Contents

1 Project Integration Management

1.1 Introduction

Project Integration Management

Project Integration Management Spans the 5 PM Process Groups of:

1. Initiating
2. Planning
3. Executing
4. Monitoring & Controlling
5. Closing

It is the first of the 9 PM Knowledge Areas that we will cover.

Develop Project Charter

The Project Charter is the document that formally authorises the project. The Project Manager should be appointed at this stage Projects are usually chartered and authorised external to the project organisation by an enterprise, government agency, a program organisation, or a portfolio organisation due to:

- Market Demand (e.g. Music Festival)
- Business Need (e.g. Product Launch, Team Building)
- Customer Request (e.g. Wedding, Conference)
- Technological Advance
- Legal Requirement (e.g. Training)
- Social Need (e.g. Community Event)

Develop Project Charter

Developing a charter links the project with the overall goals and strategy of the company (if you can't link it, why do it?) Project Charter is primarily concerned with:

- Documenting business need
- Project justification
- Current understanding of customers requirements
- Product, service, or result to satisfy the above

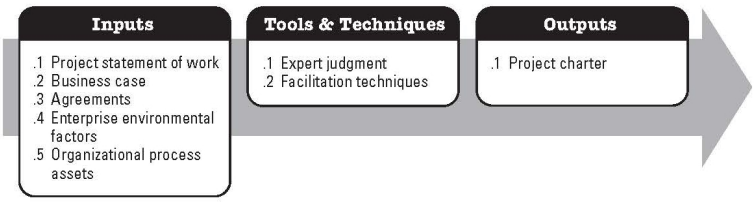

Figure 4-2. Develop Project Charter: Inputs, Tools and Techniques, and Outputs

Develop Project Charter

The project charter should address the following:

- Requirements that satisfy customer, sponsor, and other stakeholders needs, wants and expectations
- Business Needs, high level project description
- Project purpose or justification
- Assigned Project Manager and authority level
- Summary milestone schedule
- Stakeholder influences
- Functional organisation & their participation
- Organisational, Environmental and External assumptions and constraints
- Business Case justifying project; ROI etc
- Summary Budget

Develop Project Charter

Inputs: Refer to Book for details of:

- Contract
- Project Statement of Work
- Enterprise Environmental Factors
- Organizational Process Assets

Expert Judgment

Expert Judgment refers to the solicitation of expert advise from individuals, groups or organisations that specialise in the project area under assessment. For a Project Manager this could involve seeking advise from the CFO in relation to budgets and cash flow projections; it could also involve seeking advise from the CEO in relation to the strategic significance of the project or project options It may also involve employing specialists from outside the organization (consultants)

Other Tools for Project Charter

Tools:

- Project Selection Methods: Allows reader to understand why a particular project was selected
- Project Management Methodology: How will be project be managed and controlled
- Project Management Information Systems: How will information be distributed and controlled

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Project Selection Methods

Most companies cannot execute all project proposals; selection methods help to select one project over another in a logical, rational and unbiased manner. They can be:

1. Mathematical models
2. Benefit measurement methods
    - Scoring Models
    - Cash Flow Analysis Techniques
        - Payback Period
        - Discounted Cash Flow
        - NPV
        - IRR
    - Cost-Benefit Analysis

Mathematical Models

Complicated mathematical formula and algorithms. Examples include (amongst others):

- Linear
- Dynamic
- Integer
- Non Linear
- Single or Multi Objective

In general these are solved using specialist software packages

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CBA - Cost Benefit Analysis

Simple in Principle

- Define the set of feasible, mutually exclusive alternatives to be compared
- Define the planning horizon
- Develop the cost savings and benefit-disbenefit profiles in monetary terms for each alternative
- Specify the MARR
- Compare the Alternatives using a specified measure of worth, such as the benefit-cost ratio or the present worth of benefits/costs
- Perform supplementary analyses
- Select preferred alternative

Project Selection Methods

Scoring Models (may be weighted scoring)

- Can be simple, effective and easily understood
- Example of weighted scoring below

Criteria	**Weight**	**Project A**	**Project B**	**Project C**
Profit Potential	5	5	5	3
Marketability	3	4	3	4
Ease of Execution	1	4	3	2
Weighted Score		**41**	37	29

PM Methodology & PM Information System

May look similar, but very different **Methodologies** are PMBOK or similar: May be formal (PMBOK) or an informal technique **Information Systems** are generally software tools and techniques that provide details of resources & activities; allow the distribution of information; and assist in scheduling and tracking. Methodologies utilize information systems.

Project Charter Pro-forma

Project Charter Pro-forma

ABC Contracting Limited
Project Charter

PROJECT IDENTIFICATION

Project Name: _____ Date:_____

Project Manager: _____ Project Sponsor: _____

*Enter the **Project Name**. Enter the current **Date**. Enter the name of the **Project Sponsor**. Enter the name of the assigned **Project Manager**.*

PROJECT DESCRIPTION

Project Background:

Explain the events leading up to the project request. Describe any related projects that have or could have led to this project. Identify who has been involved, how they have been involved, and the current state of the project.

Project Objective:

*The **Project Objectives** identified in the Proposed Solution should serve as the basis for this Section. Be explicit as to how the expected outcome of the project will benefit the organization and help it achieve its business needs or fix the business problem. Provide details relative to the business cost benefit. It may be advantageous to provide a one-to-one correlation as follows:*

Business Need or Problem:	*Project Objectives:*
► *Business Need 1*	► *Project Objective 1*
► *Business Need 2*	► *Project Objective 2*
	► *Project Objective 3*

In developing this list, consider that a business need may be addressed by multiple project objectives and the same project objective may address multiple business needs.

Critical Success Factors:

*Provide a list of at least five (5) project **Critical Success Factors**. Critical success factors are outcomes that must be achieved in order for the project to be considered a success. They should correlate with the **Project Objectives** described in the section above.*

Required Resources:

List the names of all individuals needed to perform Project Initiation and whose participation must be approved by Performing Organization Management.

Constraints:

*List any known factors that limit the project's execution. The most frequent **Constraint** is the project end date. For each **Constraint** listed, be sure to elaborate on how it is limiting the project and how the project would benefit from its removal.*

Project Authority:

*This section of the Project Charter describes the levels of **Authority** to the project. It identifies who is involved with the project and their expected authority, who has the ability to resolve decision conflicts, and who will provide overall direction to project efforts. This section should contain, at a minimum, the roles and responsibilities of the Project Team and the Stakeholders. It should also identify any known governing body or steering committee to which the project is accountable and how they are accountable.*

PROJECT CHARTER APPROVAL
Project Sponsor Name: _____
Action: Approve:☒ Reject:☒
Comments: _____
_____
_____
_____
Project Sponsor Signature: _____
Date: _____

*Enter the **Project Sponsor Name**. The Sponsor should indicate approval or rejection of the Project Charter by checking the **Approve** or **Reject** box. If the Sponsor is rejecting the charter, he/she must indicate the reason in the **Comments** field.*
*The Sponsor indicates final acceptance of the Project Charter (including securing individual resources) by providing his/her signature on the **Project Sponsor Signature** line and the approval date on the **Date** line.*

AGREEMENT TO SECURE REQUIRED RESOURCES
Approver Name:_____ Role: _____
Approver Comments:_____
_____
_____
_____
Approver Signature: _____
Date: _____

*Enter the **Approver Name** and **Role**. The approver is a member of Performing Organization Management. He/she indicates his/her agreement to provide required resources for the project by providing his/her **Approver Signature** and the approval **Date**.*

Project Charter Approval Pro-forma

Project Scope Statement Proforma

1.2 Develop Project Management Plan

Project Integration Management

Note: This is incorrectly titled in the book Part of the Planning Process Group

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Develop Project Management Plan

Output is the Project Management Plan

- The PM Plan is a top level document that details how the project will be managed.
- The PM plan is managed throughout the Project

It is a 'live' document. (Version Control is vital) Changes to the PM plan are made through the Integrated Change Control Process The level of information contained within the plan will vary with the complexity of the project The Project Plan is likely to contain processes and procedures that are common to a company's project portfolio or project programme

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ABC Contracting Limited
Project Scope Statement

PROJECT IDENTIFICATION

Project Name: _____ Date: _____

Project Sponsor: _____ Project Manager: _____

*Enter the **Project Name**. Enter the current **Date**. Enter the name of the **Project Sponsor**. Enter the name of the assigned **Project Manager**.*

A. BUSINESS NEED/PROBLEM:

*State the **Business Need/Problem** the project will address. This should be consistent with the other documentation.*

B. PROJECT OBJECTIVES (FROM PROJECT CHARTER):

*Include a description of the deliverables that will be produced as part of the project. Be specific when describing what is **in scope and out of scope**. Note: This section will most likely be several pages in length.*

C. PROJECT RESULTS:

State what will signify that the project is complete. Include the measures that will determine whether or not the project was successful from a cost, schedule and quality standpoint.

D. PROJECT CONTENT:

*Describe the **Contents** of the project, listing all deliverables of the project in detail. Also include items NOT in scope.*

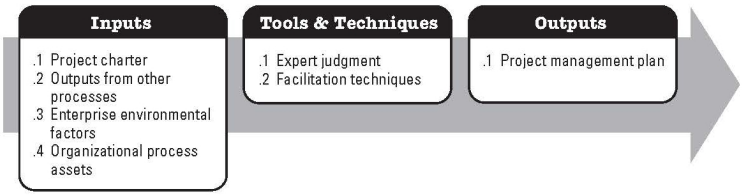

Figure 4-3. Develop Project Charter Data Flow Diagram

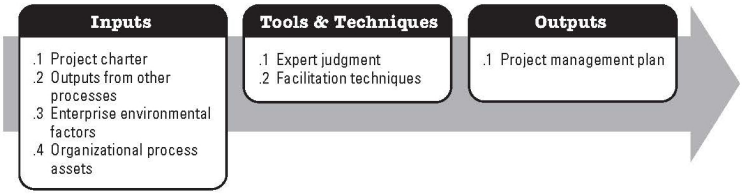

Figure 4-3. Develop Project Charter Data Flow Diagram

Develop Project Management Plan
Note: This is incorrectly titled in the book

Project Management Plan

The Project Management Plan defines how the project is executed, monitored & controlled, and closed.

- PM plan can be summary level or detailed and can be comprised of one or more subsidiary plans and/or other components.
- For construction projects, the PM Plan usually does comprise of subsidiary plans

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Project Management Plan

- Defines the processes that will be used for the project
  - States the degrees of execution of each process; the tools & techniques from each process; Essential Inputs & Outputs
- Documents the dependencies and interactions of the PM processes used to manage the project
- Methods for executing the work to fulfill objectives
- Methods of monitoring and controlling change
- Methods to perform configuration management
- Methods for determining and maintaining the validity of performance baselines
- Communication needs of the stakeholders and techniques to fulfill those needs
- Project Life Cycle
- Project Phases for multi-phase projects
- Management reviews of issues and pending decisions
  - Live Document. . .

Project Management Plan **Subsidiary Plans**

Typically:

- Project Scope Management Plan
- Schedule Management Plan
- Cost Management Plan
- Quality Management Plan
- Process Improvement Plan
- Staffing Management Plan
- Communication Management Plan
- Risk Management Plan
- Procurement Management Plan

Project Management Plan **Other Elements**

- Milestone List
  - Vital on construction projects
- Resource Calendar
  - Identifies working/non-working days in general and for individual resources
- Schedule Baseline
- Cost Baseline
- Quality Baseline
- Risk Register

Project Management Plan **Dependencies**

The top level Project Management Plan contains elements of each of the individual subsidiary plans. One of the key elements of the top-level plan is that it 'maps out' the dependencies between the various processes.

- i.e. if you identify a schedule overrun (Schedule Management) you can quickly ascertain the impacts in other plans and processes such as the cost management plan, procurement management plan etc.
- Any and all changes must be run through the change control process.

Develop PMP **Tools and Techniques**

Expert Judgment:

- Tailor the process to meet project needs
- Develop technical and management details to be included in the plan
- Determine resources and skill levels needed
- Define the level of configuration management to apply
- Determine which project documents will be subject to change control processes
  - Drawings, specs, minutes of meetings

Configuration Management System and Change Control System

Both are subsets of the overall PM information system. Configuration Management System consists of processes:

- for submitting proposed changes
- that include a tracking system for reviewing and approving or rejecting changes
- that define approval levels for authorising changes
- that define a method of validating approved changes

Normally the Configuration Management System includes the change control system - however sometimes (rarely) it is separated

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Configuration Management System

The Configuration Mgt System is a collection of formal procedures used to apply technical and administrative direction and surveillance to:

- Identify and document the functional and physical characteristics of a product or component
  - Design Drawings, Specs, etc.
- Control any changes to these characteristics
  - Changes to design (change in theme) or changes to spec (change in technology)
- Record and Report each change and its implications
  - Necessary for final accounts (read the contract)
  - May have cost, safety or schedule implications
- Support the audit of the products or components to verify conformance to requirements

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Change Control System

Change Control System is a collection of documented procedures that define how project deliverables and documentation are:

- Controlled, Changed, and Approved.

Control

- Who has the documents and ensuring the correct version is where it should be.
- Normally controlled documents have a formal list of recipients - 'Controlled Copies' are normally marked as such.
- May define a requirement that all controlled copies of superseded designs and specs are returned to the main contractor or employer for destruction;

There is no point in having the latest version of a detail drawing sitting in a filing cabinet at the head office of a large construction firm; it needs to be on site also. If you are looking at version A of a document how do you know there is not a version B?

Configuration and Change Control Systems

Absolutely Vital in any project execution.

- In event projects it is often carried out in an ad-hoc manner until point is reached where it can no longer be ignored (usually as the final account approaches)
- How many times have you seen Project Managers, Ops Managers etc. referring to the site diary to determine when someone approved a change, and the costs associated? (indicative of systems failure)

UltraApps Issue Manager

UltraApps Issue Manager

Issue Manager is an Open Source, web based solution for Configuration Control http://www.ultraapps.com As it is open source, it can be purchased and modified to meet the specific requirements of an organisation. It does not do documentation control, although it can assist in distribution. It seems that it is no longer supported. Other systems listed on http://en.wikipedia.org/wiki/Comparison_of_issue-tracking_systems

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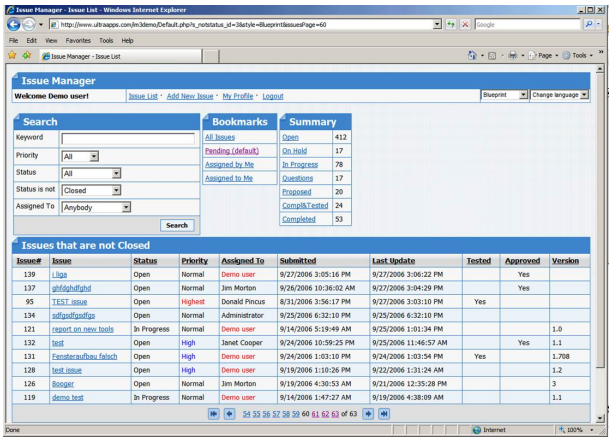
Many of the issue management systems available have been developed for the software industry. I have found that, with a little tweeking, these systems can be suitable for other types of projects. The Apache Bloodhound system appears to be quite promising, and has the advantage of being open source and free. See http://bloodhound.apache.org/



PROJECT NUMBER: 2148			DOCUMENT REF: 2148 Mutton Island EIS D - Non-Technical Summary.doc		
D	Final	P Salmon	H Watson / P Fogarty	P Fogarty	1/03/2006
C	Third Draft to Client	P Salmon	H Watson / P Fogarty	P Fogarty	01/02/2006
B	Second Draft to Client	P Salmon	H Watson/ P Fogarty	P Fogarty	03/10/2005
A	First Draft to Client	P Salmon	H Watson / MF Garrick/ P Fogarty	P Fogarty	16/09/2005
Revision	**Purpose / Description**	**Originated**	**Checked**	**Authorised**	**Date**
		TOBIN / NICHOLAS O'DWYER and ENTEC			

Documentation Control

Documentation Issue and Approval Extracted from Environmental Impact Statement, Mutton Island Upgrade Project

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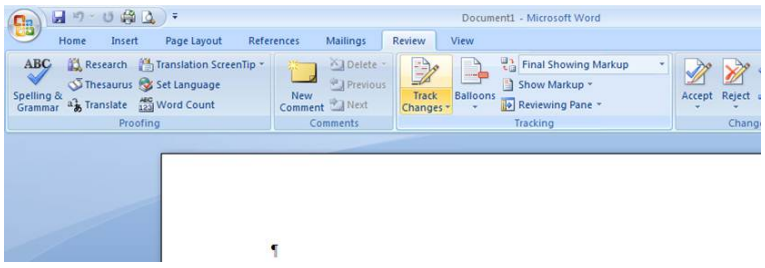
MS Word - Tracking Changes

Used by Lawyers all the time May be useful for your dissertation Very Useful for changes to specification etc. Document can be sent to client for them to approve changes.



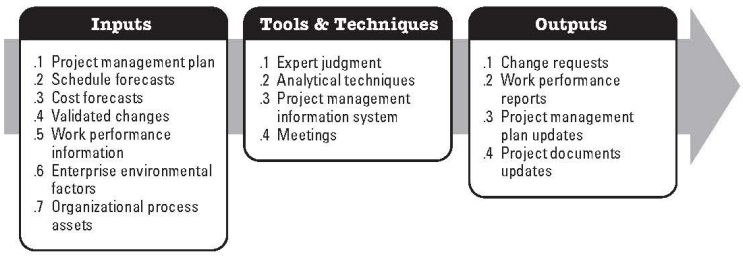


Figure 4-8. Monitor and Control Project Work: Inputs, Tools & Techniques, and Outputs

1.3 Monitor and Control Project Work

Monitor and Control Project Work
Part of the Monitoring and Controlling Process Group

Monitor and Control Project Work
Involves:

- Comparing Actual Performance against Planned Project Performance and PM Plan
- Assessing Performance to determine if corrective or preventative actions are required
- Analysing, Tracking and Monitoring Project Risks; and documenting findings
- Maintaining Accurate Information and ensuring that it can be retrieved in a timely manner
- Providing Information for Status Reporting
- Providing Forecasts to cost and schedule models and plans
- Monitoring the implementation of approved changes

Monitor and Control Project Work
Inputs:

- Project Management Plan
- Performance Reports
- Enterprise Environmental Factors
- Organisational Process Assets
  - Financial Systems (Purchasing, et al)

Monitor and Control Project Work
Tools and Techniques:

- Expert Judgement
- Project Management Methodology
  - Methodology used by the PM team to ensure that the project is being executed in accordance with the PM Plan
- Project Management Information System
  - Also used for forecasts
- Earned Value Management System
  - Used to determine current project status, past performance and likely future performance

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Monitor and Control Project Work
Outputs:

- Change Requests
  - Corrective Actions - Documented recommendations required to bring expected future project performance into conformance
  - Preventative Actions - Documented recommendations that reduce the probability of non-conformance events
  - Recommended Defect Repair - Repair of Defects or non-conformances identified during Quality Management
- Project Document Updates - Forecasts
  - ECT, EAC, Projected Completion Date etc.
- Project Management Plan Updates

1.4 Perform Integrated Change Control

Perform Integrated Change Control
Part of the Monitoring and Controlling Process Group

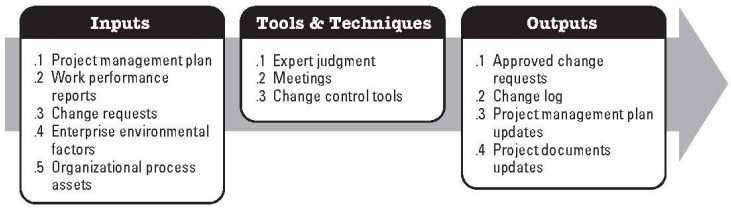

Figure 4-10. Perform Integrated Change Control: Inputs, Tools & Techniques, and Outputs

Perform Integrated Change Control

Integrated Change Control is required throughout the project lifecycle PM Plan, Scope Statement, Specifications need to be controlled and maintained throughout the course of the project.

- **Progressive Elaboration**

Changes requests can be either **rejected** or **approved**

It is important to deal with all requests. Generally putting items off until a later date is not advised, as it tends to lead to backlogs of work.

Perform Integrated Change Control

Change Management Activities:

- Identifying that a change needs to occur or has occurred
- Influencing the factors that circumvent integrated change control so that only approved changes are implemented
  - Scope Creep
- Reviewing and approving requested changes
- Managing the approved Changes when and as they occur
- Maintaining the integrity of baselines by releasing only approved changes
  - Approved changes typically modify baseline information
- Reviewing and Approving all recommended corrective and preventative actions

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Perform Integrated Change Control

Change Management Activities:

- Coordinating change across the entire project
  - Controlling and Updating Scope, Cost, Budget, etc., based upon approved changes

- One change can effect a multitude of documents
- Documenting the complete impact of requested changes
  - It is not always possible to predict ahead of time what the exact impact of a change may be. An initial estimate of 2 weeks delay may prove to be inaccurate.

Perform Integrated Change Control
Proposed Changes can require new or revised:

- Cost estimates
- Schedule activity
- Schedule dates
- Resource requirements
- Risk analysis and response

Also may require modification to:

- Scope
- Deliverables
- Etc.

Perform Integrated Change Control
Every documented requested change must be either accepted or rejected.:

- Requires persons in authority
- Change Review Boards may be formed

Perform Integrated Change Control
Inputs:

- Project Management Plan
- Work Performance Information
- Change Requests
- Enterprise Environmental Factors
- Organisational Process Assets
  - Procedures for change control, etc.

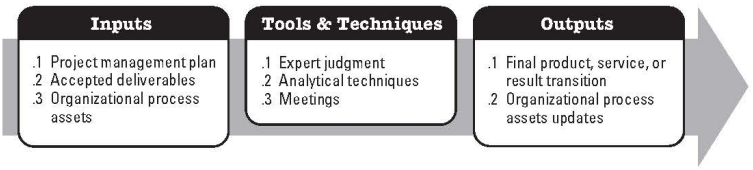

Figure 4-12. Close Project or Phase: Inputs, Tools & Techniques, and Outputs

Perform Integrated Change Control
Tools and Techniques:

- Expert Judgement
  - Approval Authorities are assumed to posses expert judgement. . . .
- Change Control Meetings
- Both Will normally require Information Systems

Perform Integrated Change Control
Outputs:

- Change Request Status Updates
  - Approved Change Requests
  - Rejected Change Requests
  - Approved Corrective Actions
  - Approved Preventative Actions
  - Approved Defect Repair
- Project Management Plan Updates
- Project Document Updates

1.5 Close Project or Phase

Close Project or Phase
Part of the Closing Process Group

Close Project

Close Project involves performing the project closure portion of the PM Plan. The 'Close Project' process can be applied to the project as a whole but may also be applied to a project phase Usually involves verifying and documenting project deliverable acceptances However sometimes it involves documenting why a project was terminated before completion Two main activities

- Administrative Closure Procedure
- Contract Closure Procedure

Close Project

Administrative Closure

- Collection of Project Records
- Success/Failure Analysis
- Lessons Learned
- Archiving of Project Information

Contract Closure

- Activities required to settle or close the contract
  - TOC; Completion Cert; Defects Liability Period, etc.
- Requires verification of project (product) acceptance

Close Project

Inputs

- Project Management Plan
- Accepted Deliverables
- Contract Documentation
- Organisational Process Assets

Close Project

Tools and Techniques:

- Expert Judgement
  - Required to develop administrative and contract closure procedures
  - Supports Required
- Processes to assist in verification of deliverables, scope etc.
- Information systems, Records, etc to required to perform administrative and contract closure

---

Close Project

Outputs (PMBOK 3rd Edition)

- Administrative Closure Procedure
  - Activities, Roles and Responsibilities of Project Team Members involved with closing the project
- Handover of Works
- O&M Manuals etc
- Stakeholder Approvals (acceptance testing)
- Deliverable Verification
- Contracts Closure Procedure
  - Step-by-Step methodology that addresses the terms and conditions of the contract and any required completion or exit criteria

---

Close Project

Outputs (PMBOK 3rd Edition)

- Final Product, Service or Result
  - Formal Acceptance and Handover
  - Make sure a formal acceptance document is produced and dated accordingly
- LD exposure risk
- Organisational Process Assets (Updates)
  - Formal Acceptance Documentation
  - Project Files
  - Project Closure Documents
  - Historical Information

The 3rd Edition took a more in-depth view of closure. It is included here for information.

Next Lecture

Reading: 'A Guide to the Project Management Body of Knowledge' Chapter 6 - Project Time Management

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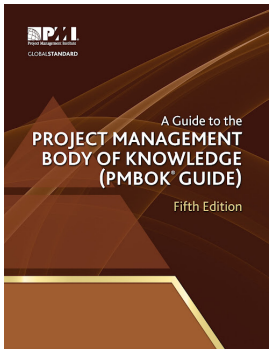
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