

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

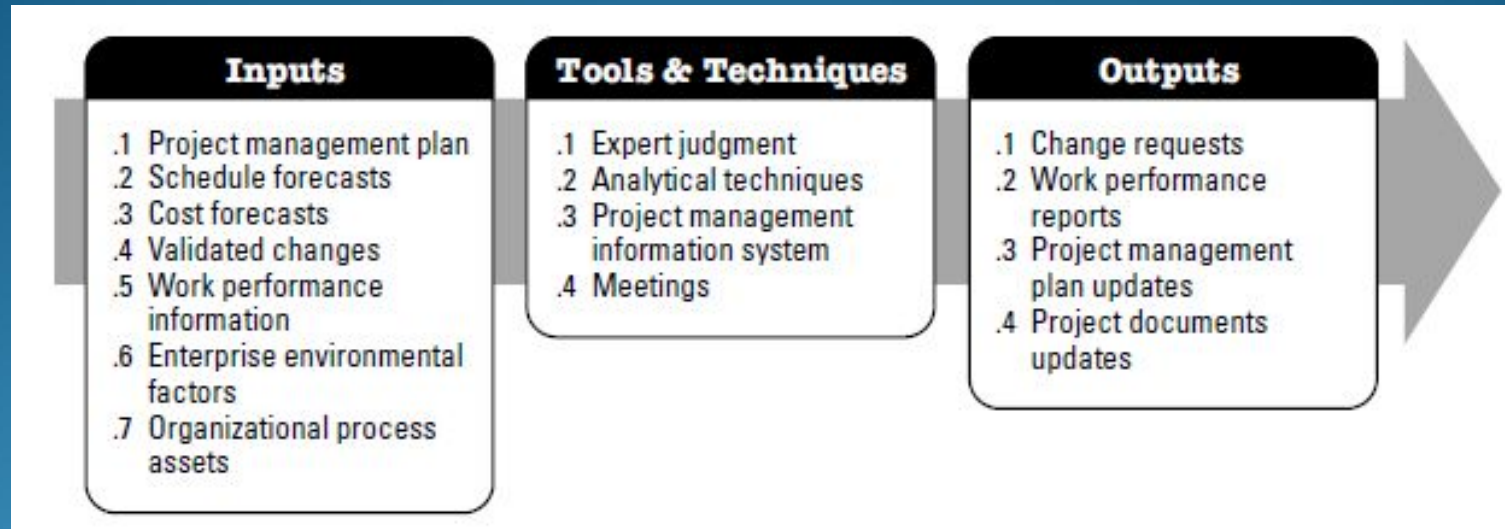
Direct and Manage Project Work

- 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
$$\text{ROI} = (\text{total discounted benefits} - \text{total discounted costs}) / \text{discounted costs}$$
- 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 be 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