

Information Technology Audit & Cyber Security

Initiating and Planning Information System
Development Projects

Systems & Infrastructure
Lifecycle Management

Introduction

The Process of
Initiating and Planning
IS Development
Projects

Assessing Project
Feasibility

Building and
Reviewing the Baseline
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LEARNING OBJECTIVES

- ✓ Describe the steps involved in the project initiation and planning process.
- ✓ List and describe various methods for assessing project feasibility.
- ✓ Describe the activities needed to build and review the baseline project plan.
- ✓ Describe the activities and participant roles within a structured walkthrough.

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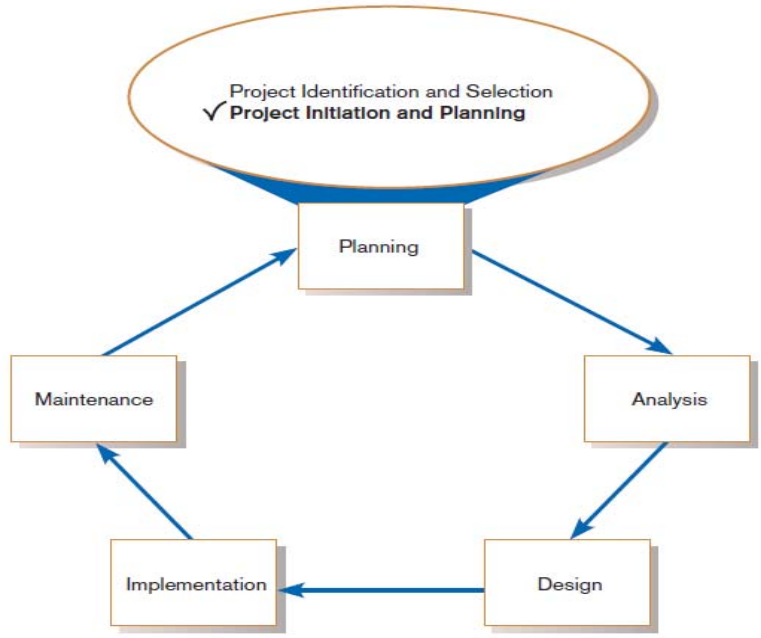
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THE PROCESS OF INITIATING AND PLANNING IS DEVELOPMENT PROJECTS

Project Phases



System Development Life Cycle



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PROJECT PHASES

Initiation	Planning	Execution	Closing
<ul style="list-style-type: none">• Project Initiation Team• Relationship with Customer• Initiation Plan• Managerial Procedures• PM Environment and Workbook• Project Charter	<ul style="list-style-type: none">• Scope, Alternatives, Feasibility• Def. Manageable Tasks• Resource and Communications Plan• Preliminary Schedule, Budget• Project Standards and Procedures• Risk Planning and Assessment• Scope Statement• Project Baseline	<ul style="list-style-type: none">• Execute Baseline• Monitor Progress against Baseline• Manage Changes in Baseline• Maintain Project Workbook• Communicate Project Status	<ul style="list-style-type: none">• Close down the project<ul style="list-style-type: none">• Team Transition• Open actions, risks and issues• Transfer custody of contracts• Lessons Learned• Conduct Postimplementation Review• Close Customer Contract<ul style="list-style-type: none">• Closure Notification

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PROJECT SCHEDULING AND REPRESENTATION

Gantt Charts

- Show Task Durations
- Show Time Overlap
- Show Slack Time

Network Diagrams

- Show Task Dependencies
- Show Parallelism (but not overlap)
- Show Slack Time in Boxes

PERT Analysis

- Scheduling Technique
- Pessimistic, Realistic, Optimistic

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CRITICAL PATH SCHEDULING

Definition - A scheduling technique whose order and duration of a sequence of task activities directly affect the completion

■ **Critical path:**

- the **shortest** time in which a project can be completed
- Changes to any Task on the Critical Path will impact time of Project Completion
- Changes must be evaluated for impact to Critical Path (schedule), Resources, Budget, Business and Project objectives

■ **Slack time:**

- Task **not** on Critical Path can be delayed without delaying the project

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INITIATING AND PLANNING SYSTEMS DEVELOPMENT PROJECTS

- **What** must be considered when making the decision on the division between **project initiation and planning (PIP)** and **analysis**?
- **How much effort** should be expended on the PIP process?
- **Who is responsible** for performing the PIP process?
- **Why** is PIP such a challenging activity?

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THE PROCESS OF INITIATING AND PLANNING IS DEVELOPMENT PROJECTS (CONT.)

- **Key activity of project planning** - defining clear, discrete activities and the work needed to complete each activity within a single project.
- **Objective of project planning** - the development of a **Baseline Project Plan (BPP)** and the **Project Scope Statement (PSS)**.

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THE PROCESS OF INITIATING AND PLANNING IS DEVELOPMENT PROJECTS (CONT.)

■ **Business Case**

- Justification for an information system
- Presented in terms of the tangible and intangible economic benefits and costs
- The technical and organizational feasibility of the proposed system

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ASSESSING PROJECT FEASIBILITY

Feasibility	Description
Economic	Process of identifying the financial benefits and costs associated with a development project.
Technical	Process of assessing the development organization's ability to construct a proposed system
Operational	Process of assessing the degree to which a proposed system solves business problems or takes advantage of business opportunities
Scheduling	Process of assessing the degree to which the potential time frame and completion dates for all major activities within a project meet organizational deadlines and constraints for affecting change.
Legal and Contractual	Process of assessing potential legal and contractual ramifications due to the construction of a system
Political	Process of evaluating how key stakeholders within the organization view the proposed system

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ASSESSING PROJECT FEASIBILITY (CONT.)

Economic feasibility: a process of identifying the financial benefits and costs associated with a development project

- Often referred to as a *Cost-Benefit Analysis*
- Project is reviewed after each SDLC phase in order to decide whether to continue, redirect, or kill a project

ASSESSING PROJECT FEASIBILITY (CONT.)

Benefits

Types	Description	Examples
Tangible	items that can be measured in dollars and with certainty.	<ul style="list-style-type: none">• reduced personnel expenses• lower transaction costs, or• higher profit margins.
Intangible	benefits derived from the creation of an information system that cannot be easily measured in dollars or with certainty.	<ul style="list-style-type: none">• organizational benefits, such as the improvement of employee morale• Operational flexibility

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ASSESSING PROJECT FEASIBILITY (CONT.)

Costs

Types	Description	Examples
Tangible	cost associated with an information system that can be measured in dollars and with certainty	<ul style="list-style-type: none">• Hardware costs• Labor costs, or• Operational costs, including employee training and building renovations.
Intangible	cost associated with an information system that cannot be easily measured in terms of dollars or with certainty	<ul style="list-style-type: none">• Loss of customer goodwill,• Employee morale, or• Operational inefficiency.

ASSESSING PROJECT FEASIBILITY (CONT.)

Costs (cont'd.)

Types	Description	Examples
One-Time	a cost associated with project start-up and development or system start-up	<ul style="list-style-type: none">• Systems development,• New hardware and software purchases,• User training,• Site preparation, and• Data or system conversion.
Recurring	a cost resulting from the ongoing evolution and use of a system	<ul style="list-style-type: none">• Application software maintenance• Incremental data storage expenses• Incremental communications• New software/hardware leases• Supplies and other expenses

ASSESSING PROJECT FEASIBILITY (CONT.)

Costs (cont'd.)

Types	Description	Examples
Fixed	billed or incurred at a regular interval and usually at a fixed rate.	<ul style="list-style-type: none">• Facilities and Equipment Lease
Variable	items that vary in relation to usage.	<ul style="list-style-type: none">• Utilities: Electricity, Water• Communications

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THE TIME VALUE OF MONEY

Time value of money (TVM):

- the concept that money available today is worth more than the same amount tomorrow

Discount rate:

- Also known as the Cost of Capital, is the rate of return used to compute the present value of future cash flows.

Present value:

- the current value of a future cash flow

$$PV_n = Y \times \frac{1}{(1 + i)^n}$$

Where:

Y = Cash Flow

i = Discount rate

n = period number

THE TIME VALUE OF MONEY

Suppose you want to buy a used car that costs \$4,500. The owner gives you the option to pay the car in 3 annual installments of \$1,500, but you decide that you want to pay the car in full. What would be a fair lump sum offer? (You may assume that the bank will loan you the money at 10% interest rate)

Car Price	\$ 4,500.00
Payment	\$ 1,500.00
Discount Rate	10%
Length (years)	3

Period	Payment	DR	PV
1	\$ 1,500.00	0.909091	\$ 1,363.64
2	\$ 1,500.00	0.826446	\$ 1,239.67
3	\$ 1,500.00	0.751315	\$ 1,126.97
Total	\$ 4,500.00		\$ 3,730.28

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THE TIME VALUE OF MONEY

Net Present Value (NPV)

- Use discount rate to determine present value of cash outlays and receipts
- Sum of discounted cash flows

Return on Investment (ROI)

- Ratio of cash receipts to cash outlays
- Sum of discounted benefits divided by sum of discounted cost

Break-Even Analysis (BEA)

- Amount of time required for cumulative cash flow to equal initial and ongoing investment

THE TIME VALUE OF MONEY (CONT.)

Net Present Value

- PV_n = present value of Y dollars n years from now based on a discount rate of i .
- NPV = sum of PVs across years.
- Calculates *time value of money*

$$PV_n = Y \times \frac{1}{(1 + i)^n}$$

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THE TIME VALUE OF MONEY (CONT.)

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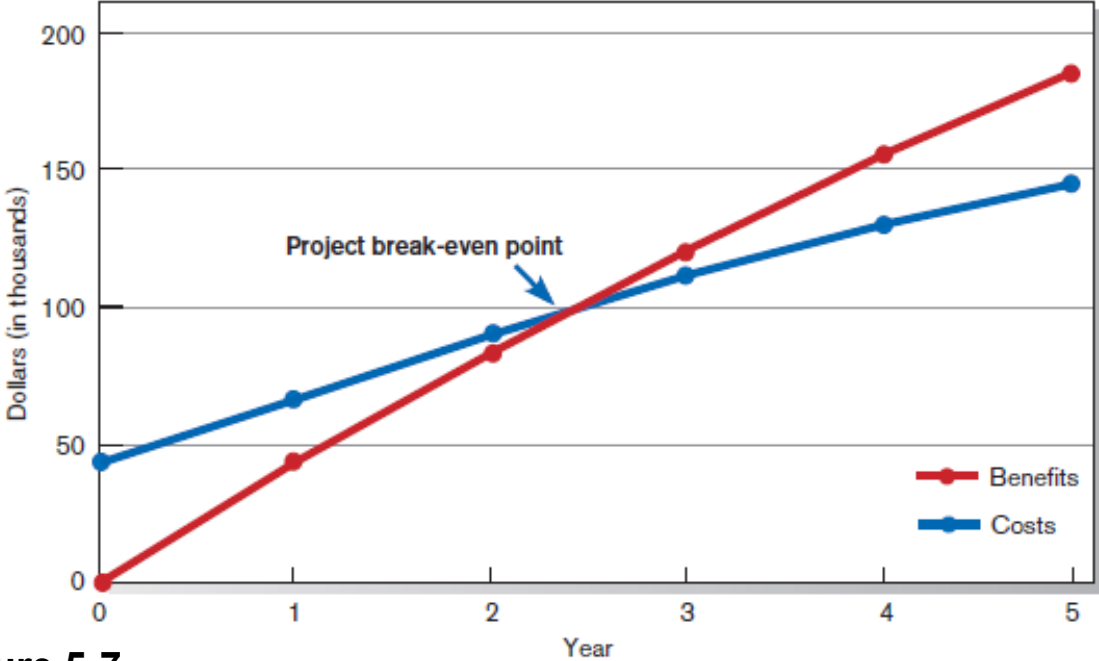


Figure 5-7
Break-even analysis for Customer Tracking System (Pine Valley Furniture)

ECONOMIC FEASIBILITY EXAMPLE

Project Charter

Title: Packaging Automation Project

Authorization Date: June, 1, 2017

Customer Name and Contact: Jeff Thompson, VP Operations. 555-555-5555

Project Start and Completion: Jan 2018 – Jan 2019

Stakeholder Roles and Responsibilities

Name	Title	Role	Responsibilities
Jeff Thompson	VP, Operations	Project Sponsor	Approve resources, budget, timeline
Carl Bunch	Director, Manufacturing	User Manager	Approvals, MFG SME, Approve testing and acceptance
Sandra Storm	Director, Engineering	Senior Manager	Approve resources
Dina Pratesh	Sr. Manager – IT	Project Manager	Project Management

Objectives: 12% reduction in labor costs

Key Assumptions: Use existing lines and equipment

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ECONOMIC FEASIBILITY EXAMPLE (CONT'D.)

Accessing Project Feasibility

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Headcount

- Current: 130
- Target: 115

Manufacturing Execution System - 18 Mo. Implementation			
Item/Task	Qty	Item Cost	Total Cost
Batch Record Redesign			
Number of Batch Records	155		
Hours per Batch Record	32		
Total Batch Record Redesign			\$ 918,000
Software Costs			
Licenses			300,000
Maintenance (Annual)		20%	60,000
Total Software Costs			\$ 360,000
Hardware Costs			
Server	1	\$ 7,500	7,500
Network Switch	1	2,000	2,000
HMI PCs (Wired)	11	2,500	27,500
Total Hardware Costs			\$ 37,000
Integrations			
(ERP, Training, Equipment, Document, EBR)	5	\$ 30,000	150,000
Implementation/Validation			\$ 350,000
Total MES Implementation			\$ 1,815,000

ECONOMIC FEASIBILITY EXAMPLE (CONT'D.)

	0	1	2	Year 3	4	5	Totals
Labor Cost Savings	\$ -	\$ 635,000	\$ 635,000	\$ 635,000	\$ 635,000	\$ 635,000	
PV of Benefits	\$ -	\$ 567,000	\$ 506,000	\$ 452,000	\$ 404,000	\$ 360,000	
Benefits NPV	\$ -	\$ 567,000	\$ 1,073,000	\$ 1,525,000	\$ 1,929,000	\$ 2,289,000	\$ 2,289,000
One time Cost (MES)	\$ (1,815,000)						
Recurring Costs							
Maintenance	\$ -	\$ (60,000)	\$ (60,000)	\$ (60,000)	\$ (60,000)	\$ (60,000)	
Total Recurring Costs	\$ -	\$ (60,000)	\$ (60,000)	\$ (60,000)	\$ (60,000)	\$ (60,000)	
PV of Costs	\$ -	\$ (54,000)	\$ (48,000)	\$ (43,000)	\$ (38,000)	\$ (34,000)	
Cost NPV	\$ (1,815,000)	\$ (1,869,000)	\$ (1,917,000)	\$ (1,960,000)	\$ (1,998,000)	\$ (2,032,000)	\$ (2,032,000)
Overall NPV							\$ 257,000
ROI (Overall NPV / Cost NPV)							13%
Discount Rate	12%						
Break-even Analysis							
Annual NPV Cash Flow	\$ (1,815,000)	\$ 513,000	\$ 458,000	\$ 409,000	\$ 366,000	\$ 326,000	
Overall NPV Cash Flow	\$ (1,815,000)	\$ (1,302,000)	\$ (844,000)	\$ (435,000)	\$ (69,000)	\$ 257,000	
Project Break-even occurs between years 4 and 5							
Actual Break-even occurs at	5.27 Years						

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BUILDING THE BASELINE PROJECT PLAN

A **Baseline Project Plan (BPP)** is a document intended primarily to guide the development team.

Sections:

- Introduction
- System description
- Feasibility assessment
- Management issues

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BUILDING THE BASELINE PROJECT PLAN (CONT.)

Project Scope statement is part of the BPP introduction.

Sections:

- Problem statement
- Project objectives
- Project description
- Business benefits
- Deliverables
- Expected duration

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FACTORS IN DETERMINING SCOPE

Organizational units affected by new system

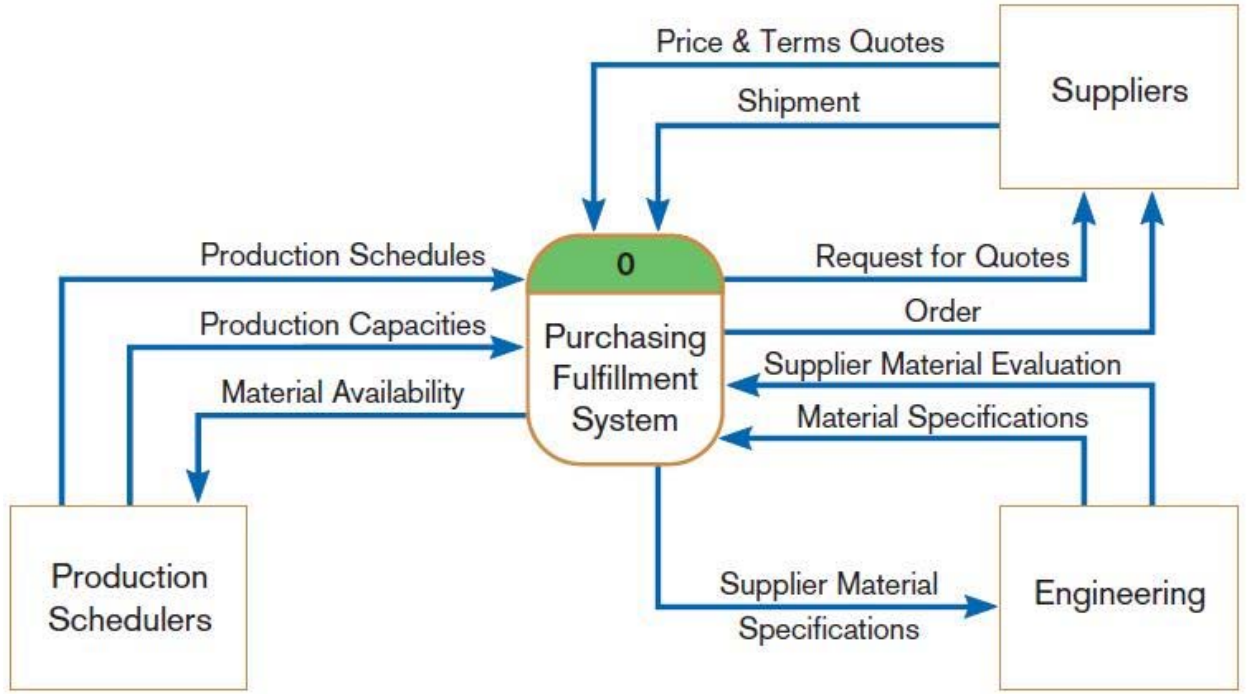
Current systems that will interact with or change because of new system

People who are affected by new system

Range of potential system capabilities

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DIAGRAM DEPICTION OF PROJECT SCOPE



Context-level data flow diagram showing project scope for Purchasing Fulfillment System (Pine Valley Furniture)

BUILDING THE BASELINE PROJECT PLAN (CONT.)

System description section outlines possible alternative solutions.

Feasibility assessment section outlines issues related to project costs and benefits, technical difficulties, and other such concerns.

Management issues section outlines a number of managerial concerns related to the project.

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REVIEWING THE BASELINE PROJECT PLAN

Structured Walkthroughs: a peer-group review of any product created during the system development process

Roles: coordinator, presenter, user, secretary, standard-bearer, maintenance oracle

Can be applied to BPP, system specifications, logical and physical designs, program code, test procedures, manuals and documentation

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EVALUATING THE BUSINESS CASE

- Measurable ROI Benefits, Targets, and Metrics
- ROI is achievable
- Reasonable Assumptions
- Measurement for Success
- Evaluate the Business Case at the end of every phase of the SDLC
- The Business Case is an important deliverable of every system