Chapter 5

Initiating and Planning Systems Development Projects

Content

- ✓ Steps of **P**roject **I**nitiation and **P**lanning (PIP) process
- ✓ The need for and the contents of a Project Scope Statement and Baseline Project Plan
- ✓ The methods for assessing project feasibility
- ✓ Costs and benefits analysis
- ✓ General rules for evaluating technical risks associated with a systems development project
- ✓ The activities and participant roles within a structured walkthrough

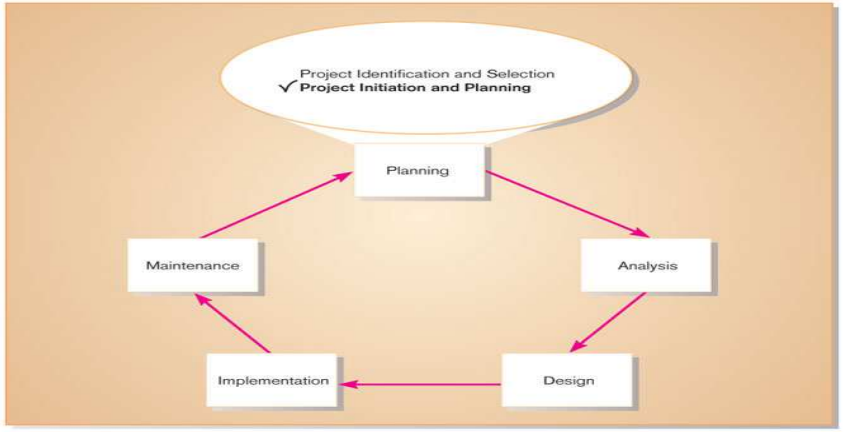
1. Project Initiating and Planning (PIP)

- What must be considered when making the decision on 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?

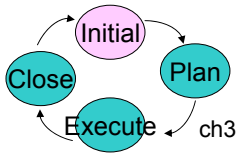
2. Process of Project Initiating and Planning

- Project initiation focuses on activities designed to assist in organizing a team to conduct project planning

Figure 5-1 Systems development life cycle with project initiation and planning highlighted



2.1 Project Initiation



- Elements of Project Initiation
  - Establishing the Project Initiation Team
  - Establishing a Relationship with the Customer
  - Establishing the Project Initiation Plan
  - Establishing Management Procedures
  - Establishing the Project Management Environment and Project Workbook
  - Developing the Project Charter

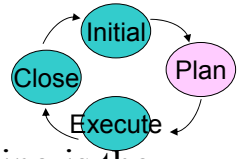
Project Charter

- The key activity of project initiation is the development of the **project charter**
  - A short document that is prepared for both internal and external stakeholders
  - A high-level overview of the project
  - Useful communication tool that helps to assure that the organizations and other stakeholders understand the initiation of a project

Project Charter

- Contains
  - Project title and date of authorization
  - Project manager name and contact information
  - Customer name and contact information
  - Projected start and completion dates
  - Key stakeholder, project role, and responsibility
  - Project objectives and description
  - Key assumptions or approach
  - Signature section for key stakeholder

2.2 Project Planning



- The key activity of project planning is the process of defining clear, discrete activities and the work needed to complete each activity within a single project
- The objective of the project planning process is the development of a *Baseline Project Plan* (*BPP*) and the *Project Scope Statement* (*PSS*)

Elements of Project Planning

- Describe project scope, alternatives, feasibility
- Divide project into tasks
- Estimate resource requirements and create resource plan
- Develop preliminary schedule
- Develop communication plan
- Determine standards and procedures
- Identify and assess risk
- Create preliminary budget
- Develop a statement of work
- Set baseline project plan

2.3 Deliverables and Outcomes

- **Baseline Project Plan (BPP)**
  - Major outcome & deliverable from the PIP
  - Planning phase containing project's scope, benefits, costs, risks, and resource requirements
- **Project Scope Statement (PSS)**
  - A document prepared for the customer
    - describe project deliverable
    - outline a high level of work to complete the project

3. Assessing Project Feasibility

- Economic
- Technical
- Operational
- Scheduling
- Legal and contractual
- Political

Figure 5-3
System Service Request for Customer Tracking System (Pine Valley Furniture)

Pine Valley Furniture
System Service Request

REQUESTED BY Jackie Judson DATE: August 22, 2005

DEPARTMENT Marketing

LOCATION Headquarters, 570c

CONTACT Tel: 4-3290 FAX: 4-3270 e-mail: judson

TYPE OF REQUEST
[X] New System
[ ] System Enhancement
[ ] System Error Correction

URGENCY
[ ] Immediate – Operations are impaired or opportunity lost
[ ] Problems exist, but can be worked around
[X] Business losses can be tolerated until new system installed

PROBLEM STATEMENT

Sales growth at PVF has caused a greater volume of work for the marketing department. This volume of work has greatly increased the volume and complexity of the data we need to deal with and understand. We are currently using manual methods and a complex PC-based electronic spreadsheet to track and forecast customer buying patterns. This method of analysis has many problems: (1) we are slow to catch buying trends as there is often a week or more delay before data can be taken from point-of-sales system and manually enter it into our spreadsheet; (2) the process of manual data entry is prone to errors (which makes the results of our subsequent analysis suspect); and (3) the volume of data and the complexity of analysis conducted in the system seem to be overwhelming our current system—sometimes the program starts recalculating and never returns while for others it returns information that we know cannot be correct.

SERVICE REQUEST

I request a thorough analysis of our current method of tracking and analysis of customer purchasing activity with the intent to design and build a completely new information system. This system should handle all customer purchasing activity, support display and reporting of critical sales information, and assist marketing personnel in understanding the increasingly complex and competitive business environment. I feel that such a system will improve the competitiveness of PVF, particularly in our ability to better serve our customers.

IS LIAISON Jim Woo, 4-6207 FAX: 4-6200 e-mail: jwoo

SPONSOR Jackie Judson, Vice-President, Marketing

TO BE COMPLETED BY SYSTEMS PRIORITY BOARD

[ ] Request approved Assigned to
Start date
[ ] Recommend revision
[ ] Suggest user development
[ ] Reject for reason

3.1 Economic Feasibility

- A process of identifying the financial benefits and costs associated with a development project
  - Also known as **cost-benefit analysis**
  - Project is reviewed after each SDLC phase to decide whether or not to continue, redirect, or terminate a project

a) Determining Project Benefits

- **Tangible benefits** refer to items that can be measured in cash and with certainty
- Example:
  - Reduce: cost & error
  - Increase: flexibility & speed of activity
  - Improvement of management planning and control
  - Others: opening new markets and increasing sales opportunities: higher profit margins

Example: Tangible Benefits

TANGIBLE BENEFITS WORKSHEET
Customer Tracking System Project

	Year 1 through 5
A. Cost reduction or avoidance	$ 4,500
B. Error reduction	2,500
C. Increased flexibility	7,500
D. Increased speed of activity	10,500
E. Improvement in management planning or control	25,000
F. Other	0
TOTAL tangible benefits	**$50,000**

Determining Project Benefits (Cont.)

- **Intangible benefits** are benefits derived from the creation of IS that cannot be easily measured in cash or with certainty.
- May have
  - direct organizational benefits: improve the employee morale
  - broader societal implications: reduce waste and resource consumption

Example: Intangible Benefits

- Competitive necessity
- Positive impacts on society
- More timely information
- Information processing efficiency
- Ability to investigate more alternative
- Faster decision making
- Improve: organizational planning / asset utilization / resource control / work process (employee morale)
- Increase: organizational flexibility / operational accuracy
- Promotion of organizational learning & understanding

b) Determining Project Cost

- **Tangible cost:** an IS cost that can be measured in cash and with certainty
- Tangible cost for IS Development
  - Hardware & software cost
  - Labor cost
  - Operational cost including employee training and building renovation

Determining Project Cost (Cont.)

- **Intangible costs:** an IS cost that cannot be easily measured in terms of cash or with certainty.
- Intangible cost can include
  - loss of customer goodwill
  - employee morale
  - operational inefficiency

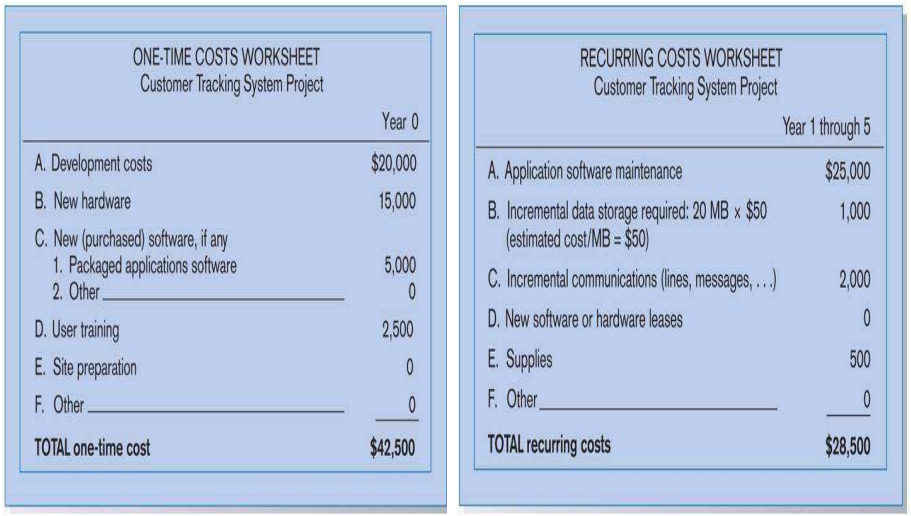
Determining Project Cost (Cont.)

- **Development (one-time) cost**: a cost associated with project development & start-up
  - Systems development
  - Start-up: operating system, installation, personnel hiring, organizational disruption, user training, site preparation, data or system conversion
  - Procurement: consulting, equipment (h/w & s/w), site preparation, capital, management time

Determining Project Cost (Cont.)

- **Operation (recurring) cost**: a cost resulting from the ongoing evolution and use of a system
  - Application software maintenance
  - Incremental data storage expenses
  - Incremental communications
  - New software and hardware leases
  - Supplies and other expenses (i.e. paper, forms, data center personnel)

Example: IS Cost



ONE-TIME COSTS WORKSHEET
Customer Tracking System Project

	Year 0
A. Development costs	$20,000
B. New hardware	15,000
C. New (purchased) software, if any	
1. Packaged applications software	5,000
2. Other _____	0
D. User training	2,500
E. Site preparation	0
F. Other _____	0
TOTAL one-time cost	$42,500

RECURRING COSTS WORKSHEET
Customer Tracking System Project

	Year 1 through 5
A. Application software maintenance	$25,000
B. Incremental data storage required: 20 MB x $50 (estimated cost/MB = $50)	1,000
C. Incremental communications (lines, messages, . . .)	2,000
D. New software or hardware leases	0
E. Supplies	500
F. Other _____	0
TOTAL recurring costs	$28,500

c) 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
  - the rate of return used to compute the present value of future cash flows (*the cost of capital*)
- (Net) Present Value (NPV)
  - the current value of a future cash flow

Net Present Value

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

$$\mathrm{PV}_n = Y \times \frac{1}{(1+i)^n}$$

E.g. 1,500 baht in the next 3 years, based on 10%
= $1{,}500(1/(1+0.1)^3)) = 1{,}126.95$ baht

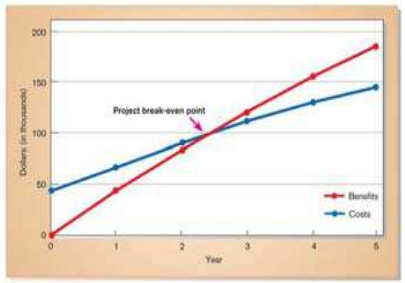
	Year of Project						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	TOTALS
Net economic benefit	$0	$50,000	$50,000	$50,000	$50,000	$50,000	
Discount Rate (12%)	*1.0000*	*0.8929*	*0.7972*	*0.7118*	*0.6355*	*0.5674*	
PV of Benefit	$0	$44,643	$39,860	$35,589	$31,776	$28,371	
NPV of all BENEFITS	$0	$44,643	$84,503	$120,092	$151,867	$180,239	**$180,239**
One-time COSTS	($42,500)						
Recuding Costs	$0	($28,500)	($28,500)	($28,500)	($28,500)	($28,500)	
Discount Rate (12%)	*1.0000*	*0.8929*	*0.7972*	*0.7118*	*0.6355*	*0.5674*	
PV of Recuding Costs	$0	($25,446)	($22,720)	($20,296)	($18,112)	($16,172)	
NPV of All COSTS	($42,500)	($67,946)	($90,666)	($110,962)	($129,064)	($145,236)	**($145,236)**
Overall NPV							**$35,003**
Overall ROI - (Overall NPV of All COSTS)							**0.24**
Break-Even Analysis							
Yearly NPV Cash Flow	($42,500)	$19,169	$17,140	$15,303	$13,664	$12,200	
Overall NPV Cash Flow	($42,500)	($23,304)	($6,164)	$9,139	$22,603	$35,003	

Project break-even occurs between years 2 and 3
Use first year of positive cash flow to calculate break-even loaction-((15303 - 9139)/15303) = .403
Actual break-even occurred at 2.4 years

Break-Even Analysis

- A type of cost-benefit analysis to identify at what point (if ever) benefits equal costs.

$$\text{Break-Even Ratio} = \frac{\text{Yearly NPV Cash Flow} - \text{Overall NPV Cash Flow}}{\text{Yearly NPV Cash Flow}}$$



$$= \frac{15{,}303 - 9{,}139}{15{,}303} = .403$$

Project breakeven ~ 2.4 years

3.2 Technical Feasibility

- A process of assessing the development organization's ability to construct a proposed system
- The potential consequences of not assessing and managing risks can include the following
  - Failure to attain expected benefits from the project
  - Inaccurate project cost & duration estimates
  - Failure to achieve adequate system performance levels
  - Failure to adequately integrate the new system with existing hardware, software, or organizational procedures

Project Risk Assessment Factors

- Project size
  - Team size, organizational departments, project duration, programming effort
- Project structure
  - New vs. renovated system, resulting organizational changes, management commitment, user perceptions
- Development group
  - Familiarity with platform, software, development method, application area, development of similar systems
- User group
  - Familiarity with IS development process, application area, use of similar systems

Assessing Technical Feasibility (Cont.)

- Risk can be managed on a project by:
  - Changing the project plan to avoid risky factors
  - Assigning project team members to carefully manage the risky aspects
  - Setting up monitoring methods to determine whether or not potential risk is

Technical Risk Assessment

- Four general **rules**
  - Larger projects are riskier than **smaller ones**
  - **The structured requirements** will be less risky than those messy, ill structured & defined requirements
  - Using common or **standard technology** will be less risky than those novel or nonstandard technology
  - The **user group** which **familiar** with the ISD process is less risky than those unfamiliar

Assessing Technical Feasibility (Cont.)

Figure 5-9 Effects of degree of project structure, project size, and familiarity with application area on project implementation risk

		Low Structure	High Structure
High Familiarity with Technology or Application Area	Large Project	(1) Low risk (very susceptible to mismanagement)	(2) Low risk
	Small Project	(3) Very low risk (very susceptible to mismanagement)	(4) Very low risk
Low Familiarity with Technology or Application Area	Large Project	(5) Very high risk	(6) Medium risk
	Small Project	(7) High risk	(8) Medium-low risk

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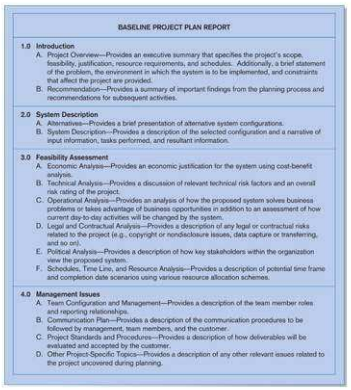
3.3 Other Feasibilities

- **Operational**
  - Does the proposed system solve problems or take advantage of opportunities?
- **Scheduling**
  - Can the project time frame and completion dates meet organizational deadlines?
- **Legal and Contractual**
  - What are legal and contractual ramifications (branch) of the proposed system development project?
- **Political**
  - How do key stakeholders view the proposed system?

4. Building & Reviewing the Baseline Project Plan (BPP)

4.1 BPP is a document intended primarily to guide the development team

- Major Sections
  - Introduction
  - System description
  - Feasibility assessment
  - Management issues
    - Team, standard,
    - Communication plan, etc


BASELINE PROJECT PLAN REPORT

1.0 Introduction
A. Project Overview—Provides an executive summary that specifies the project's scope, feasibility, justification, resource requirements, and schedules. Additionally, a brief statement of the problem, the environment in which the system is to be implemented, and constraints that affect the project are provided.
B. Recommendation—Provides a summary of important findings from the planning process and recommendations for subsequent activities.

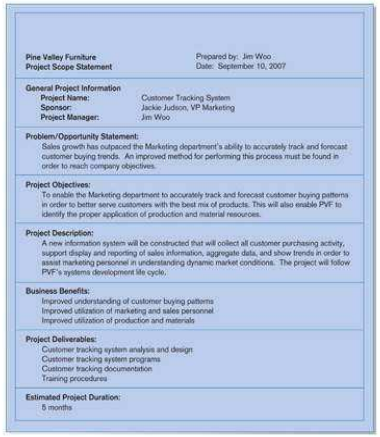
2.0 System Description
A. Alternatives—Provides a brief presentation of alternative system configurations.
B. System Description—Provides a description of the selected configuration and a narrative of input information, tasks performed, and resultant information.

3.0 Feasibility Assessment
A. Economic Analysis—Provides an economic justification for the system using cost-benefit analysis.
B. Technical Analysis—Provides a discussion of relevant technical risk factors and an overall risk rating of the project.
C. Operational Analysis—Provides an analysis of how the proposed system solves business problems or takes advantage of business opportunities in addition to an assessment of how current day-to-day activities will be changed by the system.
D. Legal and Contractual Analysis—Provides a description of any legal or contractual risks related to the project (e.g., copyright or nondisclosure issues, data capture or transferring, and so on).
E. Political Analysis—Provides a description of how key stakeholders within the organization view the proposed system.
F. Schedules, Time Line, and Resource Analysis—Provides a description of potential time frame and completion date scenarios using various resource allocation schemes.

4.0 Management Issues
A. Team Configuration and Management—Provides a description of the team member roles and reporting relationships.
B. Communication Plan—Provides a description of the communication procedures to be followed by management, team members, and the customer.
C. Project Standards and Procedures—Provides a description of how deliverables will be evaluated and accepted by the customer.
D. Other Project-Specific Topics—Provides a description of any other relevant issues related to the project uncovered during planning.

Project Scope Statement (PSS)

- Is part of the Baseline Project Planning introduction.
- Major Sections
  - General project information
  - Problem/opportunity statement
  - Project objectives
  - Project description
  - Business benefits
  - Deliverables
  - Expected duration



Pine Valley Furniture
Project Scope Statement

Prepared by: Jim Woo
Date: September 10, 2007

General Project Information
Project Name: Customer Tracking System
Sponsor: Jackie Judson, VP Marketing
Project Manager: Jim Woo

Problem/Opportunity Statement:
Sales growth has outpaced the Marketing department's ability to accurately track and forecast customer buying trends. An improved method for performing this process must be found in order to reach company objectives.

Project Objectives:
To enable the Marketing department to accurately track and forecast customer buying patterns in order to better serve customers with the best mix of products. This will also enable PVF to identify the proper application of production and material resources.

Project Description:
A new information system will be constructed that will collect all customer purchasing activity, support display and reporting of sales information, aggregate data, and show trends in order to assist marketing personnel in understanding dynamic market conditions. The project will follow PVF's systems development life cycle.

Business Benefits:
Improved understanding of customer buying patterns
Improved utilization of marketing and sales personnel
Improved utilization of production and materials

Project Deliverables:
Customer tracking system analysis and design
Customer tracking system programs
Customer tracking documentation
Training procedures

Estimated Project Duration:
5 months

Building the Baseline Project Plan (Cont.)

- 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

Diagram Depiction of Project Scope

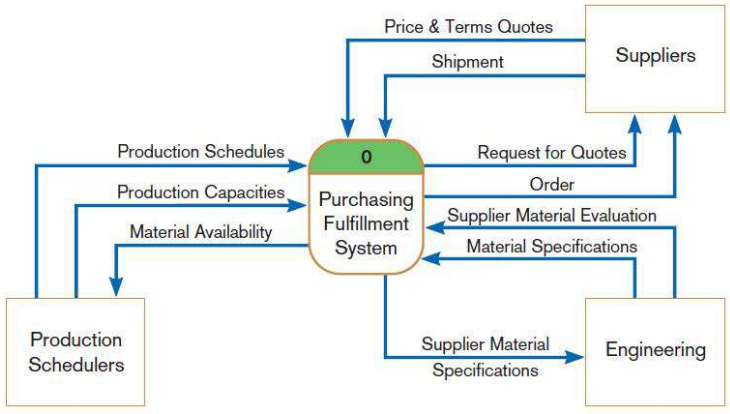
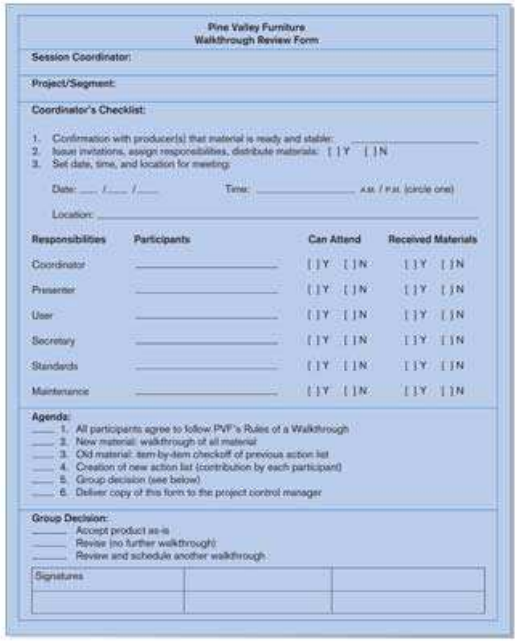


FIGURE 5-11
Context-level data flow diagram showing project scope for Purchasing Fulfillment System (Pine Valley Furniture)

4.2 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

Example: Walkthrough Review Form



Pine Valley Furniture
Walkthrough Review Form

Session Coordinator:

Project/Segment:

Coordinator's Checklist:

1. Confirmation with producer(s) that material is ready and stable: _____
2. Issue invitations, assign responsibilities, distribute materials: [ ] Y [ ] N
3. Set date, time, and location for meeting:

Date: ___ /___ /___ Time: _____ a.m. / p.m. (circle one)

Location: _____

Responsibilities	Participants	Can Attend	Received Materials
Coordinator	_____	[ ] Y [ ] N	[ ] Y [ ] N
Presenter	_____	[ ] Y [ ] N	[ ] Y [ ] N
User	_____	[ ] Y [ ] N	[ ] Y [ ] N
Secretary	_____	[ ] Y [ ] N	[ ] Y [ ] N
Standards	_____	[ ] Y [ ] N	[ ] Y [ ] N
Maintenance	_____	[ ] Y [ ] N	[ ] Y [ ] N

Agenda:

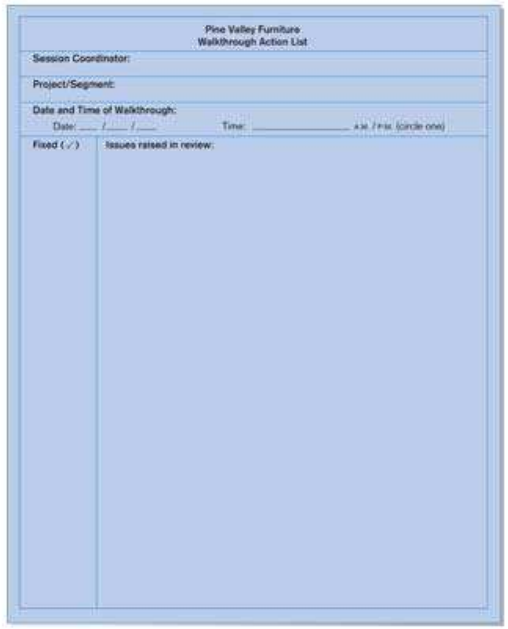
___ 1. All participants agree to follow PVF's Rules of a Walkthrough
___ 2. New material: walkthrough of all material
___ 3. Old material: item-by-item checkoff of previous action list
___ 4. Creation of new action list (contribution by each participant)
___ 5. Group decision (see below)
___ 6. Deliver copy of this form to the project control manager

Group Decision:

_____ Accept product as-is
_____ Revise (no further walkthrough)
_____ Review and schedule another walkthrough

Signatures		

Example: Walkthrough Action List



Pine Valley Furniture
Walkthrough Action List

Session Coordinator:

Project/Segment:

Date and Time of Walkthrough:

Date: ___ /___ /___ Time: _____ a.m. / p.m. (circle one)

Fixed (✓)	Issues raised in review:

Structured Review Process

- Ensure that formal review points occur during the project
- Incremental commitment
- Presentation
  - Planning: audience, objective, environment
  - Design: sequence, simple, consistent, variety, typo-error, concise
  - Delivery: practice, on-time, backup plan, appearance, etc.

Summary

- ✓ Describe the steps of project initiation and planning process
- ✓ Explain the need for and the contents of a Project Scope Statement and Baseline Project Plan
- ✓ Describe the methods for assessing project feasibility
- ✓ Explain costs and benefits analysis
- ✓ Describe the general rules for evaluating technical risks associated with a systems development project
- ✓ Describe the activities and participant roles within a structured walkthrough

Questions & Answers

Quiz

1 _____ is the major outcome & delivery from the project initiation and planning phase and contains the best estimate of the project's scope, benefits, costs, risks, and resource requirements.

2 _____ is a type of cost-benefit analysis to define at what point benefit equal costs.

3 _____ is a process of assessing the development organization's ability to construct a proposed system.

4 _____ is a peer group review of any product created during the system development process.

Exercise

- List & describe the steps in the project initiation and planning process.
- List & discuss the different types of project feasibility factors. Is any factor most important? Why or why not?
- What are the types or categories of benefits of an IS project?
- Describe the structured walkthrough process.
- Discuss the terms: walkthrough, review, inspection (in IS development)

Supplement

Three Popular Techniques to Assess Economic Feasibility

1 Payback Analysis

2 Return On Investment (ROI)

3 Net Present Value

The **Time Value of Money** is a concept that should be applied to each technique. The time value of money recognizes that a baht today is worth more than a baht one year from now.

Payback Analysis

Payback analysis is a simple and popular method for determining if and when an investment will pay for itself.

Payback period is the period of time that will lapse before accrued benefits overtake accrued and continuing costs.

Present Value Formula

Present value – the current value of a money at any time in the future.

$$PV_n = 1/(1 + i)^n$$

Where n is the number of years

i is the discount rate. (interest rate)

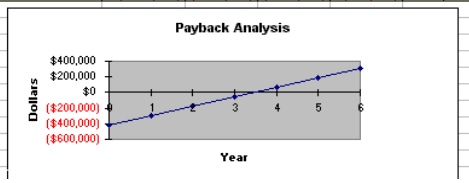
E.g. The Baht Value for the next 2 years (Assume i = 3.5%)

$PV_2 = 1/(1+0.035)^2$

$= 0.93$ baht

Payback Analysis for a Project

	A	B	C	D	E	F	G	H
4	Cash flow description	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
5	Development cost:	($418,040)						
6	Operation & maintenance cost:		($15,045)	($16,000)	($17,000)	($18,000)	($19,000)	($20,000)
7	Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	0.507
8	Time-adjusted costs (adjusted to present value):	($418,040)	($13,435)	($12,752)	($12,104)	($11,448)	($10,773)	($10,140)
9	Cumulative time-adjusted costs over lifetime:	($418,040)	($431,475)	($444,227)	($456,331)	($467,779)	($478,552)	($488,692)
10								
11	Benefits derived from operation of new system:	$0	$150,000	$170,000	$190,000	$210,000	$230,000	$250,000
12	Discount factors for 12%:	1.000	$0.893	$0.797	$0.712	$0.636	$0.567	$0.507
13	Time-adjusted benefits (current of present value):	$0	$133,950	$135,490	$135,280	$133,560	$130,410	$126,750
14	Cumulative time-adjusted benefits over lifetime:	$0	$133,950	$269,440	$404,720	$538,280	$668,690	$795,440
15		0	1	2	3	4	5	6
16	Cumulative lifetime time-adjusted costs + benefits:	($418,040)	($297,525)	($174,787)	($51,611)	$70,501	$190,138	$306,748



Return-on-Investment Analysis (ROI)

Return-on-Investment compares the lifetime profitability of alternative solutions or projects.

The ROI for a solution or project is a percentage rate that measures the relationship between the amount the business gets back from an investment and the amount invested.

ROI Formulas

$$\text{Lifetime ROI} = \frac{(\text{estimated lifetime benefits} - \text{estimated lifetime costs})}{\text{estimated lifetime costs}}$$

6 years: (795,440 - 488,692) / 488,692 = 306,748/488,692 = .628 = 62.8 %
5 years: 190,138/ 478,552 = 0.397 = 39.7 %

$$\text{Annual ROI} = \frac{\text{lifetime ROI}}{\text{lifetime of the system}}$$

6 years: 62.8/ 6 = 10.5 %
5 years: 39.7 /5 = 7.94 %