# Integration Management

# Learning Objectives

- Describe an overall framework for project integration management
- Explain the strategic planning process
- Explain the importance of creating a project charter to formally initiate projects
- Describe preliminary project scope statement
- Describe project management plan development
- Explain project execution and its relationship to project planning

# Learning Objectives (continued)

- Describe the process of monitoring and controlling project work
- Understand the integrated change control process
- Explain the importance of developing and following good procedures for closing projects

# The Key to Overall Project Success: Good Project Integration Management

- Project managers must coordinate all of the other knowledge areas throughout a project's life cycle
- Look at the "big picture" and not focus on too many details
- Project integration management is *not* the same thing as software integration

# Integration Management

- Includes the processes and activities to **identify, define, combine, unify, and coordinate the various processes** and project management activities within the Project Management Process Groups
- Includes characteristics of unification, consolidation, communication, and integrative actions that are crucial to controlled project execution through completion, successfully managing stakeholder expectations, and meeting requirements.
- Includes making choices about resource allocation, making trade-offs among competing objectives and managing interdependencies among the project management Knowledge Areas

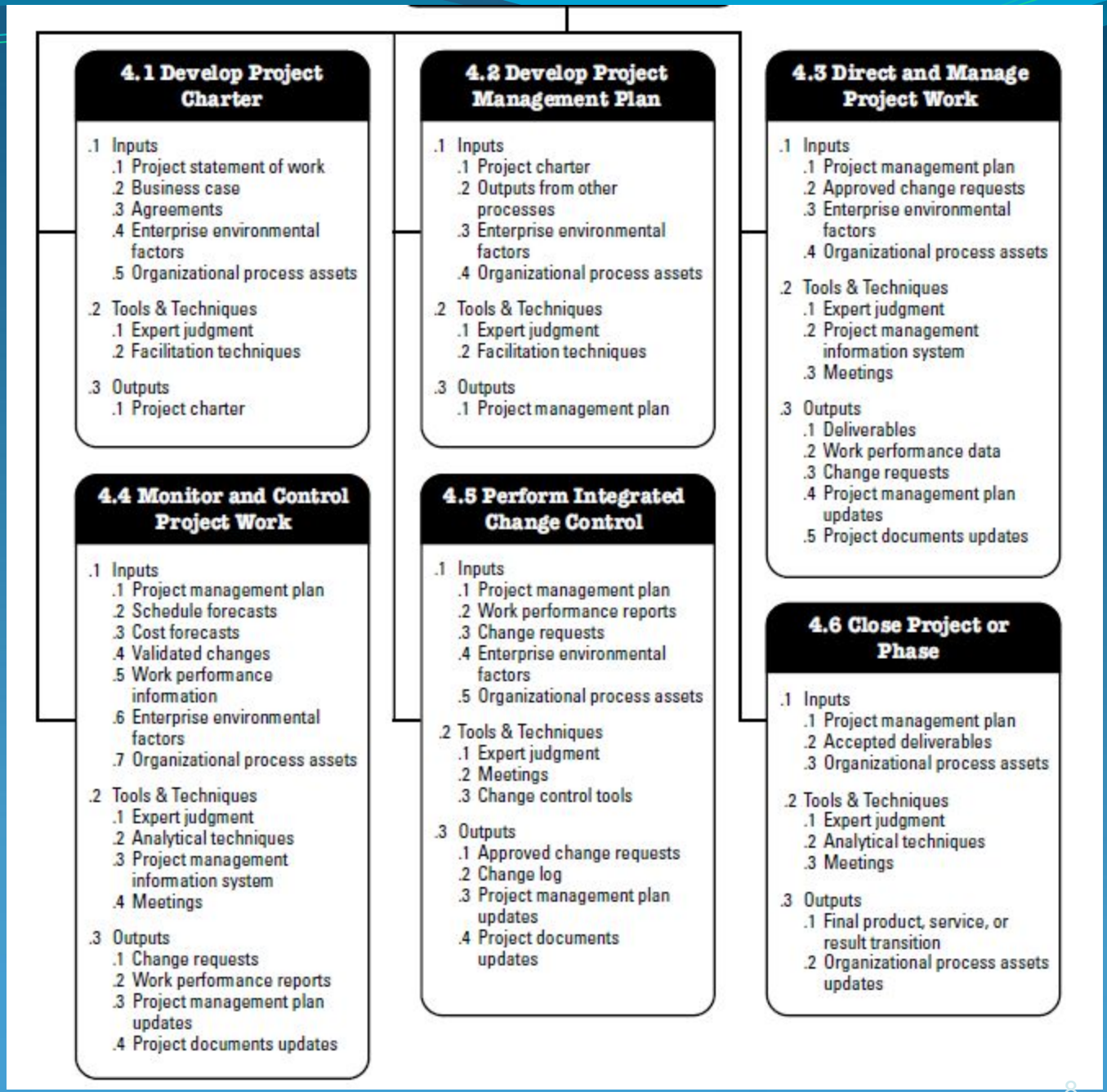
# Project Integration Management Processes

- **Develop project charter**: working with stakeholders to create the document that formally authorizes a project—the charter
- **Develop project management plan**: coordinating all planning efforts to create a consistent, coherent document—the project management plan
- **Direct and manage project execution**: carrying out the project management plan by performing the activities included in it

# Project Integration Management Processes (continued)

- **Monitor and control project work**: overseeing project work to meet the performance objectives of the project
- **Perform integrated change control**: coordinating changes that affect the project's deliverables and organizational process assets
- **Close project or phase**: finalizing all project activities to formally close the project or phase

# Overview


4.1 Develop Project Charter
.1 Inputs
.1 Project statement of work
.2 Business case
.3 Agreements
.4 Enterprise environmental factors
.5 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Facilitation techniques
.3 Outputs
.1 Project charter
4.2 Develop Project Management Plan
.1 Inputs
.1 Project charter
.2 Outputs from other processes
.3 Enterprise environmental factors
.4 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Facilitation techniques
.3 Outputs
.1 Project management plan
4.3 Direct and Manage Project Work
.1 Inputs
.1 Project management plan
.2 Approved change requests
.3 Enterprise environmental factors
.4 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Project management information system
.3 Meetings
.3 Outputs
.1 Deliverables
.2 Work performance data
.3 Change requests
.4 Project management plan updates
.5 Project documents updates
4.4 Monitor and Control Project Work
.1 Inputs
.1 Project management plan
.2 Schedule forecasts
.3 Cost forecasts
.4 Validated changes
.5 Work performance information
.6 Enterprise environmental factors
.7 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Analytical techniques
.3 Project management information system
.4 Meetings
.3 Outputs
.1 Change requests
.2 Work performance reports
.3 Project management plan updates
.4 Project documents updates
4.5 Perform Integrated Change Control
.1 Inputs
.1 Project management plan
.2 Work performance reports
.3 Change requests
.4 Enterprise environmental factors
.5 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Meetings
.3 Change control tools
.3 Outputs
.1 Approved change requests
.2 Change log
.3 Project management plan updates
.4 Project documents updates
4.6 Close Project or Phase
.1 Inputs
.1 Project management plan
.2 Accepted deliverables
.3 Organizational process assets
.2 Tools & Techniques
.1 Expert judgment
.2 Analytical techniques
.3 Meetings
.3 Outputs
.1 Final product, service, or result transition
.2 Organizational process assets updates

# Develop Project Charter

- Working with stakeholders to create the document that formally authorizes a project—the charter


- Project statement of work (SOW) is a narrative description of products, services, or results to be delivered by a project
  - Business need: Organization's business need
  - Product scope description: documents the characteristics of the product, service, or results
  - Strategic Plan: documents the organization's strategic vision, goals, and objectives

# Project Charter - Input

- **Agreements:** Contracts, MOU's, SLA, LOI, Email
- Enterprise Environmental Factors:
  - Government standards, industry standards, or regulations
  - Organizational culture and structure, management practices, and sustainability
  - Project Management Information System
  - Personnel administration (hiring and termination guidelines, reviews, training records)
  - Marketplace conditions
- Organizational Process Assets:
  - Organizational standard processes, policies, and process definitions,
  - Standard templates,
  - Historical information and lessons learned knowledge base
  - Project files from previous projects

# Project Charter – T&T

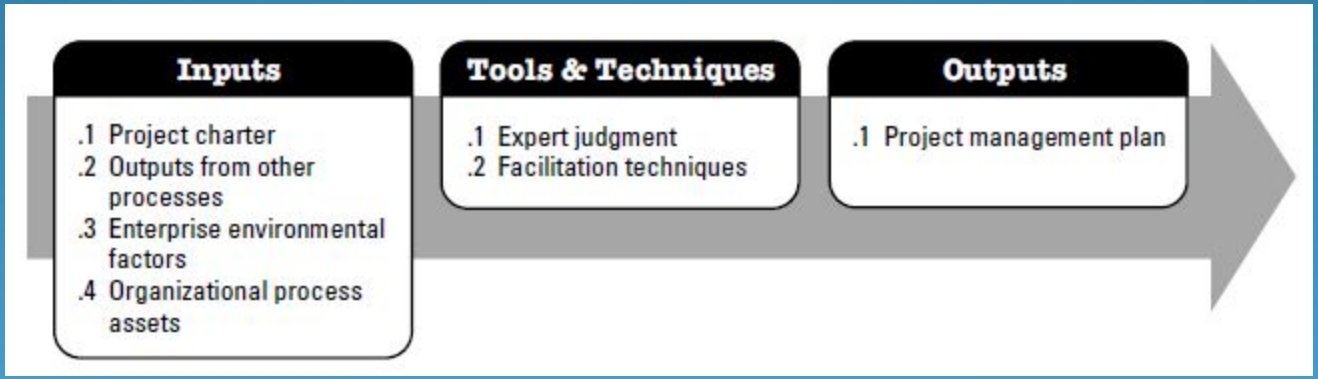
- Expert Judgement:
  - Consultants, Stakeholders, Industry Groups, SME, PMO
- **Facilitations Techniques:**
  - Brainstorming, Conflict Resolution, Problem Solving, and Meeting Management

# Project Charter – Output

- The project charter is the document issued by the project initiator or sponsor that formally authorizes the existence of a project
- It provides the project manager with the authority to apply organizational resources to project activities
- If there is no project charter, the project does not exist
- Project Charter contains:
  - Project Purpose or justification
  - Measurable project objectives and related success criteria
  - High-level requirements
  - Assumptions and constraints
  - High-level project description and boundaries
  - High-level risks
  - Summary milestone schedule
  - Summary budget
  - Stakeholder list

# Develop Project Management Plans

- A project management plan: document used to coordinate all project planning documents and help guide a project's execution and control
- Plans created in the other knowledge areas are subsidiary parts of the overall project management plan

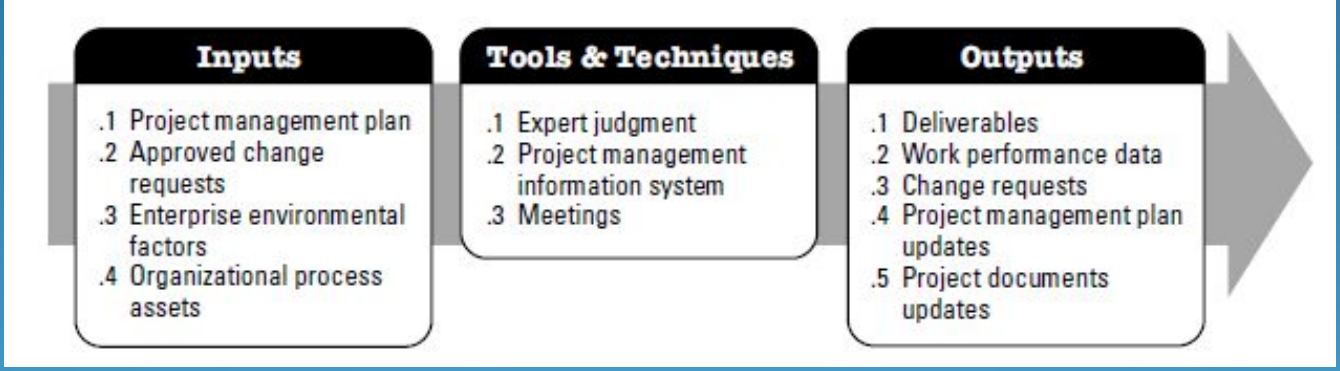


# Develop Project Management Plans

- Common Elements of a Project Management Plan
  - Introduction or overview of the project
  - Description of how the project is organized
  - Management and technical processes used on the project
  - Work to be done, schedule, and budget information

# Direct and Manage Project Work

- Process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives



# Direct and Manage Project Work

- Activities include:
  - Perform activities to accomplish project objectives;
  - Create project deliverables to meet the planned project work;
  - Provide, train, and manage the team members assigned to the project;
  - Obtain, manage, and use resources including materials, tools, equipment, and facilities;
  - Implement the planned methods and standards;
  - Establish and manage project communication channels, both external and internal to the project team;

# Direct and Manage Project Work

- Activities include:
  - Generate work performance data
  - Issue change requests and implement approved changes;
  - Manage risks and implement risk response activities;
  - Manage sellers and suppliers;
  - Manage stakeholders and their engagement; and
  - Collect and document lessons learned and implement approved process improvement activities

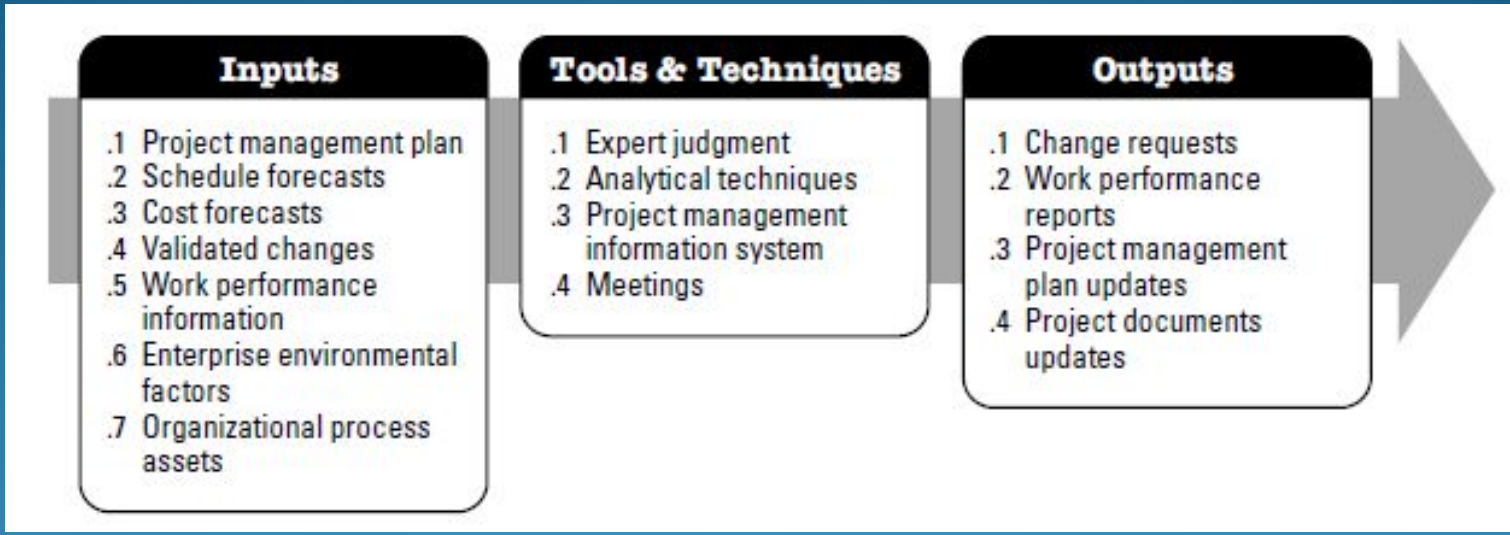
# Direct and Manage Project Work

- Also requires review of the impact of all project changes and the implementation of approved changes:
  - Corrective action: An intentional activity that realigns the performance of the project work
  - Preventive action: An intentional activity that ensures the future performance of the project work
  - Defect repair: An intentional activity to modify a nonconforming product or product component

# Monitoring and Controlling Project Work

- Changes are inevitable on most projects, so it's important to develop and follow a process to monitor and control changes
- Monitoring project work includes collecting, measuring, and disseminating performance information
- A baseline is the approved project management plan plus approved changes

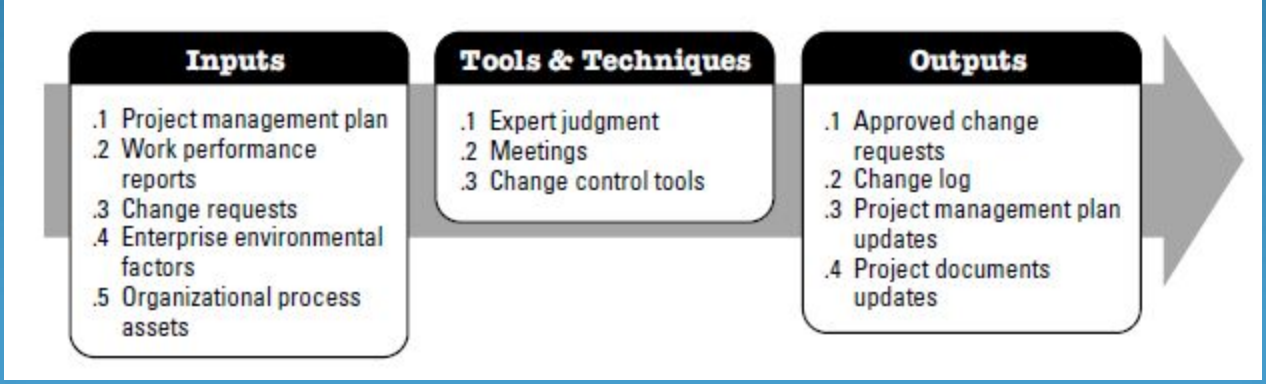
# Monitor and Control Project Work




- Analytical technique
  - Regression analysis; Root cause analysis; Reserve analysis; trend analysis; Earned value management; Variance analysis

# Integrated Change Control

- Three main objectives are:
  - Influencing the factors that create changes to ensure that changes are beneficial
  - Determining that a change has occurred
  - Managing actual changes as they occur



# Change Control on Information Technology Projects

- Former view: the project team should strive to do exactly what was planned on time and within budget
- Problem: stakeholders rarely agreed up-front on the project scope, and time and cost estimates were inaccurate
- Modern view: project management is a process of constant communication and negotiation
- Solution: changes are often beneficial, and the project team should plan for them

# Change Control System

- A formal, documented process that describes when and how official project documents and work may be changed
- Describes who is authorized to make changes and how to make them

# Change Control Board (CCB)

- A formal group of people responsible for approving or rejecting changes on a project
- CCBs provide guidelines for preparing change requests, evaluate change requests, and manage the implementation of approved changes
- Includes stakeholders from the entire organization

# Making Timely Changes

- Some CCBs only meet occasionally, so it may take too long for changes to occur
- Some organizations have policies in place for time-sensitive changes
  - "48-hour policy" allows project team members to make decisions; then they have 48 hours to reverse the decision pending senior management approval
  - Delegate changes to the lowest level possible, but keep everyone informed of changes

# Closing Projects and Phases

- To close a project or phase, you must finalize all activities and transfer the completed or cancelled work to the appropriate people
- Main outputs include:
  - Final product, service, or result transition
  - Organizational process asset updates

# Summary

- Project integration management involves coordinating all of the other knowledge areas throughout a project's life cycle
- Main processes include:
  - Develop project charter
  - Develop project management plan
  - Direct and manage project work
  - Monitor and control project work
  - Perform integrated change control
  - Close project or phase

# Financial Analysis of Projects

- Financial considerations are often an important consideration in selecting projects
- Three primary methods for determining the projected financial value of projects:
  - Net present value (NPV) analysis
  - Return on investment (ROI)
  - Payback analysis

# Net Present Value Analysis

- **Net present value** (NPV) analysis is a method of calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present point in time
- Projects with a positive NPV should be considered if financial value is a key criterion
- The higher the NPV, the better

# Net Present Value Example

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Discount rate | 10% | | | | | |
| 2 | | | | | | | |
| 3 | **PROJECT 1** | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | **TOTAL** |
| 4 | Benefits | $0 | $2,000 | $3,000 | $4,000 | $5,000 | $14,000 |
| 5 | Costs | $5,000 | $1,000 | $1,000 | $1,000 | $1,000 | $9,000 |
| 6 | Cash flow | ($5,000) | $1,000 | $2,000 | $3,000 | $4,000 | **$5,000** |
| 7 | NPV → | **$2,316** | | | | | |
| 8 | | Formula =npv(b1,b6:f6) | | | | | |
| 9 | | | | | | | |
| 10 | **PROJECT 2** | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | **TOTAL** |
| 11 | Benefits | $1,000 | $2,000 | $4,000 | $4,000 | $4,000 | $15,000 |
| 12 | Costs | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $10,000 |
| 13 | Cash flow | ($1,000) | $0 | $2,000 | $2,000 | $2,000 | **$5,000** |
| 14 | NPV → | **$3,201** | | | | | |
| 15 | | Formula =npv(b1,b13:f13) | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |

Note that totals are equal, but NPVs are not because of the time value of money

# JWD Consulting NPV Example

| | | | | | | |
|---|---|---|---|---|---|---|
| **Discount rate** | **8%** | | | | | |
| Assume the project is completed in Year 0 | | | **Year** | | | |
| | **0** | **1** | **2** | **3** | **Total** | |
| Costs | 140,000 | 40,000 | 40,000 | 40,000 | | |
| Discount factor | 1 | 0.93 | 0.86 | 0.79 | | |
| **Discounted costs** | **140,000** | **37,200** | **34,400** | **31,600** | **243,200** | |
| | | | | | | |
| Benefits | 0 | 200,000 | 200,000 | 200,000 | | |
| Discount factor | 1 | 0.93 | 0.86 | 0.79 | | |
| **Discounted benefits** | **0** | **186,000** | **172,000** | **158,000** | **516,000** | |
| | | | | | | |
| Discounted benefits - costs | (140,000) | 148,800 | 137,600 | 126,400 | **272,800** | ← **NPV** |
| Cumulative benefits - costs | (140,000) | 8,800 | 146,400 | 272,800 | | |
| | | | | | | |
| **ROI** → | **112%** | | | | | |
| | **Payback In Year 1** | | | | | |

Note: See the template called business_case_financials.xls

# Return on Investment

- **Return on investment** (ROI) is calculated by subtracting the project costs from the benefits and then dividing by the costs

  ROI = (total discounted benefits - total discounted costs) / discounted costs
- The higher the ROI, the better
- Many organizations have a **required rate of return** or minimum acceptable rate of return on investment for projects
- **Internal rate of return** (IRR) can by calculated by finding the discount rate that makes the NPV equal to zero

# Payback Analysis

- Another important financial consideration is payback analysis
- The **payback period** is the amount of time it will take to recoup, in the form of net cash inflows, the total dollars invested in a project
- Payback occurs when the net cumulative discounted benefits equals the costs
- Many organizations want IT projects to have a fairly short payback period