



TRƯỜNG ĐẠI HỌC BÁCH KHOA HÀ NỘI

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

Project management

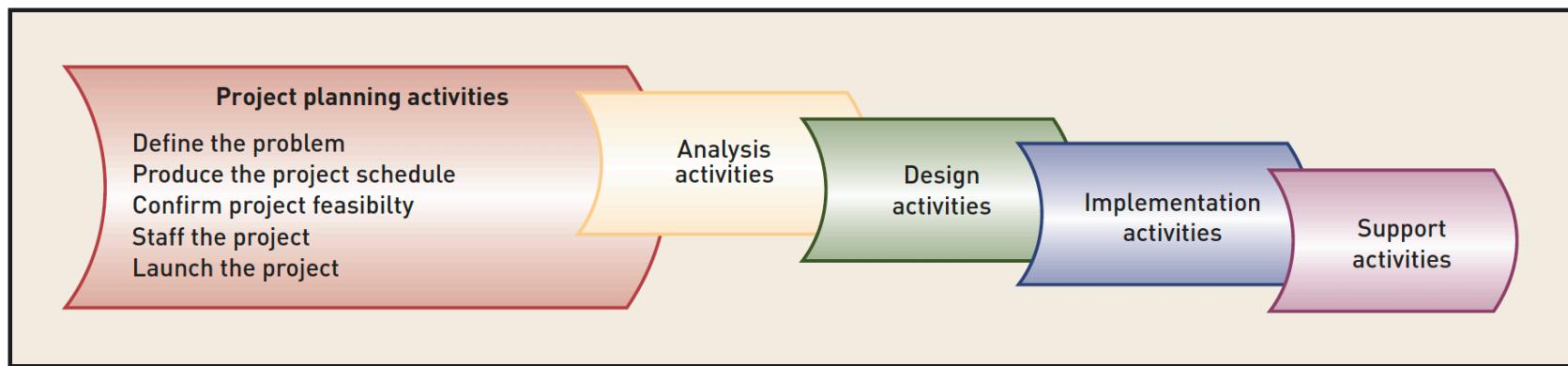
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Outline

PROJECT PLANNING ACTIVITIES



Key questions

Project planning activities	Key questions
Define the problem	Do we understand what we are supposed to be working on?
Produce the project schedule	Can the project be completed on time given the available resources?
Confirm project feasibility	Is it still feasible to begin working on this project?
Staff the project	Are the resources available, trained, and ready to start the project?
Launch the project	Are we ready to start the project?

Accurately defining the problem

- System Vision Document
 - problem description
 - anticipated business benefits
 - system capabilities
- How
 - Review the business needs
 - Develop a list of business benefits
 - Identify the new system's ability to support the realization of these benefits

The vision document outline

- Introduction
 - overview of the entire vision document. It includes the purpose, scope, definitions, acronyms, abbreviations, references, and an overview of the full document.
- Positioning
 - Business opportunity: that is addressed by this project.
 - Problem statement: Summarize the problem that this project solves.
- Stakeholder and user descriptions: identify and involve all stakeholders as part of the requirements-definition process
- Product overview: Product perspective and Summary of capabilities
- Product features
- Constraints: note any design constraints, external constraints, such as operational or regulatory requirements, or other dependencies.
- Quality ranges: define the quality ranges for performance, robustness, fault tolerance, usability, and similar characteristics that the feature set does not describe.
- Precedence and priority
- Other product requirements
- Documentation Requirements

PRODUCING THE PROJECT SCHEDULE

- A task is the smallest piece of work that is identified and scheduled
- An activity is made up of a group of related tasks or other smaller activities. Activities are also identified, named, and scheduled
- For example, in the design phase
 - Design the user interface (activity)
 - Design the customer entry form (task)
 - Design the order-entry form (task)
 - Design and integrate the database, and (activity)
 - Complete the application design (activity)

Development of a project schedule

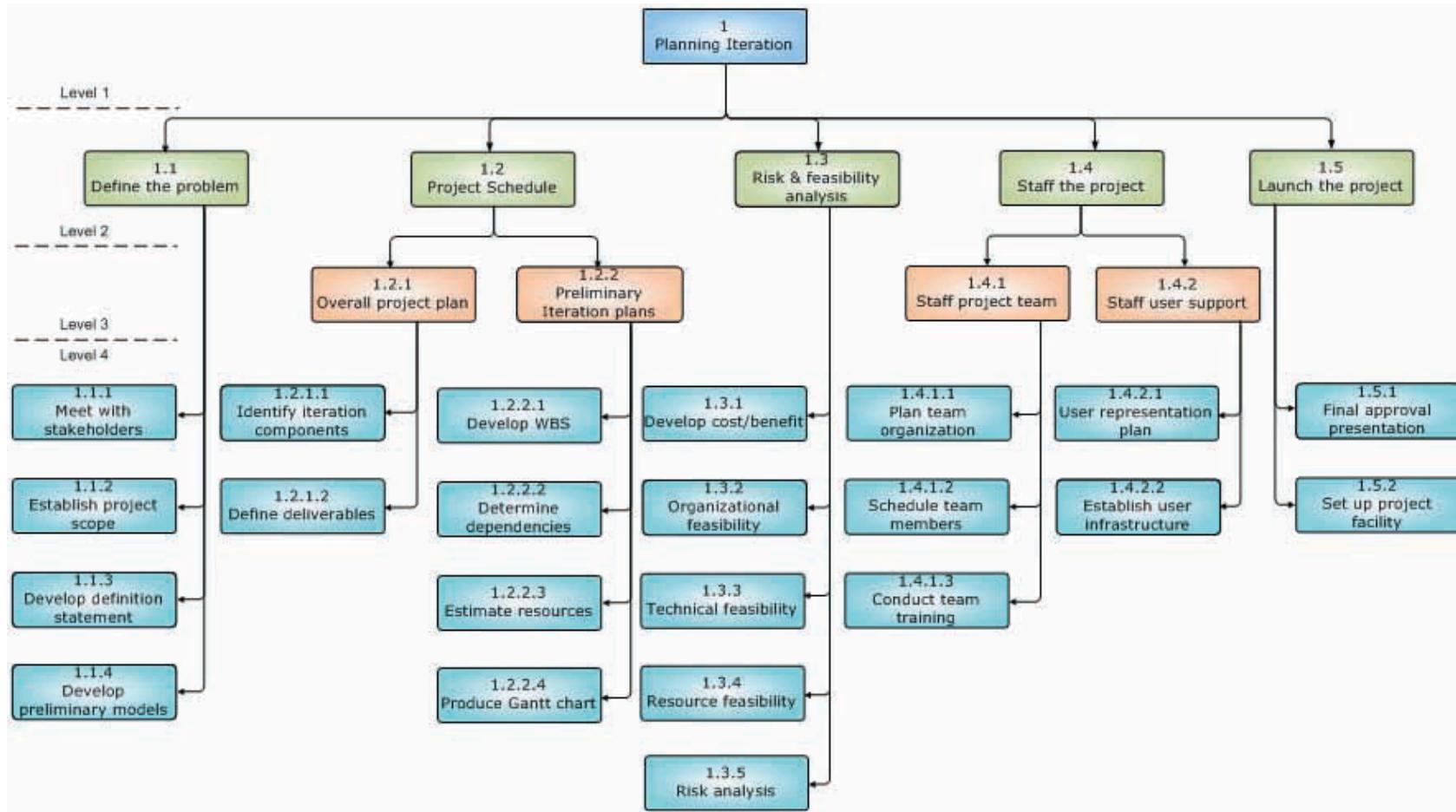
- One of the most difficult endeavors of project planning, yet it is one of the most important
- Three main steps
 - Develop a work breakdown structure
 - Build a schedule using a Gantt chart
 - Develop resource requirements and the staffing plan

Developing a work breakdown structure

- The first step in building a project schedule is to identify all of the activities and tasks that need to be scheduled
- Work breakdown structure (WBS) is the hierarchy of phases, activities, and tasks of a project; one method to estimate and schedule the tasks of a project
- Techniques
 - Top-down: Identifying major activities first and then listing internal tasks
 - Bottom-up: Listing all the tasks you can think of and organizing them later
 - Template: Using a standard template of tasks for projects that are fairly standard
 - Analogy: Finding a similar, or analogous, project that is finished and copying its tasks

Task Name
1 Project Planning
1.1 Define the Problem
1.1.1 Meet with users
1.1.2 Determine scope
1.1.3 Write problem description
1.1.4 Identify business benefits
1.1.5 Identify system capabilities
1.1.6 Develop context diagram
1.2 Produce the project schedule
1.2.1 Develop WBS
1.2.2 Estimate durations
1.2.3 Determine sequences
1.2.4 Develop Gantt Chart
1.3 Confirm project feasibility
1.3.1 Identify intangible cost/benefits
1.3.2 Estimate tangible benefits
1.3.3 Calculate cost/benefit
1.3.4 Organizational feasibility
1.3.5 Technical feasibility
1.3.6 Evaluate resource availability
1.3.7 Risk analysis
1.4 Staff the project
1.4.1 Develop resource plan
1.4.2 Procure project team
1.4.3 Procure user liaisons
1.4.4 Conduct training
1.5 Launch the project
1.5.1 Make executive presentation
1.5.2 Procure facilities
1.5.3 Procure support resources
1.5.4 Conduct kickoff meeting

WSB template for planning iteration

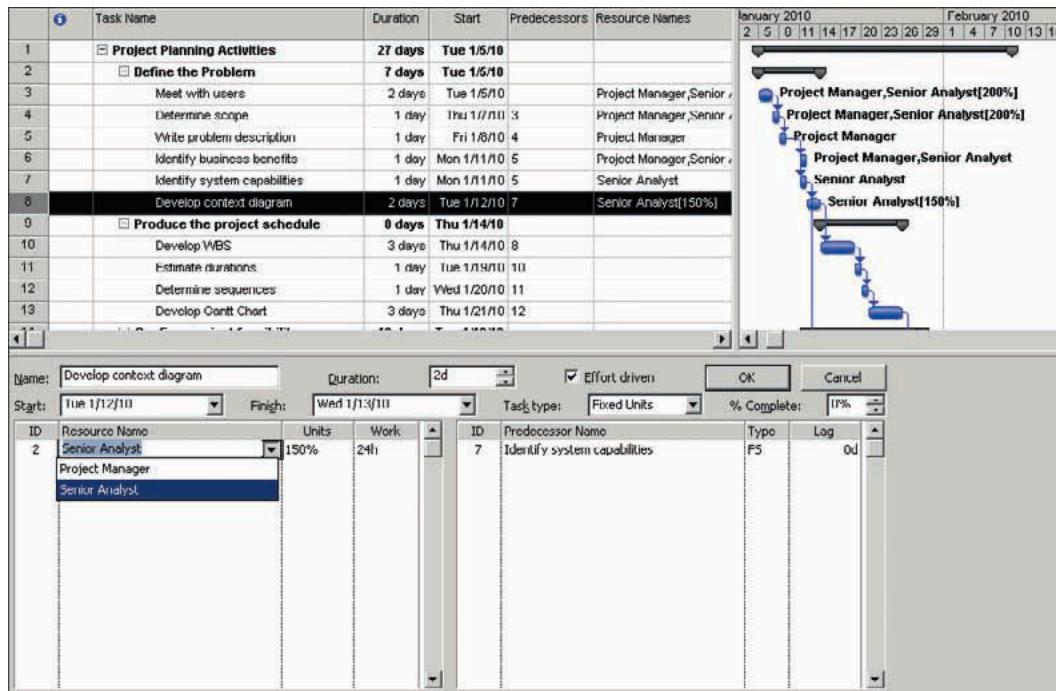


How detailed should be the individual tasks?

- There should be a way to recognize when the task is complete.
- The definition of the task should be clear enough so that someone can estimate the amount of effort required to complete it.
- As a general rule for software projects, the effort should take 2 to 10 working days.

DEVELOPING THE SCHEDULE

- A project schedule lists all project activities and tasks and the order in which they must be completed
 - must identify dependencies between the tasks on the WBS
 - estimate the effort that each task will require (**employee effort, resource requirements and the staffing plan**)



IDENTIFYING PROJECT RISKS AND CONFIRMING PROJECT FEASIBILITY

- Project feasibility analysis is an activity that verifies whether a project can be started and successfully completed
 - Assess the risk to the project (risk management).
 - Determine the organizational and cultural feasibility.
 - Evaluate the technological feasibility.
 - Determine the schedule feasibility.
 - Assess the resource feasibility.
 - Determine the economic feasibility.

Risk management

- Risk management is the project management area in which the team tries to identify potential trouble spots that could jeopardize the success of the project
 - a careful look at the overall feasibility and at the individual risks
 - done throughout the life of the project

Simplified risk analysis

- The best way to identify risks is simply to have a brainstorming session that include key project members and stakeholders

Risk description	Potential impact on project (high, medium, low)	Likelihood of occurrence (high, medium, low)	Difficulty of timely anticipation (hard, medium, easy)	Overall threat (high, medium, low)
Critical team member (expert) not available	High	Medium	Medium	High
Changing legal requirements	High	Low	Hard	Low
Organization employees not computer savvy	Medium	Medium	Easy	Medium

ORGANIZATIONAL AND CULTURAL FEASIBILITY

- Each company has its own culture, and any new system must be accommodated within that culture
- Common organizational and cultural issues
 - A current low level of computer competency
 - Substantial computer phobia
 - A perceived loss of control by staff or management
 - Potential shifting of political and organizational power due to the new system
 - Fear of change of job responsibilities
 - Fear of loss of employment due to increased automation
 - Reversal of long-standing work procedures
- What items might prevent the effective use of the new system and the resulting loss of business benefits?

TECHNOLOGICAL FEASIBILITY

- What are technological requirements of the new system?
- What expertise is available?
- How do we mitigate these technological risks?

SCHEDULE FEASIBILITY

- Project scheduling is risky
 - Assumptions
 - Estimates
 - Unknowns
 - management-imposed constraints
 - organizational schedule (start of season/term)
- How can we avoid them?

RESOURCE FEASIBILITY

- The primary resource consists of team members
 - Quantity and quality (skills)
 - Team members may leave
- Other resources
 - adequate computer resources
 - physical facilities
- How do we avoid/minimize resource risks?

ECONOMIC FEASIBILITY

- Economic feasibility consists of two tests
 - (1) Is the anticipated value of the benefits greater than projected costs of development? and
 - (2) Does the organization have adequate cash flow to fund the project during the development period?
- Common sources of increased revenue, or lowered costs
 - new markets with new products, services, locations
 - increased market share
 - reduced staffing needs
 - decreased operating costs
 - decreased error rates
 - reduced inventory losses
 - collecting accounts more quickly

Cost-benefit Analysis

- Tangible costs
 - personnel costs
 - equipment costs
 - supporting materials
 - converting to new system
- Intangible costs
 - loss of customer good will
 - staff stress and distress
 - confusion with suppliers with new processes

Cost-benefit Analysis

- Tangible benefits
 - Reduced cost
 - Increased efficiency
- Intangible benefits
 - improved work practices
 - employee morale
 - ease of customer access to account details online
 - up to date product information online
 - increase loyalty of customers
- Intangible benefits are not included in the cost/benefit analysis, but often they are the most important reason for initiating a project.

Supporting detail for salaries and wages for RMO customer support system project	
Team member	Salary/wage for project
Project leader	\$101,340.00
Senior systems analyst	\$90,080.00
Systems analyst	\$84,980.00
Programmer analysts	\$112,240.00
Programmers	\$58,075.00
Systems programmers	\$49,285.00
Total salaries and wages	\$496,000.00

Summary of development costs for RMO customer support system project	
Expense category	Amount
Salaries/wages	\$496,000.00
Equipment/installation	\$385,000.00
Training	\$78,000.00
Facilities	\$57,000.00
Utilities	\$152,000.00
Support staff	\$38,000.00
Travel/miscellaneous	\$112,000.00
Licenses	\$18,000.00
Total	\$1,336,000.00

Summary of estimated annual operating costs for RMO customer support system		
Recurring expense	Amount	
Connectivity	\$60,000.00	
Equipment maintenance	\$40,000.00	
Programming	\$65,000.00	
Help desk	\$28,000.00	
Amortization	\$48,000.00	
Total recurring costs	\$241,000.00	

Sample benefits for RMO		
Benefit/cost saving	Amount	Comments
Increased efficiency in mail-order department	\$125,000.00	5 people @ \$25,000
Increased efficiency in phone-order department	\$25,000.00	1 person @ \$25,000
Increased efficiency in warehouse/shipping	\$87,000.00	
Increased earnings due to Web presence	\$500,000.00	Increasing at 50%/year
Other savings (inventory, supplies, and so on)	\$152,000.00	
Total annual benefits	\$889,000.00	

Net present value, payback period, and return on investment

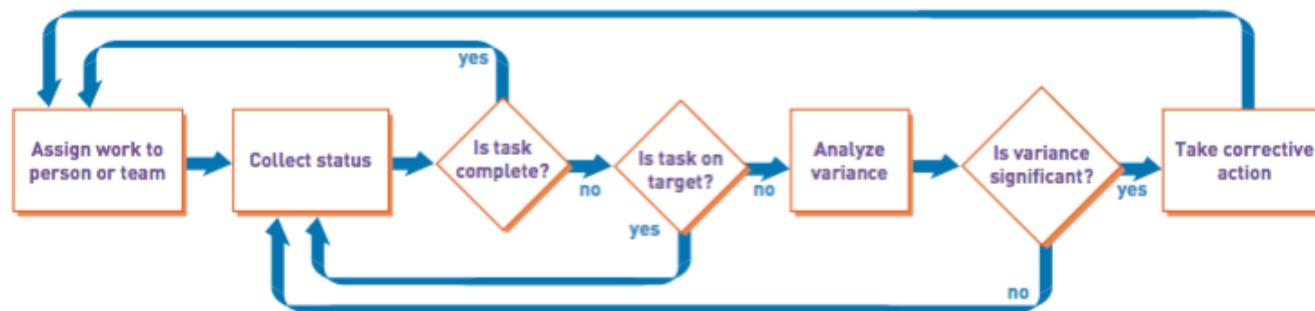
	RMO cost/benefit analysis	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Value of benefits	\$ -	\$ 889,000	\$ 1,139,000	\$ 1,514,000	\$ 2,077,000	\$ 2,927,000	
2	Discount factor (10%)	1	0.9091	0.8264	0.7513	0.6830	0.6209	
3	Present value of benefits	\$ -	\$ 808,190	\$ 941,270	\$ 1,137,468	\$ 1,418,591	\$ 1,817,374	\$6,122,893
4	Development costs	\$1,336,000						\$(1,336,000)
5	Ongoing costs		\$ (241,000)	\$ (241,000)	\$ (241,000)	\$ (241,000)	\$ (241,000)	
6	Discount factor (10%)	1	0.9091	0.8264	0.7513	0.6830	0.6209	
7	Present value of ongoing costs	\$ -	\$ (219,093)	\$ (199,162)	\$ (181,063)	\$ (164,603)	\$ (149,637)	\$(913,559)
8	PV of net of benefits and costs	\$(1,336,000)	\$ 589,097	\$ 742,107	\$ 956,405	\$ 1,253,988	\$ 1,667,737	
9	Cumulative NPV	\$(1,336,000)	\$(746,903)	\$ (4,769)	\$ 951,609	\$ 2,205,597	\$ 3,873,334	
10	Payback period	2 years + 4796 / (4796 + 951,609) = 2 + .005 or 2 years and 2 days						
11	5-year return on investment	(\$6,122,893 - \$(1,336,000 + 913,559)) / \$(1,336,000 + 913,559) = 172.18%						

Establish the Project Environment

- Project manager must establish project parameters and the work environment
 - Recording and communicating—internal and external
 - Who, what, when, and how
 - Work environment
 - Workstations, software development tools (IDE), servers and repositories, office and meeting space, support staff
 - Process and procedures followed
 - Reporting and documentation, programming approach, testing, deliverables, code and version control
- In other words, tailor and operationalize the methodology being used

Evaluate Work Processes

- Very important process for iterative projects
- retrospective meeting
 - a meeting to determine what was successful, and what can be improved next iteration
 - done for each iteration
- Monitor project progress and make corrections





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Thank you for your attention!
Q&A

