Chapter 4

Project Selection and Project Initiation

Objectives

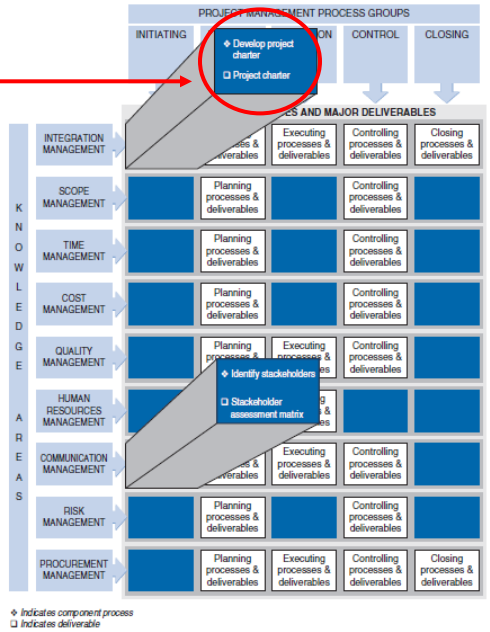
- Understand **how to select right projects** and why selecting the right projects to work on is important and sometimes difficult for an organization
- Understand the importance and contents of a **project charter** and **the stakeholder assessment matrix**
- Understand how to conduct a **project kickoff meeting**

Objectives

Learn the tools and techniques of **project selection,** including:

1. The strategic planning process for the organization and IT department
2. Quantitative methods, including the following:
   - **Return on investment (ROI)**
   - **Net present value (NPV)**
   - **Internal rate of return (IRR)**
   - **Payback Time Period (PTP) analysis**
3. The weighted scoring model (WSM)
4. Qualitative methods
5. Balanced scorecard

Project Selection (to be completed before a development of project charter)



What Potential Projects Should be Selected by a Company? What to select? How to select?

Organizations should follow a documented consistent planning process for selecting IT projects

Step # 1: Create a Strategic Plan	develop an IT strategic plan in support of the organization's overall strategic plan
Step # 2: Analyze local businesses	perform a business area analysis
Step # 3: Identify all relevant projects	define all potential projects, build the business case for those projects
Step # 4: Carefully select projects	select the most appropriate and doable project, and assign resources for identified projects

Strategic Planning

(determining long-term business objectives)

- A formal document that outlines an organization's 3 to 5 year mission, vision, goals, objectives, and strategies

- The main goal of any project should be to deliver some form of business value:
  - higher market share,
  - new product or market,
  - better customer support,
  - higher productivity,
  - lower operating costs,
  - etc.

- All of these are typically defined in the company's strategic plan as goals and objectives. Listed next to each goal or objective is a list of strategies which will fulfill the objective

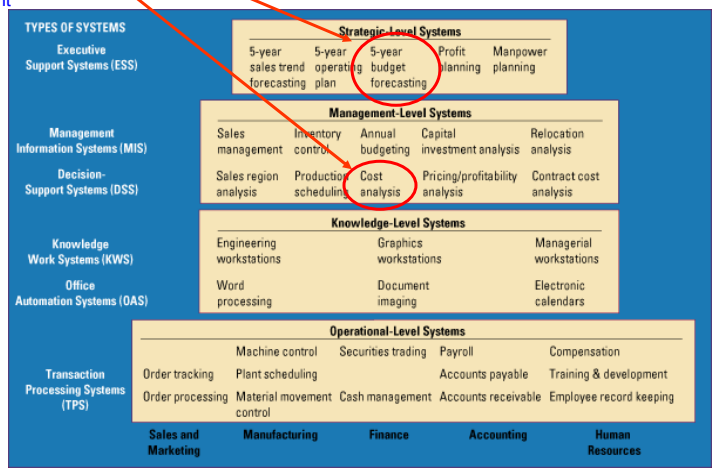
Examples:

- *Bradley University Strategic Planning*
- *LAS College Strategic Planning*
- *CS/IS Department Strategic Planning*

Strategic Planning

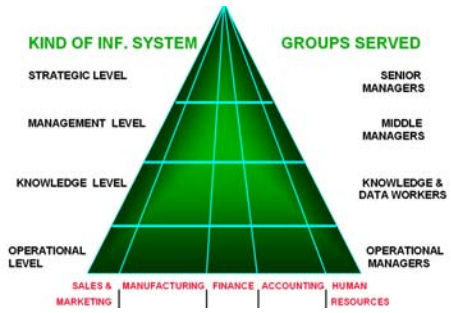
Projects authorized as a result of:

1. A market demand
2. An organizational need
3. A customer request
4. A technological advance
5. A legal requirement



Methods for Selecting Projects

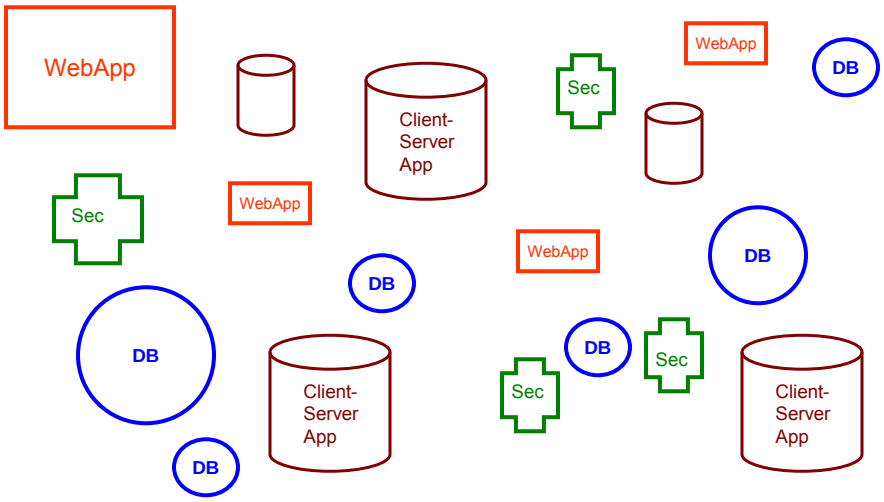
- In every organization, there are always more projects than available time and resources to implement them
- Very important to follow **a repeatable and complete process for selecting SW/IT projects**, to get the right mix (portfolio) for the organization
- **Business case** – a document, developed by SME (subject matter experts), and composed of a set of project characteristics (costs, benefits, risk, etc.) that aid organization decision makers in deciding what projects to work on



Four Key Issues Needing Answers for All Technology Projects

1. Business Value
2. Technology Needed
3. Cost/Benefit questions
4. Risks

Project Manager / Team identified multiple possible projects



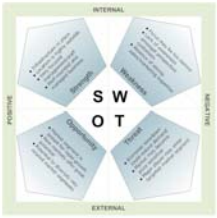
The question is How to select projects? How to prioritize projects? What are selection criteria? What are good (reliable) selection criteria?

Strategic Planning and Project Selection

- **SWOT analysis -- an often used tool**

to build the strategic plan:

  - **Strengths**
  - **Weaknesses**
  - **Opportunities**
  - **Threats**



A strength is an organizational resource (dollars, people, location, equipment, information technology) that can be used to meet an objective
A weaknesses is a missing or limited resource that bares on the organization's ability to meet an objective
An opportunity is a circumstance that may provide the organization a chance to improve its ability to compete
A threat is a potentially negative circumstance that if occurs may hinder an organizations ability to compete.

- **An information gathering technique to evaluate external influences against internal capabilities**
- **Selection Tools: Qualitative Models**
  - **Subject Matter Expert (SME) judgments (based on SME's knowledge + expertise)**
  - **"Sacred Cow" (pressure from upper mngt) (upper Mngt. wants this project to get done)**
  - **Mandates (generated from external vendors, agencies)**
- **Selection Tools: Quantitative Models (based on financial considerations that can be calculated)**
  - **Net Present Value (NPV)**
  - **Internal Rate of Return (IRR)**
  - **Return On Investment (ROI)**
  - **Payback Period**

Quantitative Models to Select Best Project(s)
(based on financial considerations that can be calculated)

Time Value of Money (TVM) Method

Time Value of Money (TVM) Method

- A sum of money is more valuable the sooner it is received. A dollar TODAY is worth more than the promise of a dollar TOMORROW (1 week from today, 1 month from today, 1 year from today…)
- This is because of a) inflation and b) risk.
- ***Ex: Inflation rate (consumer prices) (%) Country Ranks***

Inflation Rates – 20 Top Economies (in %)

TOP ECONOMIES	LAST	PREVIOUS	HIGHEST	LOWEST	UNIT	REFERENCE	FREQUENCY	CHART
AUSTRALIA	2.20	2.00	23.90	-1.30	Percent	Dec/2012	Quarterly	
BRAZIL	6.15	5.84	6821.31	1.65	Percent	Jan/2013	Monthly	
CANADA	0.50	0.90	21.60	-17.80	Percent	Jan/2013	Monthly	
CHINA	2.00	2.50	28.40	-2.20	Percent	Jan/2013	Monthly	
EURO AREA	2.00	2.20	5.00	-0.70	Percent	Jan/2013	Monthly	
FRANCE	1.20	1.30	19.80	-0.70	Percent	Jan/2013	Monthly	
GERMANY	1.70	2.00	11.40	-7.60	Percent	Jan/2013	Monthly	
INDIA	6.62	7.18	34.68	-11.31	Percent	Jan/2013	Monthly	
INDONESIA	4.57	4.30	82.40	-1.17	Percent	Jan/2013	Monthly	
ITALY	2.20	2.31	25.84	-2.44	Percent	Jan/2013	Monthly	
JAPAN	-0.10	-0.20	25.00	-2.52	Percent	Dec/2012	Monthly	
NEW ZEALAND	0.90	0.80	44.00	-15.30	Percent	Dec/2012	Quarterly	
RUSSIA	7.10	6.50	2333.30	3.60	Percent	Jan/2013	Monthly	
SOUTH KOREA	1.50	1.40	32.01	0.17	Percent	Jan/2013	Monthly	
SPAIN	2.66	2.67	28.43	-1.37	Percent	Jan/2013	Monthly	
SWITZERLAND	-0.30	-0.40	11.82	-1.37	Percent	Jan/2013	Monthly	
TURKEY	7.31	6.16	106.71	-4.01	Percent	Jan/2013	Monthly	
UNITED KINGDOM	2.70	2.70	8.50	0.50	Percent	Jan/2013	Monthly	
UNITED STATES	1.80	1.70	23.70	-15.80	Percent	Jan/2013	Monthly	

Source: http://www.tradingeconomics.com/inflation-rates-list-by-country

- As a result, $ 1.0 dollar TODAY will actually become 0.93 dollars 1 YEAR FROM TODAY (or, it will loose about $ 0.07)
- Before you invest money in a project you must compare its rate of return against other opportunities (other projects)

Time Value of Money Method: Basic Calculations

$FV = PV(1 + i)^n$

where: FV = Future Value of an investment (project)
PV = Present Value of that same investment
i = Interest rate, discount rate or cost of capital
n = Number of years

Example:

- Invest $1000 today (PV)
- for 1 year(n)
- at an interest rate of 10% (i).

As a result, the investment is worth
$1000(1+.1)^1 = $1,100 at the end of project year # 1,
$1000(1+.1)^2 = $1210 at the end of project year # 2, etc.

What happens when you have two different investments (2 different projects) with varying rates of return?

We need to adequately compare those 2 projects on equal terms (or, the same basis) !

Time Value of Money Method: Discount Rates

- You put both on equal terms by changing the formula slightly to evaluate all future cash flows at time zero or today

  PV = $FV / (1+i)^n$

  Example:

  You have a project that promises you $1000 of profit at the end of the first year. Discount rate is 10%. So, Present Value (today) of project is

  $$PV = \frac{\$1{,}000}{(1+0.1)^1} = \$909$$

The project is worth only $909 today

Net Present Value (NPV) Analysis

- NPV is a method of calculating the expected net monetary gain or loss from an investment (project) by discounting all future costs and benefits to the PRESENT TIME
- Projects with a positive NPV should be considered ***if*** financial value is a key criterion
- Generally, the higher the NPV, the better

NPV is calculated using the following formula (for projects with multiple project years):

$$NPV = \sum_{t=0\ldots n} CF/ (1+i)^t$$

where
t = the year of the cash flow
n = the last year of the cash flow
CF = the cash flow at time t
i = interest rate or discount rate

NPV Advantage: NPV analysis will help us to compare various projects with different duration (in years), different start time, different discount rates, etc.

An Example of NPV Calculations (based on 8% discount rate for 5 years)

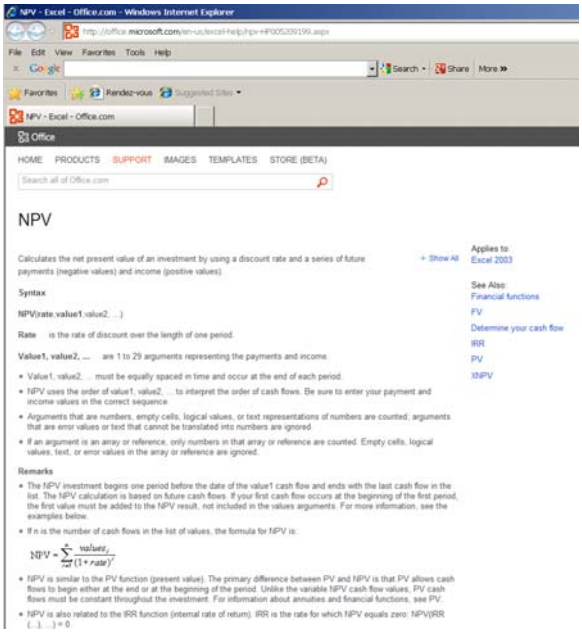
	Do the Math	Discounted Cash Flow
Project 1		
Year 0	**($120,000)**	**($120,000)**
Year 1	**($40,000) / (1 + .08)^1**	**($37,037)**
Year 2	**$25,000 / (1 + .08)^2**	**$21,433**
Year 3	**$70,000 / (1 + .08)^3**	**$55,569**
Year 4	**$130,000 / (1 + .08)^4**	**$95,553**
Year 5	**$80,000 / (1 + .08)^5**	**$54,448**
NPV	**Add them up**	**$69,966**
Project 2		
Year 0	**($75,000)**	**($75,000)**
Year 1	**($5,000) / (1 + .08)^1**	**($4,630)**
Year 2	**$70,000 / (1 + .08)^2**	**$60,014**
Year 3	**$45,000 / (1 + .08)^3**	**$35,723**
Year 4	**$30,000 / (1 + .08)^4**	**$22,051**
Year 5	**$5,000 / (1 + .08)^5**	**$3,403**
NPV	**Add them up**	**$41,561**

Attention:

Data in parenthesis or in RED color mean negative values

(or, out-of-pocket expenses = outflows = expenditures, etc.)

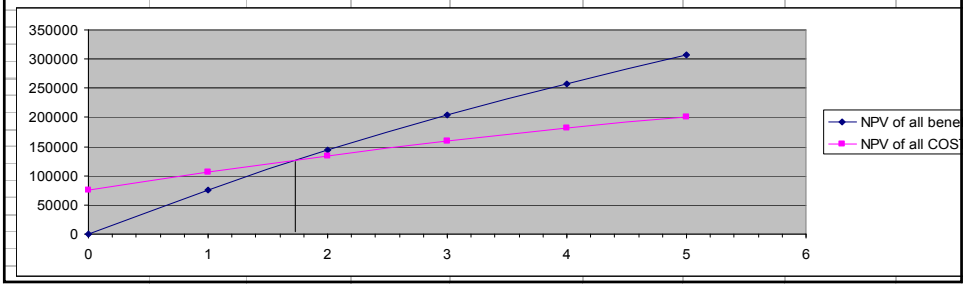
NPV Calculations with Microsoft Excel App



An example of NPV Calculations in Microsoft Excel:
row 9: manually = by using your own formulas for calculations;
row 10: automatically: by using built-in functions in MS Excel.

	A	B	C	D	E	F	G	H
1				Project 1				
2								
3	Year	0	1	2	3	4	Total	
4	Costs(Cash Outflows)	$0	$100,000	$10,000	$10,000	$10,000		
5	Benefits(inflows)	$0	$0	$5,000	$50,000	$110,000		
6	Net Cash Flow	$0	($100,000)	($5,000)	$40,000	$100,000		
7	Discount Rate(10%)	1	0.9091	0.8264	0.7513	0.6830		
8	Discounted Net Cash Flow	$0	($90,909.09)	($4,132.23)	$30,052.59	$68,301.35		
9	Overall NPV (calculated)						$3,312.62	
10	**Overall NPV (Excel formula)**	**$0.00**	**($90,909.09)**	**($95,041.32)**	**($64,988.73)**	**$3,312.62**		
11								

EX. 4 p. 151				Year of Project				
Year	0	1	2	3	4	5	Total	
Net economic benefit	$0	$85,000	$85,000	$85,000	$85,000	$85,000	$425,000	
Discount Rate(12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674		
PV of Benefit	0.00	75,892.86	67,761.48	60,501.32	54,019.04	48,231.28		
NPV of all benefits	0	$75,892.86	$143,654.34	$204,155.66	$258,174.69	$306,405.98	306405.9772	
One-time COST	($75,000)							
Recuring Costs	$0	($35,000.00)	($35,000.00)	($35,000.00)	($35,000.00)	($35,000.00)		
Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674		
PV of Recuring Costs	$0.00	($31,250.00)	($27,901.79)	($24,912.31)	($22,243.13)	($19,859.94)		
NPV of all COSTS	($75,000.00)	($106,250.00)	($134,151.79)	($159,064.09)	($181,307.23)	($201,167.17)	($201,167.17)	
Overall NPV							$105,238.81	
Overall ROI - (Overall NPV/NPV of all Costs)							0.52	
Break-Even Analysis:								
Yearly NPV Cash Flow	($75,000)	$44,642.86	$39,859.69	$35,589.01	$31,775.90	$28,371.34		
Overall NPV Cash Flow	($75,000)	($30,357.14)	$9,502.55	$45,091.56	$76,867.47	$105,238.81		
Break Even occurs between years 1 and 2								
Use first year of postive cash flow to calculate breakeven fraction								
Actual break-even occurred at 1.76			0.76					
Plot								
Year	0	1	2	3	4	5		
NPV of all benefits	0	$75,892.86	$143,654.34	$204,155.66	$258,174.69	$306,405.98		
NPV of all COSTS	$75,000.00	$106,250.00	$134,151.79	$159,064.09	$181,307.23	$201,167.17		



Return on Investment (ROI) Method

Return On Investment (ROI) Method

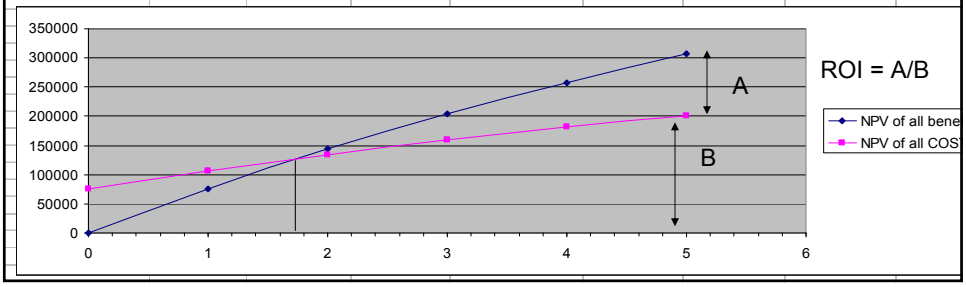
- Return on investment (ROI) is income divided by investment

  ROI = (total discounted benefits – total discounted costs) / total discounted costs

- The higher the ROI or higher the ratio of benefits to costs, the better

- Many organizations have a required rate of return or minimum acceptable rate of return on investment for projects

EX. 4 p. 151				Year of Project			
Year	0	1	2	3	4	5	Total
Net economic benefit	$0	$85,000	$85,000	$85,000	$85,000	$85,000	$425,000
Discount Rate(12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674	
PV of Benefit	0.00	75,892.86	67,761.48	60,501.32	54,019.04	48,231.28	
NPV of all benefits	0	$75,892.86	$143,654.34	$204,155.66	$258,174.69	$306,405.98	306405.9772
One-time COST	($75,000)						
Recuring Costs	$0	($35,000.00)	($35,000.00)	($35,000.00)	($35,000.00)	($35,000.00)	
Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674	
PV of Recuring Costs	$0.00	($31,250.00)	($27,901.79)	($24,912.31)	($22,243.13)	($19,859.94)	
NPV of all COSTS	($75,000.00)	($106,250.00)	($134,151.79)	($159,064.09)	($181,307.23)	($201,167.17)	($201,167.17)
Overall NPV							$105,238.81
Overall ROI - (Overall NPV/NPV of all Costs)							0.52
Break-Even Analysis:							
Yearly NPV Cash Flow	($75,000)	$44,642.86	$39,859.69	$35,589.01	$31,775.90	$28,371.34	
Overall NPV Cash Flow	($75,000)	($30,357.14)	$9,502.55	$45,091.56	$76,867.47	$105,238.81	
Break Even occurs between years 1 and 2							
Use first year of postive cash flow to calculate breakeven fraction							
Actual break-even occurred at 1.76			0.76				
Plot							
Year	0	1	2	3	4	5	
NPV of all benefits	0	$75,892.86	$143,654.34	$204,155.66	$258,174.69	$306,405.98	
NPV of all COSTS	$75,000.00	$106,250.00	$134,151.79	$159,064.09	$181,307.23	$201,167.17	



An Example of ROI Calculations (based on 8% discount rate, for 5 years)

Year	Do the Math	Discount Factor
0	$1/(1 + 0.08)^0$	1
1	$1/(1 + 0.08)^1$	.93
2	$1/(1 + 0.08)^2$	.86
3	$1/(1 + 0.08)^3$	.79
4	$1/(1 + 0.08)^4$	.73
5	$1/(1 + 0.08)^5$	.68

Project 1	Discounted Costs	Discounted Benefits
Year 0	(1)*$120,000 = 120,000	(1)*$0 = 0
Year 1	(0.93)*$100,000 = 93,000	(0.93)*$60,000 = 55,800
Year 2	(0.86)*$75,000 = 64,500	(0.86)*$100,000 = 86,000
Year 3	(0.79)*$50,000 = 39,500	(0.79)*$120,000 = 94,800
Year 4	(0.73)*$50,000 = 36,500	(0.73)*$180,000 = 131,400
Year 5	(0.68)*$20,000 = 13,600	(0.68)*$100,000 = 68,000
Totals	$367,100	$436,000

Project 2	Discounted Costs	Discounted Benefits
Year 0	(1) * $75,000	(1) * $0
Year 1	(0.93) * $90,000	(0.93) * $85,000
Year 2	(0.86) * $30,000	(0.86) * $100,000
Year 3	(0.79) * $30,000	(0.79) * $75,000
Year 4	(0.73) * $20,000	(0.73) * $50,000
Year 5	(0.68) * $20,000	(0.68) * $25,000
Totals	$256,000	$335,000

Step 1: determine discount factor for each year.

Step 2: calculate discounted costs (based on available absolute values of expected costs)

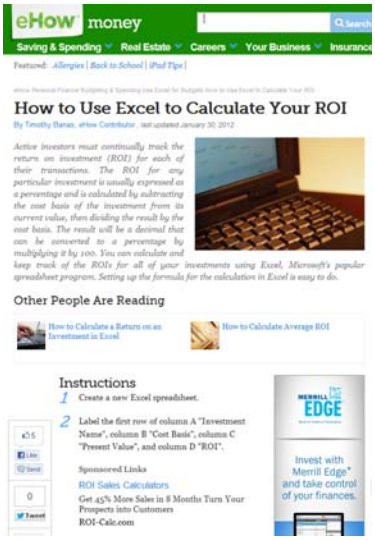
Step 3: calculate discounted benefits (based on available absolute values of expected benefits)

Step 4: calculate ROI for each project

- ROI Project 1 = ($436,000 - $367,100) / $357,100 = 19%
- ROI Project 2 = ($335,000 - $256,000) / $256,000 = 31%

Step 5: Compare calculated values of ROIs

NO formulas for ROI Calculations in Microsoft Excel (but there are many online explanations and examples available)



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How to Use Excel to Calculate Your ROI

By Timothy Banas, eHow Contributor, last updated January 30, 2012

Active investors must continually track the return on investment (ROI) for each of their transactions. The ROI for any particular investment is usually expressed as a percentage and is calculated by subtracting the cost basis of the investment from its current value, then dividing the result by the cost basis. The result will be a decimal that can be converted to a percentage by multiplying it by 100. You can calculate and keep track of the ROIs for all of your investments using Excel, Microsoft's popular spreadsheet program. Setting up the formula for the calculation in Excel is easy to do.

Other People Are Reading

How to Calculate a Return on an Investment in Excel

How to Calculate Average ROI

Instructions

1 Create a new Excel spreadsheet.

2 Label the first row of column A "Investment Name", column B "Cost Basis", column C "Present Value", and column D "ROI".

Sponsored Links

ROI Sales Calculators

Get 45% More Sales in 8 Months Turn Your Prospects into Customers

ROI-Calc.com

Invest with Merrill Edge® and take control of your finances.

Instructions

1 Create a new Excel spreadsheet.

2 Label the first row of column A "Investment Name", column B "Cost Basis", column C "Present Value", and column D "ROI".

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3 Copy and paste this formula in cell D2:

=(C2-B2)/B2*100

This formula will calculate the ROI for the investment data you place in cells B2 and C2 and is based on this formula:

ROI = (Present Value of Investment - Cost Basis) / Cost Basis x 100 percent

4 Input the data for your first investment in cells A2 B2, and C2, and the ROI for that investment will be displayed in cell D2.

An example of ROI Calculations in Microsoft Excel row 10: manually = by using your own formulas for calculations

A18

	A	B	C	D	E	F	G	H	I
1				Project 1					
2									
3	Year	0	1	2	3	4	Total		
4	Costs(Cash Outflows)	$0	$100,000	$10,000	$10,000	$10,000			
5	Benefits(inflows)	$0	$0	$5,000	$50,000	$110,000			
6	Net Cash Flow	$0	($100,000)	($5,000)	$40,000	$100,000			
7	Discount Rate(10%)	1	0.9091	0.8264	0.7513	0.6830			
8	Discounted Costs	$0	$90,909.09	$8,264.46	$7,513.15	$6,830.13	$113,517		
9	Discounted Benefits	$0	$0.0000	$4,132.2314	$37,565.7400	$75,131.48	$116,829.45		
10	ROI						0.0292	2.92%	
11									
12									

Internal Rate of Return (IRR) Method

Internal Rate of Return (IRR)

- One of the more sophisticated capital budgeting techniques and also more difficult to calculate
- The IRR is the discount rate at which NPV is zero
- Or the Discount rate where the present value of the cash inflows exactly equals the initial investment. IRR is the discount rate when NPV = 0
- Most companies that use this technique have a minimum IRR that you must meet.
- **Basically, try to change the discount rate until NPV becomes zero**

Good Web links for IRR calculation and examples:

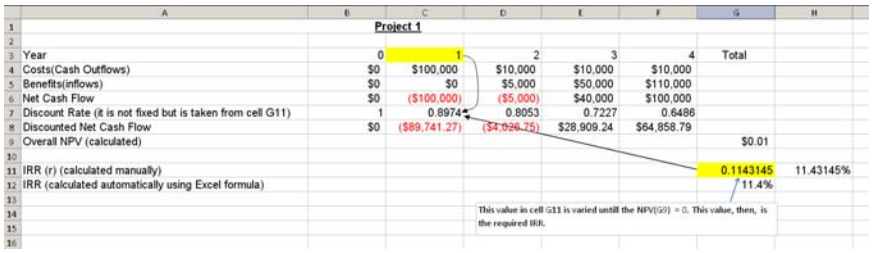
IRR online calculator: http://www.datadynamica.com/IRR.asp

Calculation of IRR with Microsoft Excel: http://office.microsoft.com/en-us/excel-help/irr-HP005209146.aspx

Financial functions at Excel: http://office.microsoft.com/en-us/excel-help/financial-functions-HP005200181.aspx?CTT=3

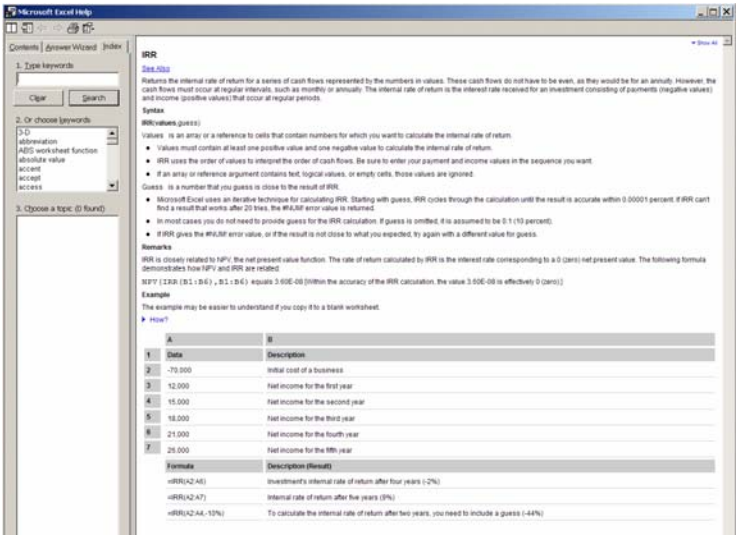
Calculation of NPV in Microsoft Excel: http://office.microsoft.com/en-us/excel-help/npv-HP005209199.aspx?CTT=3

An example of IRR Calculations in Microsoft Excel:
row 11: manually = by using your own formulas for calculations and fitting until Overall NPV is almost equal to 0.0;
row 12: automatically: by using built-in functions in MS Excel.



	A	B	C	D	E	F	G	H
1			Project 1					
2								
3	Year	0	1	2	3	4	Total	
4	Costs(Cash Outflows)	$0	$100,000	$10,000	$10,000	$10,000		
5	Benefits(inflows)	$0	$0	$5,000	$50,000	$110,000		
6	Net Cash Flow	$0	($100,000)	($5,000)	$40,000	$100,000		
7	Discount Rate (it is not fixed but is taken from cell G11)	1	0.8974	0.8053	0.7227	0.6486		
8	Discounted Net Cash Flow	$0	($89,741.27)	($4,026.75)	$28,909.24	$64,858.79		
9	Overall NPV (calculated)						$0.01	
10								
11	IRR (r) (calculated manually)						0.1143145	11.43145%
12	IRR (calculated automatically using Excel formula)						11.4%	
13								
14				This value in cell G11 is varied untill the NPV(G9) = 0. This value, then, is the required IRR.				
15								
16								

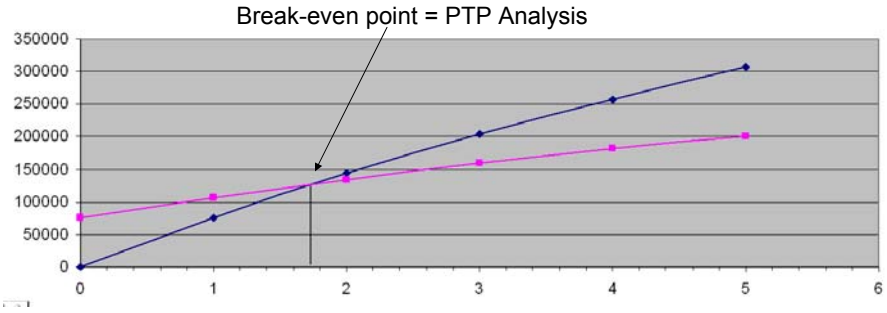
IRR Calculations in Microsoft Excel



Payback Time Period (PTP) Method

Payback Time Period Analysis

- The payback period is the amount of time it will take a project before the accrued benefits surpass accrued costs or how much time an investment takes to recover its initial cost
- track the net cash flow across each year to determine the year that net benefits overtake net costs (not discounted cash flows)
- Many organizations want IT projects to have a fairly short payback period (< 1 year)



An Example of PTP Calculations

- Same numbers as earlier examples. Table shows net cash flows
- Project 1 payback occurs sometime during year 4
- Project 2 payback occurs sometime during year 3

Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Net cash flow Project 1	($120,000)	($160,000)	($135,000)	($65,000)	$65,000	$145,000
Net cash flow Project 2	($75,000)	($80,000)	($10,000)	$35,000	$65,000	$70,000

An example of PTP Calculations in Microsoft Excel: row 8: manually = by using your own formulas for calculations + observation; row 9: automatically: by using one of MS Excel's generic built-in formula

	A	B	C	D	E	F	G	H
1			Project 1					
2								
3	Year	0	1	2	3	4	Total	
4	Costs(Cash Outflows)	$0	$100,000	$10,000	$10,000	$10,000		
5	Benefits(inflows)	$0	$0	$5,000	$50,000	$110,000		
6	Net Cash Flow	$0	($100,000)	($5,000)	$40,000	$100,000		
7	Cumulative Net Cash Flow	$0	($100,000)	($105,000)	($65,000)	$35,000		
8	Payback Period - manual calculation (during project year #)						4	
9	Payback Period - automatic calculation (not a built-in formula but one of Excel's generaic formulas)						4	
10								

Selecting a Portfolio (a Set) of Projects

We have reviewed several methods for evaluating individual projects by NPV, ROI, IRR, and PTP.

Now lets move on to selecting our entire ***portfolio*** by comparing projects against each other using a weighted scoring model

The **weighted scoring model (WSM)** is a culmination of all of the other models discussed in this chapter

- It is used to evaluate all projects on as equal a basis as is humanly possible. It attempts to remove human bias in the project selection process
- The criterion used to compare projects differs from one organization to another and may differ between types and classes of projects within the same organization

Weighting Scoring Method (WSM)

Weighted Scoring Model (Generic)

WSM main steps:

- First identify criteria important to the project selection process
- Then assign weights (percentages) to each criterion so they add up to 100%
- Then assign BY YOURSELF scores to each criterion for each project (based on calculated numeric values of NPV, ROI, IRR, PTP, etc.)
- **Multiply the scores by the weights and get the total weighted scores**

	Criterion	Weight	Project			
			1	2	3	4
1	Market share effect	10%	70	70	50	30
2	Competition	5%	30	70	70	70
3	Risk	10%	10	30	50	30
4	Product fit	5%	70	70	50	0
5	Strategic plan alignment	15%	50	50	70	30
6	Customer support	20%	50	50	30	30
7	Payback	10%	70	70	30	10
8	NPV	15%	70	50	30	30
9	ROI	10%	50	50	30	10
	Totals	100%	53	54	43	26.5

Rating	Score
Poor/not satisfied	0
Below average	10
Average	30
Above average	50
Excellent	70

Weighted Scoring Model (updated)

Important note:

In many cases, scores for all under-review projects should add up to 100 points for each particular criterion (in order to provide correct comparison "apples with apples" of all projects)

	Criterion	Weight	Project			
			1	2	3	4
1	Market share effect	10%	70	70	50	30
2	Competition	5%	30	70	70	70
3	Risk	10%	10	30	50	30
4	Product fit	5%	70	70	50	0
5	Strategic plan alignment	15%	50	50	70	30
6	Customer support	20%	50	50	30	30
7	Payback	10%	70	70	30	10
8	NPV	15%	70	50	30	30
9	ROI	10%	50	50	30	10
	Totals	100%	53	54	43	26.5

Rating	Score
Poor/not satisfied	0
Below average	10
Average	30
Above average	50
Excellent	70

40 40 15 5 ---> 100%

40 30 15 15 ---> 100%

35 35 23 7 ---> 100%

Weighted Scoring Model
(updated – with more accurate calculations)

Calculated NPV for each project (in $)

Project Number	NPV numeric value, in $
Project 1	1,000,000
Project 2	500,000
Project 3	1,500,000
Project 4	50,000

Calculate % using Excel application

	NPV	%-wise (to be used in WSM table
	$	
Project 1	1000000	32%
Project 2	500000	16%
Project 3	1500000	48%
Project 4	100000	3%
SUM=	3100000	

To be used in WSM table:

Project Number	NPV of projects (in %)
Project 1	32%
Project 2	16%
Project 3	48%
Project 4	3%

Selecting the Wrong Projects

There are five major reasons why organizations choose the **wrong projects**:

1) Lack of knowledge and lack of the right metrics for valuing projects

2) Failure to establish an effective framework for project portfolio management

3) Inability to assess and value risks tht are associated with projects

4) Bias (unfairness, partiality, favoritism) and errors in judgment

Projects' Selection: A Summary

- A variety of choices (tools) are available to help organizations become better at selecting the right projects
- Many studies have been done to review the use and effectiveness of these techniques. The problem in trying to draw any conclusions from these studies is that they all address different industry segments, over different time periods, using different technologies
- The choice of which techniques to use is based on many factors:
  - company culture,
  - financial position,
  - industry segment,
  - technology,
  - length of project,
  - size of project,

  and so on
- Organizations should use a method that builds a WSM which consists of elements and weights that are pertinent to the organization at a point in time and circumstances

Chapter 4

Project Selection and Project Initiation

Homework assignment

Chapter 4

Project Selection and Project Initiation.

Additional Information

Net Present Value Analysis

- NPV is a method of calculating the expected net monetary gain or loss from an investment (project) by discounting all future costs and benefits to the present time
- Projects with a positive NPV should be considered ***if*** financial value is a key criterion
- Generally, the higher the NPV, the better

Calculation of NPV in Microsoft Excel: http://office.microsoft.com/en-us/excel-help/npv-HP005209199.aspx?CTT=3

NPV Example

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Project 1						
Costs (cash outflows)	$120,000	$100,000	$75,000	$50,000	$50,000	$20,000
Benefits (inflows)	$0	$60,000	$100,000	$120,000	$180,000	$100,000
Net cash flow	($120,000)	($40,000)	$25,000	$70,000	$130,000	$80,000
Project 2						
Costs (cash outflows)	$75,000	$90,000	$30,000	$30,000	$20,000	$20,000
Benefits (inflows)	$0	$85,000	$100,000	$75,000	$50,000	$25,000
Net cash flow	($75,000)	($5,000)	$70,000	$45,000	$30,000	$5,000

NPV is calculated using the following formula:

$$NPV = \sum_{t=0...n} CF/ (1+i)^t$$

Where

t = the year of the cash flow
n = the last year of the cash flow
CF = the cash flow at time t
i = interest rate or discount rate

NPV Example Calculations

	Do the Math	Discounted Cash Flow
Project 1		
Year 0	**($120,000)**	**($120,000)**
Year 1	**($40,000) / (1 + .08)^1**	**($37,037)**
Year 2	**$25,000 / (1 + .08)^2**	**$21,433**
Year 3	**$70,000 / (1 + .08)^3**	**$55,569**
Year 4	**$130,000 / (1 + .08)^4**	**$95,553**
Year 5	**$80,000 / (1 + .08)^5**	**$54,448**
NPV	**Add them up**	**$69,966**
Project 2		
Year 0	**($75,000)**	**($75,000)**
Year 1	**($5,000) / (1 + .08)^1**	**($4,630)**
Year 2	**$70,000 / (1 + .08)^2**	**$60,014**
Year 3	**$45,000 / (1 + .08)^3**	**$35,723**
Year 4	**$30,000 / (1 + .08)^4**	**$22,051**
Year 5	**$5,000 / (1 + .08)^5**	**$3,403**
NPV	**Add them up**	**$41,561**

ROI Example

Year	Do the Math	Discount Factor
0	$1/(1 + 0.08)^0$	1
1	$1/(1 + 0.08)^1$	.93
2	$1/(1 + 0.08)^2$	.86
3	$1/(1 + 0.08)^3$	.79
4	$1/(1 + 0.08)^4$	.73
5	$1/(1 + 0.08)^5$	.68

Step 1: determine discount factor for each year.
Step 2: calculate discounted benefits and costs

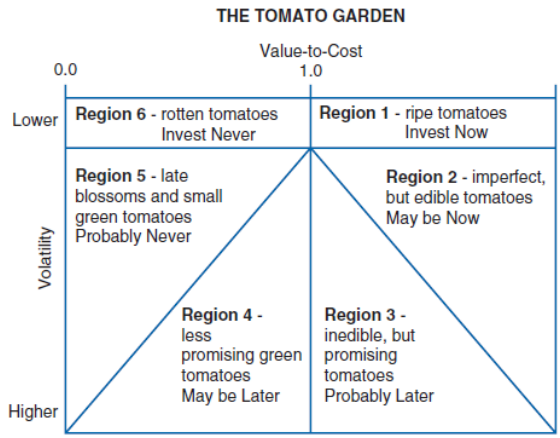
ROI Example

Project 1	Discounted Costs	Discounted Benefits
Year 0	(1)*$120,000 = 120,000	(1)*$0 = 0
Year 1	(0.93)*$100,000 = 93,000	(0.93)*$60,000 = 55,800
Year 2	(0.86)*$75,000 = 64,500	(0.86)*$100,000 = 86,000
Year 3	(0.79)*$50,000 = 39,500	(0.79)*$120,000 = 94,800
Year 4	(0.73)*$50,000 = 36,500	(0.73)*$180,000 = 131,400
Year 5	(0.68)*$20,000 = 13,600	(0.68)*$100,000 = 68,000
Totals	$367,100	$436,000
Project 2	**Discounted Costs**	**Discounted Benefits**
Year 0	(1) * $75,000	(1) * $0
Year 1	(0.93) * $90,000	(0.93) * $85,000
Year 2	(0.86) * $30,000	(0.86) * $100,000
Year 3	(0.79) * $30,000	(0.79) * $75,000
Year 4	(0.73) * $20,000	(0.73) * $50,000
Year 5	(0.68) * $20,000	(0.68) * $25,000
Totals	$256,000	$335,000

Other Methods to Determine Value

- Balanced Scorecard
- Real Options

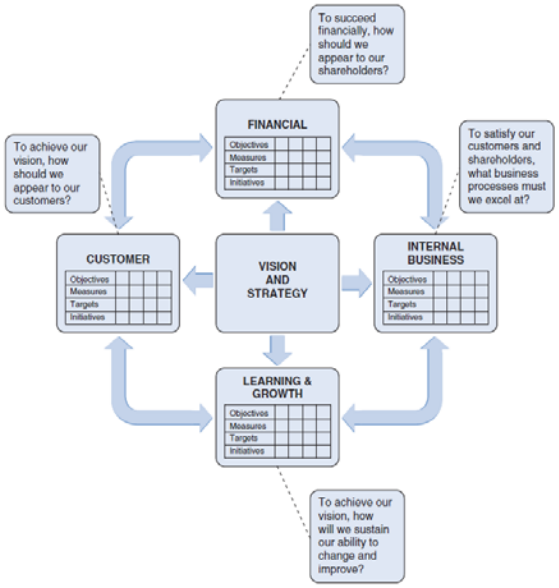
Real Options



Balanced Scorecard (BSC) Method (1992)

- Drs. Robert Kaplan and David Norton developed this approach to help select and manage projects that align with business strategy
- A balanced scorecard converts an organization's *value drivers*, such as customer service, innovation, operational efficiency, and financial performance to a series of defined metrics
- Organizations record and analyze these metrics to determine how well projects help them achieve strategic goals
- The balanced scorecard measures organizational performance across four balanced perspectives:
  - financial,
  - customers,
  - internal processes, and
  - learning.

Balanced Scorecard



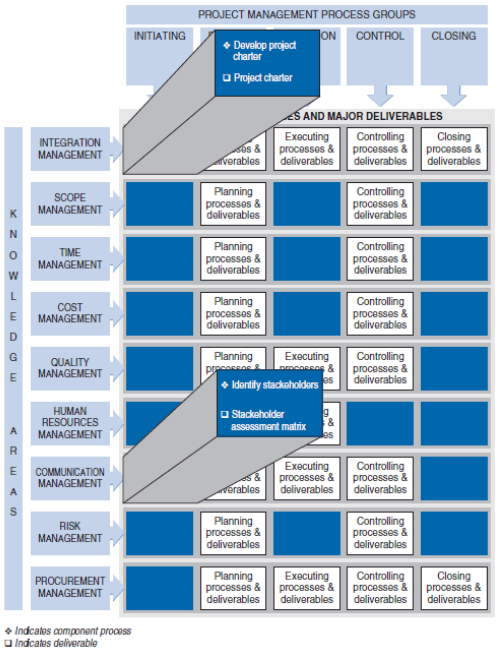
Real Options

- Derives from a financial model considering the management of a portfolio of stock investment options
- Has not yet become a very popular option for IT investments
- A fundamental definition of an option is “the right, but not the obligation, to buy (call option) or sell (put option) an investment holding at a predetermined price (called the exercise price or strike price) at some particular date in the future”
- A stock option lets us make a small investment today in order to reduce our risk later on. At the same time, it keeps open the possibility of making a bigger investment later, if the future goes the way we expect
- The more uncertain the times, the more valuable an options approach becomes

Real Options

- In order to make real options easier to understand, T.A. Leuhrman (1998) used the analogy of a tomato garden: In a tomato garden, not all the tomatoes are ripe at the same time; some are ready to pick right now, some are rotten and should be thrown away, and some will be ready to harvest at a later date
- We can apply this line of thinking for evaluating investments.
- Traditionally, the evaluation of investments has been limited to a yes/no “ripe or rotten” decision based solely on net present value. With real options, an investment with a negative net present value may still be good, but perhaps it’s just not the right time (it’s not ripe yet)
- If you can delay until the proper time (now ripe) your once negative NPV net present value would reflect a positive one
- Viewing an investment as an option allows projects to be evaluated and managed in respect to future value and a dynamic business environment

Project Initiation

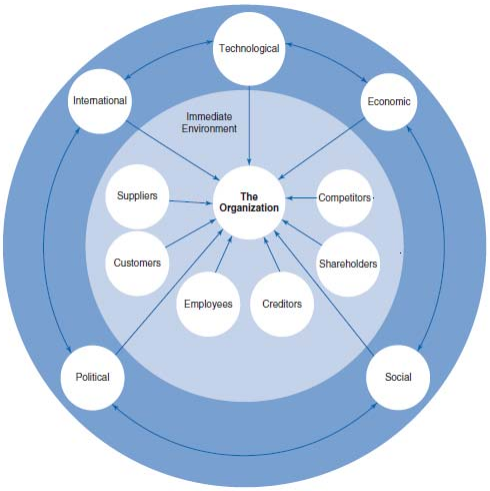


Project Initiation

- The projects have been selected, now time to begin
- First project artifact is the Project Charter, but
  - First we must do a stakeholder analysis

1. Identify all potential stakeholders
2. Determine interests, expectations, and influence for each
3. Build a stakeholder assessment matrix
4. Analyze appropriate stakeholder approach strategies and update the matrix
5. Update throughout the project

Where to Look for Stakeholders



Stakeholder Assessment Matrix

(like a set of mini dossiers on each stakeholder)

Stakeholder	Interests	Influence	Unique Information	Role	Approach Strategies
Elaine Henry	Major user of the new information, been with company 15 years	Voice is heard all the way up to the CEO	Loves Nascar, has four children, likes camping	Key end user	Family oriented, needs to work straight time with no overtime to take care of family
Heidi Cosgray	Key end user of the software, most computer literate of the company	Her opinion of software will influcence other users	Generally against all change, works many hours of overtime, no children, always seems stressed	End user	Approach carefully about changes, schedule first for training
Kenny Jones	Against using computers due to his lack of knowledge	Some, due to his control of the warehouse and staff	Well liked but will need many hours of computer training; well liked by his warehouse staff	Key end user	Slowly work with him to bring computer skills up to date; careful not to insult due to computer knowledge
Foster Hines	Anxious to use new software	Not much, due to newness with company	Major baseball fan and Colts football fan	Observer	Periodic status updates

Project Charter: 1st Project Tangible Outcome

- A project charter or project definition (sometimes called the terms of reference) is a statement of the
  - project scope,
  - project objectives and
  - participants in a project.
- Project charter
  - provides a preliminary delineation of roles and responsibilities,
  - outlines the project objectives,
  - identifies the main stakeholders, and
  - defines the authority of the project manager.
- It serves as a reference of authority for the future of the project. As such having a good understanding of how to write a project charter is a key skill for any project manager to have.
- Key project stakeholders should sign a project charter to acknowledge agreement on the need and intent of the project

Project Charter: A sample

Project Title: Asset Management Date: 3/1/2008
Version: 2008-V1

Description:

Purchase an asset management software package that comes closest to meeting R & S needs. Then, perform a gap analysis and write custom code to deliver what is missing from the package. Finally integrate this software into the other software solutions of R & S.

Project Manager: Mark Lewis and Premier Consultants Authority Level: <= 10% of budget

Objectives:

- Ability to track the location of every amusement asset (onsite or in the field)
- Inventory: game machines, maintenance supplies, dollar bill changers, external speakers
- Inventory information is updated continually in real time
- Generate purchase requisitions
- Ability to generate ad hoc reports
- Track vendor information
- Track asset performance

Major Deliverable Schedule:	Duration Estimates
• Requirements documentation with statement of work	2 months
• Software/hardware purchase and install	6 months
• Gap analysis document	2 months
• Deliver custom software	2 months

Critical Success Factors

- Find software solution that satisfies a minimum of 75% of stated requirements
- Improves productivity by 50%
- Reduces inventory carrying costs by 20%
- Improve customer satisfaction ratings

Assumptions/Constraints/Risks

- Low end-user involvement
- Clear statement of requirements
- Finding software which matches user requirements and budget

Key Roles and Responsibilities

- Mark Lewis, project manager
- Reid Lewis, executive management support
- Kenny Jones, user requirements from warehouse
- Elaine Henry, user requirements and software verification

Approvals

Mark Lewis	_____	Elaine Henry	_____
Reid Lewis	_____	Jeff Dunbar	_____
Kenny Jones	_____	Kevin Pullen	_____

Project Charter: Best Practices

- Should not be created in isolation
- It is not a novel, keep it short and to the point
  - Implementing an entire ERP application can be summarized in a project charter in 3 or 4 pages max
  - Tough to get stakeholder buy-in and understanding when the charter is 20 plus pages

Kick-Off Meeting

- With the completion of the stakeholder analysis and the signing of the project charter, it's time to schedule and conduct the kickoff meeting
- First step, use the stakeholder analysis to make sure to invite the right people
- Everyone at the start of the project hears the same message
- Get agreement from everyone on Project Charter

Summary of Process Steps

1. Project sponsors prepare the business case
2. Review potential project business cases
3. Review current business climate
4. Build the weighted scoring model
5. Review available resources
6. Select projects and assign project managers
7. Conduct stakeholder analysis
8. Create Project Charter
9. Obtain Project Charter buy-in obtain signatures
10. Conduct Kick-off meeting