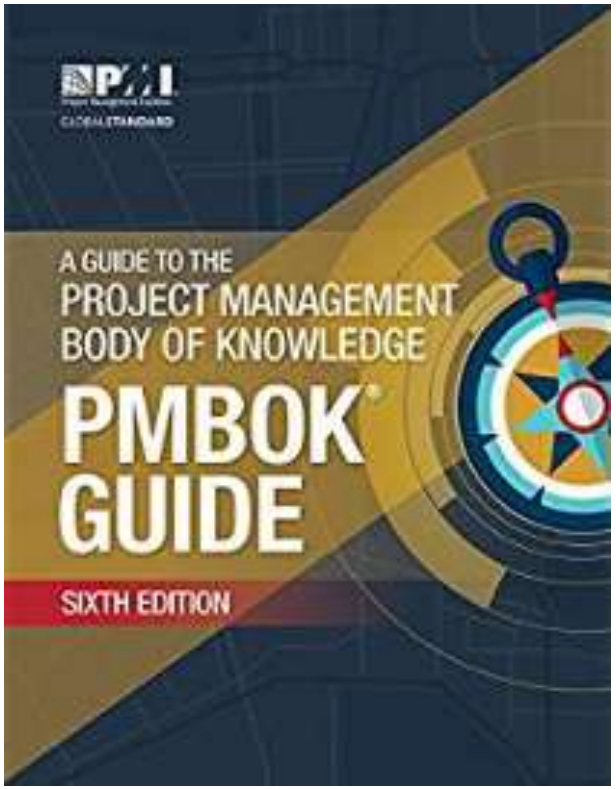
Sample Problems for Exam

Problem 3: Michael Dell, president of Dell Computers, Inc., has two design options for his new high resolution flat screen monitors for CAD workstations. The life cycle sales forecast of the monitors is 100,000 units.

Design option A has a 0.70 probability of yielding 59 good monitors per 100 and 0.3 probability of yielding 64 good monitors per 100. This design cost is $1,000,000. Design option B has a 0.60 probability of yielding 64 good units per 100 and 0.40 probability of yield 59 good units per 100. This design will cost $1,350,000. Good or bad, each monitor will cost $75. Each good monitor will sell for $150. Bad monitors are destroyed and have no salvage value.

Which design option should be selected and what is its expected monetary value (EMV)?

Course resources



Questions

- Questions

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NEXT WEEK: Project planning
Scope, Schedule and Cost Management