Project Management Professional (PMP)

Section (4)
Project Integration Management

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Project Integration Management

Identify, Define, Combine, Unify, and Coordinate the various processes and project management activities

- Includes:
  - The characteristics of unification, consolidation, communication & integrative actions that is crucial to controlled project execution through completion, successfully managing stakeholder expectations & meeting requirements
  - Making choices about resource allocation.
  - Making trade-offs among competing objectives and alternatives.
  - Managing the interdependencies among the project management Knowledge Areas.

Project Integration Management

- The Project Integration Management processes:
  - 4.1 Develop Project Charter (**Initiating**)
  - 4.2 Develop Project Management Plan (**Planning**)
  - 4.3 Direct and Manage Project Work (**Executing**)
  - 4.4 Monitor and Control Project Work (**Monitor & Controlling**)
  - 4.5 Perform Integrated Change Control (**Monitor & Controlling**)
  - 4.6 Close Project or Phase (**Closing**)

These processes interact with each other and with processes in other Knowledge Areas

Figure 4-1. Project Integration Management Overview

Project Integration Management

- The processes interact in **Integration Management** as follows:
  - **Cost estimate** needed for **a contingency plan** involves integrating the processes in the **Project Cost**, **Project Time** and **Project Risk** Management.
  - The project deliverables may also need integrating with ongoing operations of the performing organization
  - Project Integration Management includes the activities needed to manage project documents to ensure consistency with the project management plan and product, service, or capability deliverables.

4.1 Develop Project Charter

- The process of developing a document that formally authorizes the existence of a project or project phase and provides the project manager with the authority to apply organizational resources to project activities

  - The key benefit of this process is:
    1. A well-defined project start
    2. Project boundaries
    3. Creation of a formal record of the project
    4. A direct way for senior management to formally accept and commit to the project.

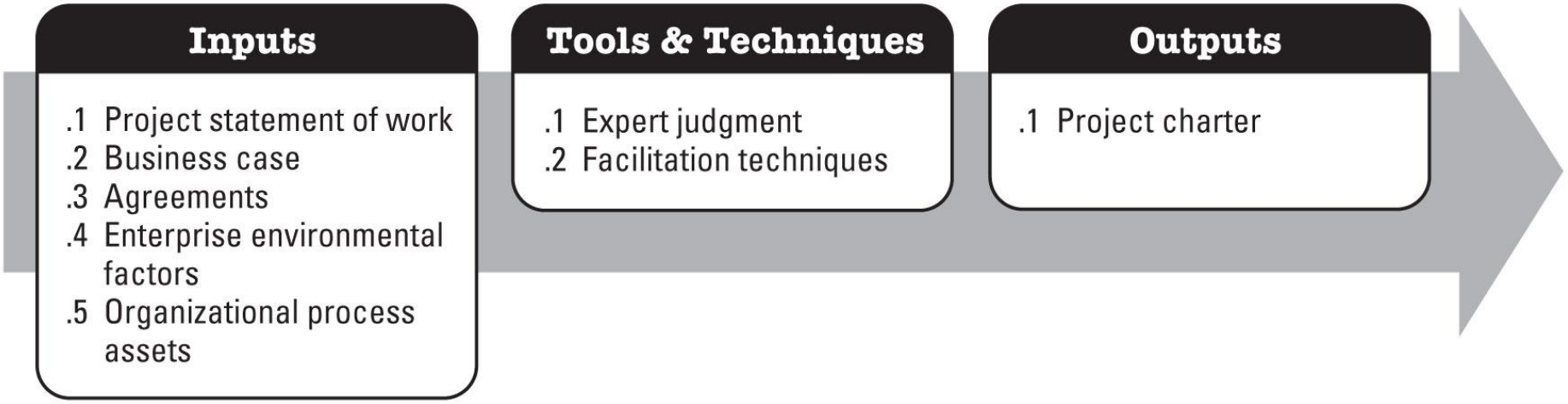

Figure 4-2. Develop Project Charter: Inputs, Tools and Techniques, and Outputs

4.1.1 Develop Project Charter: Inputs

- 4.1.1.1 Project Statement of Work (SOW)
- 4.1.1.2 Business Case: describes
- 4.1.1.3 Agreements
- 4.1.1.4 Enterprise Environmental Factors (EEFs) (Out: 2.1.5)
- 4.1.1.5 Organizational Process Assets (OPAs) (Out: 2.1.4)

4.1.1 Develop Project Charter: Inputs

4.1.1.1 Project Statement of Work (SOW)

- The project statement of work (SOW) is a **narrative description** of products, services, or results to be delivered by a project.
  - Internal Projects:
    - The project initiator or sponsor provides the **statement of work** based on business needs, product, or service requirements.
  - External Projects:
    - The statement of work can be received from the **customer** as part of a bid document, (a request for proposal (**RFP**), request for information (**RFI**), or request for bid (**RFB**)) or as part of a contract.

4.1.1 Develop Project Charter: Inputs

- 4.1.1.2 Business Case: describes
  - The necessary information to determine whether or not the project is worth the required investment, The business case is created as a result of one or more of the following:
    - Market demand
    - Customer request
    - Legal requirement
    - environmental impact
    - Organizational need
    - Technological advance
    - Ecological impacts
    - Social need

4.1.1 Develop Project Charter: Inputs

- 4.1.1.3 Agreements
  - Agreements are used to define initial intentions for a project.
  - Agreements may take the form of
    - Contracts
    - memorandums of understanding (MOUs)
    - service level agreements (SLA)
    - letter of agreements — letters of intent
    - verbal agreements — email or other written agreements.
  - Contract is used when a project is being performed for an external customer.

4.1.1 Develop Project Charter: Inputs

- 4.1.1.4 Enterprise Environmental Factors (EEFs) (Out: 2.1.5)
  - The enterprise environmental factors that can influence the Develop Project Charter process include:
    - Governmental standards, industry standards, or regulations
    - Organizational culture and structure
    - Marketplace conditions.

4.1.1 Develop Project Charter: Inputs

- 4.1.1.5 Organizational Process Assets (OPAs) (Out: 2.1.4)
  - The organizational process assets that can influence the Develop Project Charter process include:
    - Organizational standard processes, policies, and process definitions
    - Templates
    - Historical information and lessons learned knowledge base

4.1.2 Develop Project Charter: Tools and Techniques

- 4.1.2.1 Expert Judgment
- 4.1.2.2 Facilitation Techniques

4.1.2 Develop Project Charter: Tools and Techniques

4.1.2.1 Expert Judgment

- This technique used to assess the inputs used to develop the project charter.
- Expert judgment is applied to all technical and management details during this process, including:
  - Other units within the organization
  - Consultants, Industry groups
  - Stakeholders, including customers or sponsors
  - Professional and technical associations
  - Subject matter experts (SME)
  - Project management office (PMO)

4.1.2 Develop Project Charter: Tools and Techniques

- 4.1.2.2 Facilitation Techniques
  - Facilitation techniques have broad application within project management processes and guide the development of the project charter.
  - Brainstorming, conflict resolution, problem solving, and meeting management are examples of key techniques used by facilitators to help teams and individuals accomplish project activities.

4.1.3 Develop Project Charter: Outputs

4.1.3.1 Project Charter

- The document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities, Include the following:
  - Project purpose or justification
  - High-level requirements
  - High-level description
  - High-level risks
  - Summary budget
  - Project approval requirements
  - Measurable objectives
  - Assumptions and constraints
  - High-level boundaries
  - Summary milestone schedule
  - Stakeholder list
  - PM responsibility & authority level

4.2 Develop Project management Plan

- The process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan
  - The key benefit of this process is:
    - A central document that defines the basis of all project work.

4.2.1 Develop Project Management Plan: Inputs

- 4.2.1.1 Project Charter (Out: 4.1)
- 4.2.1.2 Outputs from Other Processes (Outs: 5:13)
- 4.2.1.3 Enterprise Environmental Factors (Out: 2.1.5)
- 4.2.1.4 Organizational Process Assets (Out: 2.1.4)

4.2.1 Develop Project Management Plan: Inputs

- 4.2.1.1 Project Charter (Out: 4.1)
  - The size of the project charter varies depending on the complexity of the project and the information known at the time of its creation.
  - At a minimum, the project charter should define the high-level boundaries of the project.
  - The project manager uses the project charter as the starting point for initial planning throughout the Initiating Process Group.

4.2.1 Develop Project Management Plan: Inputs

- 4.2.1.2 Outputs from Other Processes (Outs: 5:13)
  - Outputs from many of the other processes described in Sections 5 through 13 are integrated to create the project management plan.
  - Any baselines and subsidiary plans that are an output from other planning processes are inputs to this process. In addition, changes to these documents may necessitate updates to the project management plan.

4.2.1 Develop Project Management Plan: Inputs

- 4.2.1.3 Enterprise Environmental Factors (Out: 2.1.5)
  - The enterprise environmental factors that can influence the Develop Project Management Plan process include, but are not limited to:
    - Governmental or industry standards.
    - Project management body of knowledge for vertical market
    - Project management information system
    - Organizational structure, culture, management practices, and sustainability
    - Infrastructure
    - Personnel administration

4.2.1 Develop Project Management Plan: Inputs

- 4.2.1.4 Organizational Process Assets (Out: 2.1.4)
  - The organizational process assets that can influence the Develop Project Management Plan process include, but are not limited to:
    - Standardized guidelines, work instructions, proposal evaluation criteria, and performance measurement criteria
    - Project management plan template.
    - Change control procedures
    - Project files from previous projects
    - Historical information and lessons learned knowledge base
    - Configuration management knowledge base

4.2.2 Develop Project Management Plan: Tools and Techniques

- 4.2.2.1 Expert Judgment.
- 4.2.2.2 Facilitation Techniques.

4.2.2 Develop Project Management Plan: Tools and Techniques

- 4.2.2.1 Expert Judgment
  - When developing the project management plan, expert judgment is utilized to:
    - Tailor the process to meet the project needs
    - Develop technical and management details
    - Determine resources and skill levels needed to perform project work
    - Define the level of configuration management to apply on the project
    - Prioritize the work on the project to ensure the project resources are allocated to the appropriate work at the appropriate time.

4.2.2 Develop Project Management Plan: Tools and Techniques

- 4.2.2.2 Facilitation Techniques
  - Facilitation techniques have broad application within project management processes and are used to guide the development of the project management plan.
  - **Brainstorming, conflict resolution, problem solving,** and **meeting management** are key techniques used by facilitators to help teams and individuals achieve agreement to accomplish project activities.

4.2.3 Develop Project Management Plan: Outputs

- 4.2.3.1 Project Management Plan
  - The project management plan is the document that describes how the project will be executed, monitored, and controlled.
  - It integrates and consolidates all of the subsidiary plans and baselines from the planning processes.
  - Project baselines include:
    1. Scope baseline (Section 5.4.3.1).
    2. Schedule baseline (Section 6.6.3.1).
    3. Cost baseline (Section 7.3.3.1).

4.2.3 Develop Project Management Plan: Outputs

4.2.3.1 Project Management Plan

Subsidiary plans include:

- Scope management plan (Section 5.1.3.1).
- Requirements management plan (Section 5.1.3.2).
- Schedule management plan (Section 6.1.3.1).
- Cost management plan (Section 7.1.3.1).
- Quality management plan (Section 8.1.3.1).
- Process improvement plan (Section 8.1.3.2).
- Human resource management plan (Section 9.1.3.1).
- Communications management plan (Section 10.1.3.1).
- Risk management plan (Section 11.1.3.1).
- Procurement management plan (Section 12.1.3.1).
- Stakeholder management plan (Section 13.2.3.1).

Project Management Plan	Project Documents	
Change management plan	Activity attributes	Project staff assignments
Communications management plan	Activity cost estimates	Project statement of work
Configuration management plan	Activity duration estimates	Quality checklists
Cost baseline	Activity list	Quality control measurements
Cost management plan	Activity resource requirements	Quality metrics
Human resource management plan	Agreements	Requirements documentation
Process improvement plan	Basis of estimates	Requirements traceability matrix
Procurement management plan	Change log	Resource breakdown structure
Scope baseline • Project scope statement • WBS • WBS dictionary	Change requests	Resource calendars
Quality management plan	Forecasts • Cost forecast • Schedule forecast	Risk register
Requirements management plan	Issue log	Schedule data
Risk management plan	Milestone list	Seller proposals
Schedule baseline	Procurement documents	Source selection criteria
Schedule management plan	Procurement statement of work	Stakeholder register
Scope management plan	Project calendars	Team performance assessments
Stakeholder management plan	Project charter Project funding requirements Project schedule Project schedule network diagrams	Work performance data Work performance information Work performance reports

4.3 Direct and Manage Project Work

- Direct and **Manage Project Work** is the process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.

  - The key benefit of this process is
    - It provides **overall management of the project work.**

4.3.1 Direct and Manage Project Work: Inputs

- 4.3.1.1 Project Management Plan (Out: 4.2.3.1)
- 4.3.1.2 Approved Change Requests (Out: 4.5)
- 4.3.1.3 Enterprise Environmental Factors (EEFs) (Out: 2.1.5)
- 4.3.1.4 Organizational Process Assets (OPAs) (Out: 2.1.4)

4.3.1 Direct and Manage Project Work: Inputs

- 4.3.1.1 Project Management Plan (Out: 4.2.3.1)
  - The project management plan contains subsidiary plans concerning all aspects of the project.
    - Those subsidiary plans related to project work include:
      - Scope management plan (Section 5.1.3.1).
      - Requirements management plan (Section 5.1.3.2).
      - Schedule management plan (Section 6.1.3.1).
      - Cost management plan (Section 7.1.3.1).
      - Stakeholder management plan (Section 13.2.3.1).

4.3.1 Direct and Manage Project Work: Inputs

- 4.3.1.2 Approved Change Requests (Out: 4.5)
  - Approved change requests are an output of the Perform Integrated Change Control process and include those requests reviewed and approved for implementation by **the change control board (CCB).**
  - The approved change request may be a corrective action, a preventative action or a defect repair.
  - Approved change requests are scheduled and implemented by the project team, and can impact any area of the project or project management plan.

4.3.1 Direct and Manage Project Work: Inputs

- 4.3.1.3 Enterprise Environmental Factors (EEFs) (Out: 2.1.5)
  - The Direct and Manage Project Work process is influenced by enterprise environmental factors that include:
    - Organizational, company, or customer culture and structure of the performing or sponsor organizations.
    - Infrastructure.
    - Personnel administration .
    - Stakeholder risk tolerances.
    - Project management information system

4.3.1 Direct and Manage Project Work: Inputs

- 4.3.1.4 Organizational Process Assets (OPAs) (Out: 2.1.4)
  - The organizational process assets that can influence the Direct and Manage Project Work process include:
    - Standardized guidelines and work instructions.
    - Communication requirements defining allowed communication media, record retention, and security requirements;
    - Issue and defect management procedures defining issue and defect controls, issue and defect identification and resolution, and action item tracking;
    - Process measurement database used to collect and make available measurement data on processes and products;
    - Project files from previous projects.
    - Issue and defect management database(s) containing historical issue and defect status, control information, issue and defect resolution, and action item results.

4.3.2 Direct and Manage Project Work: Tools and Techniques

- 4.3.2.1 Expert Judgment
- 4.3.2.2 Project Management Information System (PMIS)
- 4.3.2.3 Meetings

4.3.2 Direct and Manage Project Work: Tools and Techniques

- 4.3.2.1 Expert Judgment
  - Expert judgment is used to assess the inputs needed to direct and manage execution of the project management plan.
  - Such judgment and expertise are applied to all technical and management details during this process, including:
    - Other units within the organization
    - Consultants and other subject matter experts (internal and external)
    - Stakeholders, including customers, suppliers, or sponsors
    - Professional and technical associations.

4.3.2 Direct and Manage Project Work: Tools and Techniques

- 4.3.2.2 Project Management Information System (PMIS)
  - The project management information system, which is part of the environmental factors, provides access to tools, such as:
    - A scheduling tool
    - A work authorization system
    - A configuration management system
    - An information collection and distribution system
    - Interfaces to other online automated systems.

4.3.2 Direct and Manage Project Work: Tools and Techniques

- 4.3.2.3 Meetings
  - Meetings are used to discuss and address pertinent topics of the project when directing and managing project work.
  - Attendees at the meetings may include the project manager, the project team and appropriate stakeholders involved or affected by the topics addressed.
  - Meetings tend to be one of three types:
    - Information exchange.
    - Brainstorming, option evaluation, or design.
    - Decision making.

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.1 Deliverables
- 4.3.3.2 Work Performance Data (WPD)
- 4.3.3.3 Change Requests
- 4.3.3.4 Project Management Plan Updates
- 4.3.3.5 Project Documents Updates

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.1 Deliverables
  - A deliverable is any unique and verifiable product, result or capability to perform a service that is required to be produced to complete a process, phase, or project.
  - Deliverables are typically tangible components completed to meet the project objectives and can include elements of the project management plan.

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.2 Work Performance Data (WPD)
  - Work performance data are the raw observations and measurements identified during activities being performed to carry out the project work
  - Examples of work performance data include:
    - Work completed.
    - Technical performance measures.
    - Number of change requests.
    - Actual costs.
    - Key performance indicators.
    - Start and finish dates.
    - Number of defects.
    - Actual durations.

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.3 Change Requests
  - A change request is **a formal proposal to modify any document, deliverable, or baseline.**
  - An approved change request will replace the associated document, deliverable, or baseline and may result in an update to other parts of the project management plan.

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.3 Change Requests
  - Requests for a change can be **direct** or **indirect**, **externally** or **internally** initiated, and can be optional or legally/contractually mandated, and may include:
    1. Corrective action
    2. Preventive action
    3. Defect repair
    4. Updates

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.4 Project Management Plan Updates
  - Elements of the project management plan that may be updated include:
    - Scope management plan
    - Schedule management plan
    - Quality management plan
    - Human resource management plan
    - Risk management plan
    - Stakeholder management plan
    - Requirements management plan
    - Cost management plan
    - Process improvement plan
    - Communications management plan
    - Procurement management plan
    - Project baselines

4.3.3 Direct and Manage Project Work: Outputs

- 4.3.3.5 Project Documents Updates
  - Project documents that may be updated include:
    - Requirements documentation
    - Project logs (issues, assumptions, etc.)
    - Risk register
    - Stakeholder register

4.4 Monitor and Control Project Work

- Monitor and Control Project Work is the process of **tracking**, **reviewing**, and **reporting** the progress to meet the performance objectives defined in the project management plan.

  - The key benefit of this process is
    - It allows stakeholders to understand the current state of the project, the steps taken, and budget, schedule, and scope forecasts.

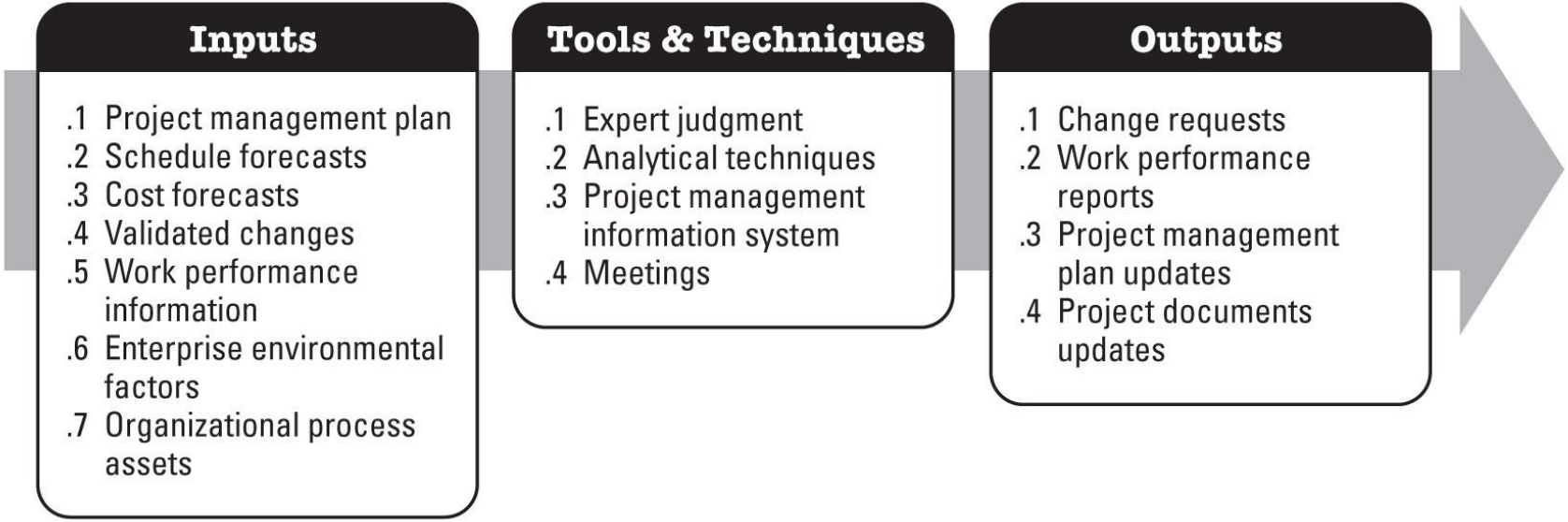

Figure 4-8. Monitor and Control Project Work: Inputs, Tools & Techniques, and Outputs

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.1 Project Management Plan (Out: 4.2)
- 4.4.1.2 Schedule Forecasts (Out: 6.7)
- 4.4.1.3 Cost Forecasts (Out: 7.4)
- 4.4.1.4 Validated Changes (Out: 8.3)
- 4.4.1.5 Work Performance Information (Out: 5.5, 5.6, 6.7, 7.4, 8.3, 10.3, 11.6, 12.3 and 13.4)
- 4.4.1.6 Enterprise Environmental Factors (Out: 2.1.5)
- 4.4.1.7 Organizational Process Assets (Out: 2.1.4)

4.4.1 Monitor and Control Project Work: Inputs

4.4.1.1 Project Management Plan (Out: 4.2)

- Monitoring and controlling project work involves looking at all aspects of the project.
- Subsidiary plans within the project management plan form the basis for controlling the project, Subsidiary plans and baselines include:
  - Scope management plan
  - Schedule management plan
  - Quality management plan
  - Human resource management plan
  - Risk management plan
  - Stakeholder management plan
  - Schedule baseline
  - Requirements management plan
  - Cost management plan
  - Process improvement plan
  - Communications management plan
  - Procurement management plan
  - Scope baseline
  - Cost baseline.

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.2 Schedule Forecasts (Out: 6.7)
  - The schedule forecasts are derived from progress against the schedule baseline and computed time estimate to complete (ETC).
  - This is typically expressed in terms of schedule variance (SV) and schedule performance index (SPI). For projects not using earned value management, variances against the planned finish dates and forecasted finish dates are provided.
  - The forecast may be used to determine if the project is still within defined tolerance ranges and identify any necessary change requests.

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.3 Cost Forecasts (Out: 7.4)
  - The cost forecasts are derived from progress against the cost baseline and computed estimates to complete (ETC). This is typically expressed in terms of cost variance (CV) and cost performance index (CPI).
  - An estimate at completion (EAC) can be compared to the budget at completion (BAC) to see if the project is still within tolerance ranges or if a change request is required. For projects not using earned value management, variances against the planned versus actual expenditures and forecasted final costs are provided.

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.4 Validated Changes (Out: 8.3)
  - Approved changes that result from the Perform Integrated Change Control process require validation to ensure that the change was appropriately implemented.
  - A validated change provides the necessary data to confirm that the change was appropriately executed.

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.5 Work Performance Information (Out: 5.5, 5.6, 6.7, 7.4, 8.3, 10.3, 11.6, 12.3 and 13.4)
  - Work performance information is the performance data collected from various controlling processes, analyzed in context, and integrated based on relationships across areas.
  - Thus work performance data has been transformed into work performance information. Data in itself cannot be used in the decision-making process as it has only out-of-context meaning. Work performance information, however, is correlated and contextualized, and provides a sound foundation for project decisions.
  - Work performance information is circulated through communication processes.

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.6 Enterprise Environmental Factors (Out: 2.1.5)
  - The enterprise environmental factors that can influence the Monitor and Control Project Work process include, but are not limited to:
    - Governmental or industry standards (e.g., regulatory agency regulations, codes of conduct, product standards, quality standards, and workmanship standards)
    - Organization work authorization systems
    - Stakeholder risk tolerances
    - Project management information system (e.g., an automated tool suite, such as a scheduling software tool, a configuration management system, an information collection and distribution system, or web interfaces to other online automated systems)

4.4.1 Monitor and Control Project Work: Inputs

- 4.4.1.7 Organizational Process Assets (Out: 2.1.4)
  - The organizational process assets that can influence the Monitor and Control Project Work process include, but are not limited to:
    - Organizational communication requirements;
    - Financial controls procedures
    - Issue and defect management procedures
    - Change control procedures
    - Risk control procedures
    - Process measurement database
    - Lessons learned database.

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.1 Expert Judgment
- 4.4.2.2 Analytical Techniques
- 4.4.2.3 Project Management Information System (PMIS)
- 4.4.2.4 Meetings

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.1 Expert Judgment
  - Expert judgment is used by the project management team to interpret the information provided by the monitor and control processes.
  - The project manager, in collaboration with the team, determines the actions required to ensure that project performance matches expectations.

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.2 Analytical Techniques
  - Analytical techniques are applied in project management to **forecast potential outcomes based on possible variations of project or environmental variables and their relationships with other variables.**
  - Examples of analytical techniques used in projects are:
    - Causal analysis.
    - Root cause analysis.
    - Forecasting methods
    - Reserve analysis.
    - Earned value management.
    - Variance analysis.

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.2 Analytical Techniques
  - Analytical techniques are applied in project management to **forecast potential outcomes based on possible variations of project or environmental variables and their relationships with other variables.**
  - Examples of analytical techniques used in projects are:
    - Regression analysis.
    - Causal analysis.
    - Forecasting methods
    - Fault tree analysis (FTA).
    - Trend analysis.
    - Variance analysis.
    - Grouping methods.
    - Root cause analysis.
    - Failure mode and effect analysis (FMEA).
    - Reserve analysis.
    - Earned value management.

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.3 Project Management Information System (PMIS)
  - The project management information system, which is part of enterprise environmental factors, provides access to automated tools, such as:
    - scheduling, cost, and resourcing tools, performance indicators, databases, project records, and financials used during the Monitor and Control Project Work process.

4.4.2 Monitor and Control Project Work: Tools and Techniques

- 4.4.2.4 Meetings
  - Meetings may be face-to-face, virtual, formal, or informal. They may include project team members, stakeholders, and others involved in or affected by the project.
  - Types of meetings include, but are not limited to, user groups and review meetings.

4.4.3 Monitor and Control Project Work: Outputs

- 4.4.3.1 Change Requests
- 4.4.3.2 Work Performance Reports (WPRs)
- 4.4.3.3 Project Management Plan Updates
- 4.4.3.4 Project Documents Updates

4.4.3 Monitor and Control Project Work: Outputs

- 4.4.3.1 Change Requests
  - As a result of comparing planned results to actual results, change requests may be issued to expand, adjust, or reduce project scope, product scope, or quality requirements and schedule or cost baselines.
    - Changes may include, but are not limited to, the following:
      - Corrective action
      - Preventive action
      - Defect repair

4.4.3 Monitor and Control Project Work: Outputs

- 4.4.3.2 Work Performance Reports (WPRs)
  - Work performance reports are the physical or electronic representation of work performance information compiled in project documents, intended to generate decisions, actions, or awareness.

    - Examples of work performance reports include:
      - Status reports.
      - Memos.
      - Justifications.
      - Information notes.
      - Recommendations and updates.

4.4.3 Monitor and Control Project Work: Outputs

- 4.4.3.3 Project Management Plan Updates
  - Changes identified during the Monitor and Control Project Work process may affect the overall project management plan.
    - Project management plan elements that may be updated include:
      - Scope management plan (Section 5.1.3.1),
      - Requirements management plan (Section 5.1.3.2),
      - Schedule management plan (Section 6.1.3.1),
      - Cost management plan (Section 7.1.3.1),
      - Quality management plan (Section 8.1.3.1),
      - Scope baseline (Section 5.4.3.1),
      - Schedule baseline (Section 6.6.3.1), and
      - Cost baseline (Section 7.3.3.1).

4.4.3 Monitor and Control Project Work: Outputs

- 4.4.3.4 Project Documents Updates
  - Project documents that may be updated include, but are not limited to:
    - Schedule and cost forecasts.
    - Work performance reports.
    - Issue log.

4.5 Perform Integrated Change Control

- The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan & communicating their disposition.

  - The key benefit of this process is
    - It allows for documented changes within the project to be considered in an integrated fashion while reducing project risk, which often arises from changes made without consideration to the overall project objectives or plans.

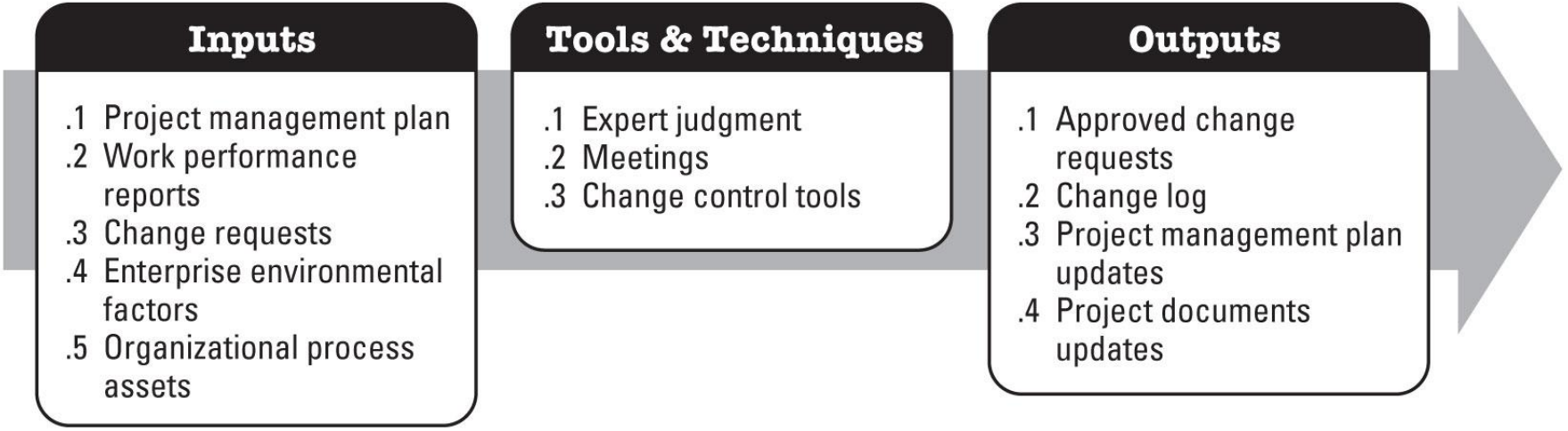

Figure 4-10. Perform Integrated Change Control: Inputs, Tools & Techniques, and Outputs

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.1 Project Management Plan (Out: 4.2)
- 4.5.1.2 Work Performance Reports (WPRs) (Out: 4.4)
- 4.5.1.3 Change Requests (Out: 5.6, 6.7, 7.4, 8.2, 8.3, 9.4, 10.3, 11.6, 12.1, 12.2, 12.3, 13.3 and 13.4)
- 4.5.1.4 Enterprise Environmental Factors (Out: 2.1.5)
- 4.5.1.5 Organizational Process Assets (Out: 2.1.4)

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.1 Project Management Plan (Out: 4.2)
  - Elements of the project management plan that may be used include:
    - Scope management plan, which contains the procedures for scope changes.
    - Scope baseline, which provides product definition.
    - Change management plan, which provides the direction for managing the change control process and documents the formal change control board (CCB).
  - Changes are documented and updated within the project management plan as part of the change and configuration management processes.

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.2 Work Performance Reports (WPRs) (Out: 4.4)
  - Work performance reports of particular interest to the Perform Integrated Change Control process include resource availability, schedule and cost data, and earned value management (EVM) reports, burnup or burndown charts.

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.3 Change Requests
  - (Out: 5.6, 6.7, 7.4, 8.2, 8.3, 9.4, 10.3, 11.6, 12.1, 12.2, 12.3, 13.3 &13.4)
  - All of the Monitoring and Controlling processes and many of the Executing processes produce change requests as an output.
  - Change requests may include corrective action, preventive action, and defect repairs. However, corrective and preventive actions do not normally affect the project baselines-only the performance against the baselines.

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.4 Enterprise Environmental Factors (Out: 2.1.5)
  - The following enterprise environmental factor can influence the Perform Integrated Change Control process: project management information system.
  - The project management information system may include the scheduling software tool, a configuration management system, an information collection and distribution system, or web interfaces to other online automated systems.

4.5.1 Perform Integrated Change Control: Inputs

- 4.5.1.5 Organizational Process Assets (Out: 2.1.4)
  - The organizational process assets that can influence the Perform Integrated Change Control process include:
    - Change control procedures, including the steps by which official organization standards, policies, plans, and other project documents will be modified, and how any changes will be approved, validated & implemented.
    - Procedures for approving and issuing change authorizations.
    - Process measurement database used to collect and make available measurement data on processes and products.
    - Project documents
    - Configuration management knowledge base

4.5.2 Perform Integrated Change Control: Tools and Techniques

- 4.5.2.1 Expert Judgment
- 4.5.2.2 Meetings
- 4.5.2.3 Change Control Tools

4.5.2 Perform Integrated Change Control: Tools and Techniques

- 4.5.2.1 Expert Judgment
  - In addition to the project management team's expert judgment, stakeholders may be asked to provide their expertise and may be asked to sit on **the change control board (CCB).**

4.5.2 Perform Integrated Change Control: Tools and Techniques

- 4.5.2.2 Meetings
  - In this case, **these meetings are usually referred to as change control meetings**.
  - When needed for the project, **a change control board (CCB)** is responsible for meeting and reviewing the change requests and approving, rejecting, or other disposition of those changes.

4.5.2 Perform Integrated Change Control: Tools and Techniques

- 4.5.2.3 Change Control Tools
  - In order to facilitate configuration and change management, manual or automated tools may be used. Tool selection should be based on the needs of the project stakeholders including organizational and environmental considerations and/or constraints.
  - Tools are used to manage the change requests and the resulting decisions. Additional considerations should be made for communication to assist the CCB members in their duties as well as distribute the decisions to the appropriate stakeholders.

4.5.3 Perform Integrated Change Control: Outputs

- 4.5.3.1 Approved Change Requests
- 4.5.3.2 Change Log
- 4.5.3.3 Project Management Plan Updates
- 4.5.3.4 Project Documents Updates

4.5.3 Perform Integrated Change Control: Outputs

- 4.5.3.1 Approved Change Requests
  - **Change requests** are processed according to the change control system by the project manager, CCB, or by an assigned team member.
  - **Approved change requests** will be implemented through the Direct and Manage Project Work process.
  - **The disposition** of all change requests, approved or not, will be updated in the change log as part of updates to the project documents.

4.5.3 Perform Integrated Change Control: Outputs

- 4.5.3.2 Change Log
  - A change log is used to **document changes** that occur during a project.
  - These changes and their **impact to the project in terms of time, cost, and risk, are communicated to the appropriate stakeholders.**
  - **Rejected change requests** are also captured in the change log.

4.5.3 Perform Integrated Change Control: Outputs

- 4.5.3.3 Project Management Plan Updates
  - Elements of the project management plan that may be updated include:
    - Any subsidiary plans, and
    - Baselines that are subject to the formal change control process.
  - Changes to baselines should only show the changes from the current time forward. Past performance may not be changed. This protects the integrity of the baselines and the historical data of past performance.

4.5.3 Perform Integrated Change Control: Outputs

- 4.5.3.4 Project Documents Updates
  - Project documents that may be updated as a result of the Perform Integrated Change Control process include all documents specified as being subject to the project's formal change control process.

4.6 Close Project or Phase

- The process of **finalizing all activities across all of the Project Management Process Groups to formally complete the project or phase.**
  - The key benefit of this process is
    - It provides lessons learned, the formal ending of project work, and the release of organization resources to pursue new endeavors.

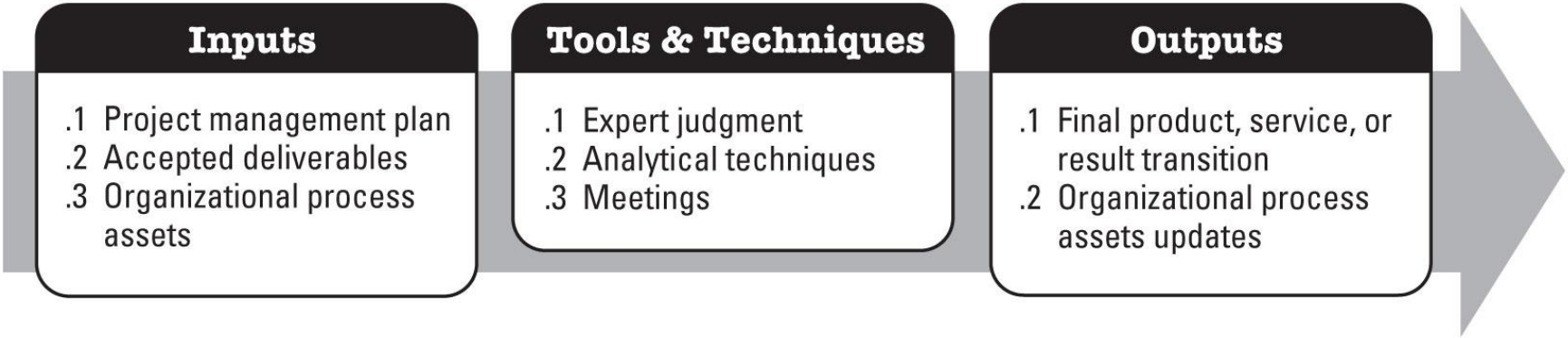

Figure 4-12. Close Project or Phase: Inputs, Tools & Techniques, and Outputs

4.6.1 Close Project or Phase: Inputs

- 4.6.1.1 Project Management Plan (Out: 4.2)
- 4.6.1.2 Accepted Deliverables (Out: 5.5)
- 4.6.1.3 Organizational Process Assets (Out: 2.1.4)

4.6.1 Close Project or Phase: Inputs

- 4.6.1.1 Project Management Plan (Out: 4.2)
  - The project management plan becomes the agreement between the project manager and project sponsor, defining what constitutes project completion.

4.6.1 Close Project or Phase: Inputs

- 4.6.1.2 Accepted Deliverables (Out: 5.5)
  - Accepted deliverables may include approved product specifications, delivery receipts, and work performance documents.
  - Partial or interim deliverables may also be included for phased or cancelled projects.

4.6.1 Close Project or Phase: Inputs

- 4.6.1.3 Organizational Process Assets (Out: 2.1.4)
  - The organizational process assets that can influence the Close Project or Phase process include:
    - Project or phase closure guidelines or requirements (e.g., administrative procedures, project audits, project evaluations, and transition criteria); and
    - Historical information and lessons learned knowledge base

4.6.2 Close Project or Phase: Tools and Techniques

- 4.6.2.1 Expert Judgment
- 4.6.2.2 Analytical Techniques
- 4.6.2.3 Meetings

4.6.2 Close Project or Phase: Tools and Techniques

- 4.6.2.1 Expert Judgment
  - Expert judgment is applied when performing administrative closure activities.
  - These experts ensure the project or phase closure is performed to the appropriate standards. Expertise is available from many sources, including:
    - Other project managers within the organization,
    - Project management office (PMO).
    - Professional and technical associations.

4.6.2 Close Project or Phase: Tools and Techniques

- 4.6.2.2 Analytical Techniques
  - Examples of analytical techniques used in project closeout are:
    - Regression analysis, and
    - Trend analysis.

4.6.2 Close Project or Phase: Tools and Techniques

- 4.6.2.3 Meetings
  - Meetings may be face-to-face, virtual, formal, or informal.
  - This may include project team members and other stakeholders, involved in or affected by the project.
  - Types of meetings include, but are not limited to lessons learned, closeout, user group, and review meetings.

4.6.3 Close Project or Phase: Outputs

- 4.6.3.1 Final Product, Service, or Result Transition
- 4.6.3.2 Organizational Process Assets Updates

4.6.3 Close Project or Phase: Outputs

- 4.6.3.1 Final Product, Service, or Result Transition
  - This output refers to the transition of the final product, service, or result that the project was authorized to produce (or in the case of phase closure, the intermediate product, service, or result of that phase).

4.6.3 Close Project or Phase: Outputs

- 4.6.3.2 Organizational Process Assets Updates
  - The organizational process assets that are updated as a result of the Close Project or Phase process include:
    - Project files
    - Project or phase closure documents
    - Historical information:

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