System Analysis and Design
UML

Sixth Edition

Alan Dennis, Barbara Wixom, Roberta M. Roth

Chapter 2

Project Managment

Project Selection

https://www.youtube.com/watch?v=BKorP55Aqvg&pp=ygUOaSdtIGFuIGV4cG9lcnQ%3D

Project – System Request

System Request—Name of Project	
Project Sponsor:	Name of project sponsor
Business Need:	Short description of business need
Business Requirements:	Description of business requirements
Business Value:	Expected value that the system will provide
Special Issues or Constraints:	Any additional information that may be relevant to the stakeholders

- Make this convincing.
- First Impressions are Important
- Convince the stakeholders that the world cannot make it without this project

Feasibility

Technical Feasibility: Can We Build It? • Familiarity with Functional area: Less familiarity generates more risk • Familiarity with Technology: Less familiarity generates more risk • Project Size: Large projects have more risk • Compatibility: The harder it is to integrate the system with the company's existing technology, the higher the risk
Economic Feasibility: Should We Build It? • Development costs • Annual operating costs • Annual benefits (cost savings and revenues) • Intangible costs and benefits
Organizational Feasibility: If We Build It, Will They Come? • Is the project strategically aligned with the business? • Project champion(s) • Senior management • Users • Other stakeholders

Economic Feasibility

Development Costs	Operational Costs
1. Identifing Costs and Benefits	List the tangible costs and benefits for the project. Include both one-time and recurring costs.
2. Assigning Values to Costs and Benefits	Work with business users and IT professionals to create numbers for each of the costs and benefits. Even intangibles should be valued if at all possible.
3. Determining Cash Flow	Project what the costs and benefits will be over a period of time, usually three to five years. Apply a growth rate to the numbers, if necessary.
4. Determining Net Present Value (NPV)	Calculate what the value of future costs and benefits are if measured by today's standards. You will need to select a rate of growth to apply the NPV formula.
5. Determining Return on Investment (ROI)	Calculate how much money the organization will receive in return for the investment it will make using the ROI formula.
6. Determining the Break-Even Point	Find the first year in which the system has greater benefits than costs. Apply the break-even formula using figures from that year. This will help you understand how long it will take before the system creates real value for the organization.
7. Graphing the Break-Even Point	Plot the yearly costs and benefits on a line graph. The point at which the lines cross is the break-even point.

Economic Feasibility

Benefits [a]	
Increased sales	500,000
Improved customer service[b]	70,000
Reduced inventory costs	68,000
Total benefits	**638,000**
Development costs	
2 servers @ $125,000	250,000
Printer	100,000
Software licenses	34,825
Server software	10,945
Development labor	1,236,525
Total development costs	**1,632,295**
Operational costs	
Hardware	54,000
Software	20,000
Operational labor	111,788
Total operational costs	**185,788**
Total costs	**1,818,083**

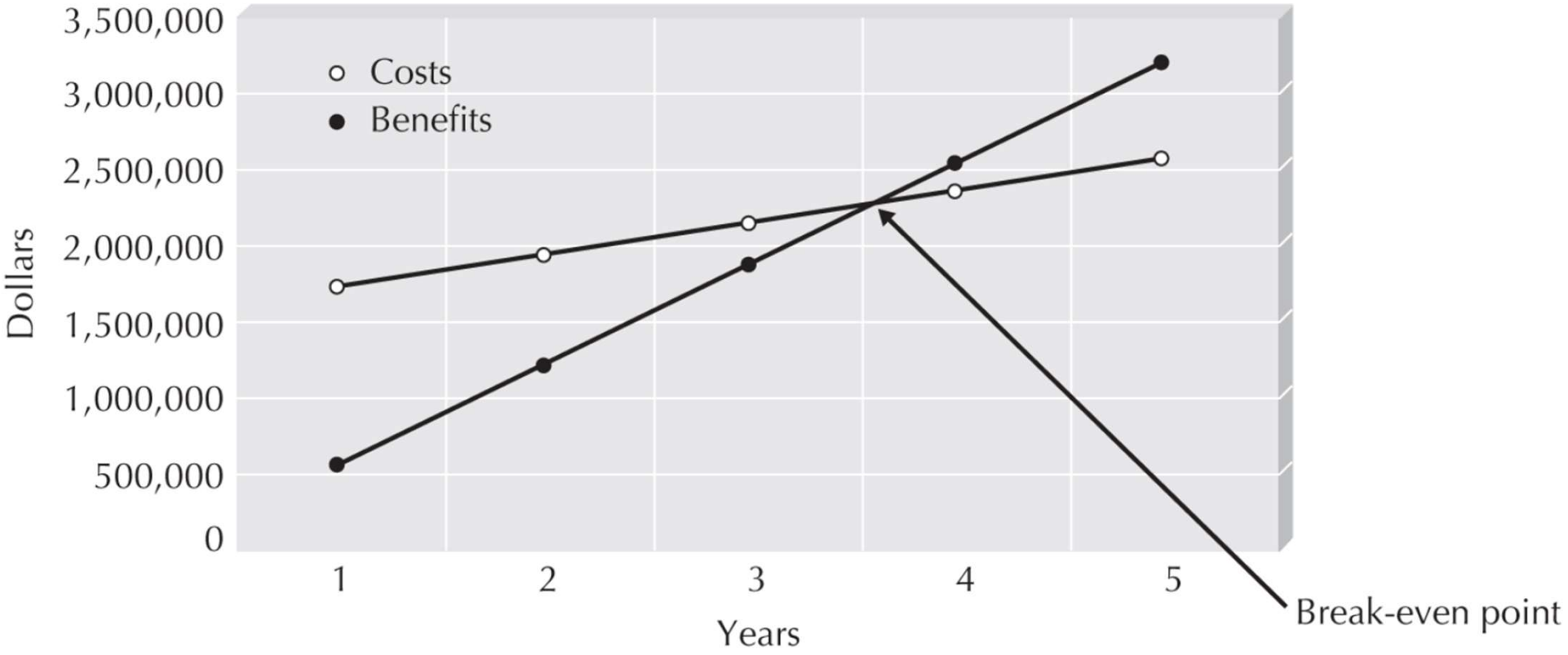
Economic Feasibility – Current and Future Calculations

Calculation	Definition	Formula
Present Value (PV)	The amount of an investment today compared to that same amount in the future, taking into account inflation and time.	$\frac{\text{Amount}}{(1+\text{interest rate})^n}$ n = number of years in future
Net Present Value (NPV)	The present value of benefit less the present value of costs.	PV Benefits – PV Costs
Return on Investment (ROI)	The amount of revenues or cost savings results from a given investment.	$\frac{\text{Total benefits}-\text{Total costs}}{\text{Total costs}}$
Break-Even Point	The point in time at which the costs of the project equal the value it has delivered.	$\frac{\text{Yearly NPV*}-\text{Cumulative NPV}}{\text{Yearly NPV*}}$

The Numbers

	2015	2016	2017	2018	2019	Total
Increased sales	500,000	530,000	561,800	595,508	631,238	
Reduction in customer complaint calls	70,000	70,000	70,000	70,000	70,000	
Reduced inventory costs	68,000	68,000	68,000	68,000	68,000	
TOTAL BENEFITS:	638,000	668,000	699,800	733,508	769,238	
PV OF BENEFITS:	**619,417**	**629,654**	**640,416**	**651,712**	**663,552**	**3,204,752**
PV OF ALL BENEFITS:	**619,417**	**1,249,072**	**1,889,488**	**2,541,200**	**3,204,752**	
2 Servers @ $125,000	250,000	0	0	0	0	
Printer	100,000	0	0	0	0	
Software licenses	34,825	0	0	0	0	
Server software	10,945	0	0	0	0	
Development labor	1,236,525	0	0	0	0	
TOTAL DEVELOPMENT COSTS:	1,632,295	0	0	0	0	
Hardware	54,000	81,261	81,261	81,261	81,261	
Software	20,000	20,000	20,000	20,000	20,000	
Operational labor	111,788	116,260	120,910	125,746	130,776	
TOTAL OPERATIONAL COSTS:	185,788	217,521	222,171	227,007	232,037	
TOTAL COSTS:	1,818,083	217,521	222,171	227,007	232,037	
PV OF COSTS:	**1,765,129**	**205,034**	**203,318**	**201,693**	**200,157**	**2,575,331**
PV OF ALL COSTS:	**1,765,129**	**1,970,163**	**2,173,481**	**2,375,174**	**2,575,331**	
TOTAL PROJECT BENEFITS AND COSTS:	**(1,180,083)**	**450,479**	**477,629**	**506,501**	**537,201**	
YEARLY NPV:	**(1,145,712)**	**424,620**	**437,098**	**450,019**	**463,395**	**629,421**
CUMULATIVE NPV:	**(1,145,712)**	**(721,091)**	**(283,993)**	**166,026**	**629,421**	
RETURN ON INVESTMENT:	**24.44%**	(629,421/2,575,331)				
BREAK-EVEN POINT:	**3.63 years**	[break-even occurs in year 4; (450,019 – 166,026)/450,019 = 0.63]				
INTANGIBLE BENEFITS:	This service is currently provided by competitors Improved customer satisfaction					

Break Even



Making the Case

- Initial concept approved
- Data gathered
- Time to pitch for final approval.

	Role	Techniques for Improvement
Champion	A champion: • Initiates the project • Promotes the project • Allocates his or her time to project • Provides resources	• Make a presentation about the objectives of the project and the proposed benefits to those executives who will benefit directly from the system • Create a prototype of the system to demonstrate its potential value
Organizational Management	Organizational managers: • Know about the project • Budget enough money for the project • Encourage users to accept and use the system	• Make a presentation to management about the objectives of the project and the proposed benefits • Market the benefits of the system using memos and organizational newsletters • Encourage the champion to talk about the project with his or her peers
System Users	Users: • Make decisions that influence the project • Perform hands-on activities for the project • Ultimately determine whether the project is successful by using or not using the system	• Assign users official roles on the project team • Assign users specific tasks to perform with clear deadlines • Ask for regular feedback from users (e.g., at weekly meetings)

Project Selection Decision

- Committee considers key metric to determine if project should finally be approved.
- The following are the major things consider

Size	What is the size? How many people are needed to work on the project?
Cost	How much will the project cost the organization?
Purpose	What is the purpose of the project? Is it meant to improve the technical infrastructure? Support a current business strategy? Improve operations? Demonstrate a new innovation?
Length	How long will the project take before completion? How much time will go by before value is delivered to the business?
Risk	How likely is it that the project will succeed or fail?
Scope	How much of the organization is affected by the system? A department? A division? The entire corporation?
Return on investment	How much money does the organization expect to receive in return for the amount the project costs?

Ethical Considerations

- Many ways new IT systems can bring about ethics questions.
  - Workforce reduction during economic downturns
  - Deskilling with AI
  - Employee monitoring – just because we could, doesn't mean we should.
    - Employee monitoring can result in many benefits, including catching employees not performing.
    - Excessive and unethical monitoring must be avoided. Can increase job stress, resulting in lower productivity
  - Technostress
    - Technology that provides for 24/7 access
    - Downtime is removed/reduced. Instead of stress 8 hours/day. It becomes 16-24 hours per day.
  - IT Health Affects
    - Increased eye strain, carpal tunnel, headaches, neck and back arthritis, etc

Work Breakdown Structure (WBS)

Structured Development Approaches

- Top down, hierarchical breakdown of work to be performed
- In a structured development method, this would all be done and predicted soon after contract award.

Workplan Information	Example
Name of the task	Perform economic feasibility
Start date	Jan 05, 2015
Completion date	Jan 19, 2015
Person assigned to the task	Project sponsor: Mary Smith
Deliverable(s)	Cost–benefit analysis
Completion status	Open
Priority	High
Resources that are needed	Spreadsheet software
Estimated time	16 hours
Actual time	14.5 hours

Task Tracking

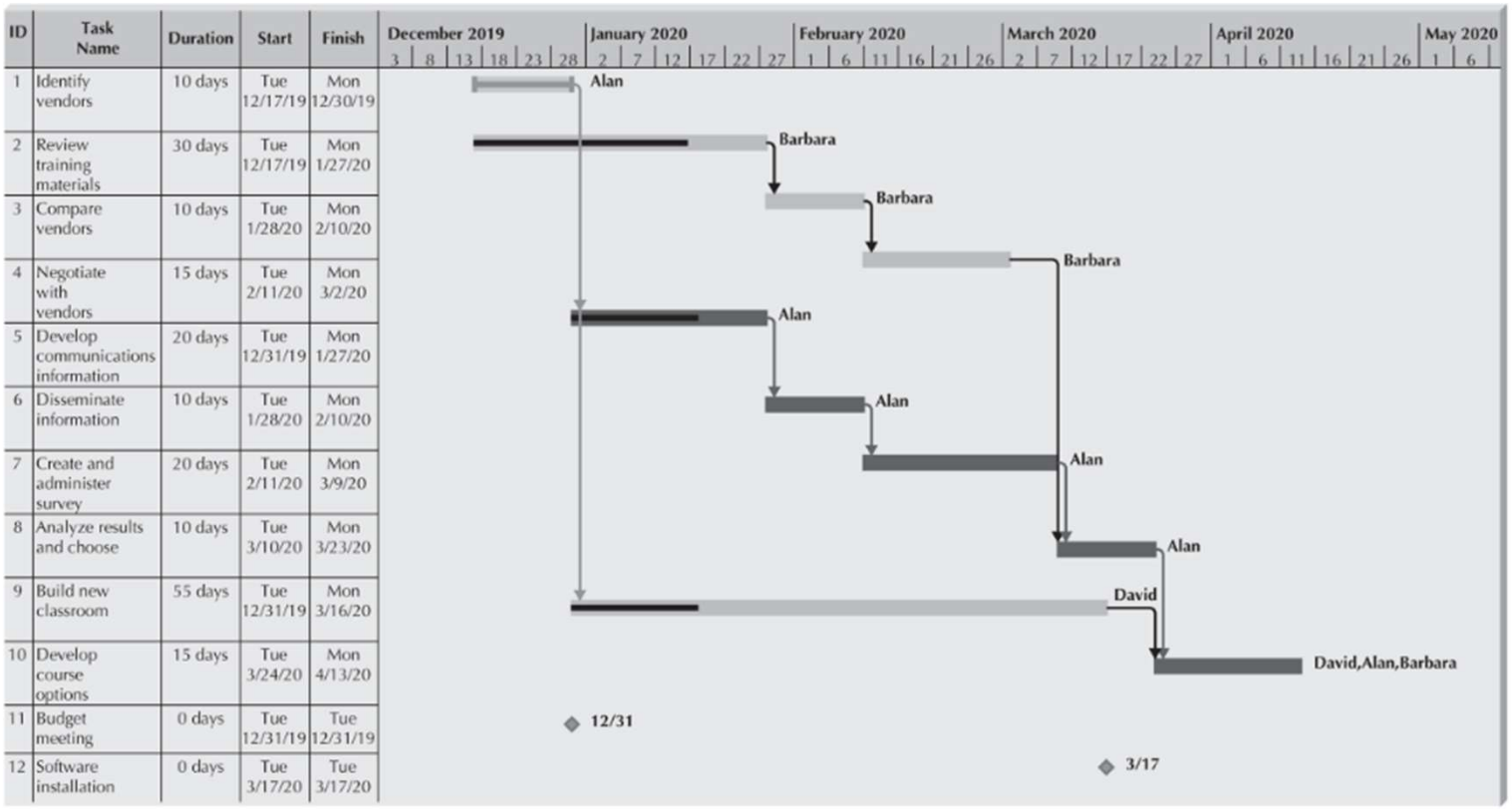
- Very detailed, specific, and rigid.

Task Number	Task Name	Duration (in weeks)	Dependency	Status
1	Identify vendors	2		Complete
2	Review training materials	6	1	Complete
3	Compare vendors	2	2	In Progress
4	Negotiate with vendors	3	3	Open
5	Develop communications information	4	1	In Progress
6	Disseminate information	2	5	Open
7	Create and administer survey	4	6	Open
7.1	Create initial survey	1		Open
7.2	Review initial survey	1	7.1	Open
7.2.1	Review by Director of IT Training	1		Open
7.2.2	Review by Project Sponsor	1		Open
7.2.3	Review by Representative Trainee	1		Open
7.3	Pilot test initial survey	1	7.1	Open
7.4	Incorporate survey changes	1	7.2, 7.3	Open
7.5	Create distribution list	0.5		Open
7.6	Send survey to distribution list	0.5	7.4, 7.5	Open
7.7	Send follow-up message	0.5	7.6	Open
7.8	Collect completed surveys	1	7.6	Open
8	Analyze results and choose vendor	2	4, 7	Open
9	Build new classrooms	11	1	In Progress
10	Develop course options	3	8, 9	Open

Gantt Chart

- Tool used by program management, finance, and customers to keep track of progress in a structured development approach.
- Very useful for determining critical path.

ID	Task Name	Duration	Start	Finish
1	Identify vendors	10 days	Tue 12/17/19	Mon 12/30/19
2	Review training materials	30 days	Tue 12/17/19	Mon 1/27/20
3	Compare vendors	10 days	Tue 1/28/20	Mon 2/10/20
4	Negotiate with vendors	15 days	Tue 2/11/20	Mon 3/2/20
5	Develop communications information	20 days	Tue 12/31/19	Mon 1/27/20
6	Disseminate information	10 days	Tue 1/28/20	Mon 2/10/20
7	Create and administer survey	20 days	Tue 2/11/20	Mon 3/9/20
8	Analyze results and choose	10 days	Tue 3/10/20	Mon 3/23/20
9	Build new classroom	55 days	Tue 12/31/19	Mon 3/16/20
10	Develop course options	15 days	Tue 3/24/20	Mon 4/13/20
11	Budget meeting	0 days	Tue 12/31/19	Tue 12/31/19
12	Software installation	0 days	Tue 3/17/20	Tue 3/17/20



Network Diagram

- Just another view Gantt information.