Project Management Knowledge Areas

SECTION III
Project Integration Management

CHAPTER 4
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.
- Many new project managers have trouble looking at the “big picture” and want to focus on too many details.
Basics

- Project Integration Management knowledge area includes the processes and activities need to identify, define, combine, unify and coordinate the various processes and project management activities within the Project Management Process Groups.

- It is very important for:
  - Project Completion
  - Successfully meeting customer & stakeholder requirements
  - Managing Expectations
Project Integration Management Processes

Integration Management
  - Scope Management
  - Time Management
  - Cost Management
  - Quality Management
  - HR Management
  - Risk Management
  - Communication Management
  - Procurement Management
Project Integration Management Processes

- 4.1 Develop Project Charter
- 4.2 Develop Project Management Plan
- 4.3 Direct and Manage Project Execution
- 4.4 Monitor and Control Project Work
- 4.5 Perform Integrated Change control
- 4.6 Close Project or Phase
4.1 Develop Project Charter

- A Project charter is the document that formally authorizes a project.
- It gives the authority to Project Manager to apply organizational resources to project activities.
- A Project Manager is identified and assigned as early as in the project as is feasible.
- The Project Manager should always be assigned prior to the start of planning, and preferably while the project charter is being developed.
Benefits of Project Charter

- Formally recognizes the existence of the project. (This means that a project does not exist without a project charter.)
- Gives the project manager authority to spend money and commit corporate resources.
- Provides the high-level requirements for the project.
- Links the project to the ongoing work of the organization.

The Project Charter is also:

- Issued by a sponsor, not the project manager
- Created in the initiating process group
- Broad enough so it does not NEED to change as the project changes
## 4.1 Develop Project Charter (Integration) [Initiating]

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Tools &amp; Techniques</th>
<th>Outputs</th>
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</thead>
<tbody>
<tr>
<td>1. Project statement of work</td>
<td>1. Expert judgement</td>
<td>1. Project charter</td>
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<td>2. Business Case</td>
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<td>3. Contract (when applicable)</td>
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<td>4. Enterprise environmental factors</td>
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<td>5. Organizational process assets</td>
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</table>

1. Business Case
2. Contract (when applicable)
3. Enterprise environmental factors
4. Organizational process assets
4.1 Develop Project Charter: Inputs

Business Case:

- The business case or similar document provides the necessary information from a business standpoint to determine whether or not the project is worth the required investment.
- Typically the business need and the cost–benefit analyses are contained in the business case to justify the project.
- The requesting organization or the customer, in the case of external projects, may write the business case. The business case is created as a result of one or more of the following:

<table>
<thead>
<tr>
<th>Market demand</th>
<th>Organizational Need</th>
<th>Customer</th>
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<tbody>
<tr>
<td>Request</td>
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<td>Technological advance</td>
<td>Legal Requirement</td>
<td>Ecological</td>
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<td>Impacts</td>
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<tr>
<td>Social Need</td>
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</tbody>
</table>
4.1 Develop Project Charter: Inputs

- **Project Statement of Work**
  - The statement of work (SOW) is a narrative description of products or service to be supplied by the project.
  - For internal projects, the project initiator or sponsor provides the statement of work based on business needs, product, or service requirements.
  - For external projects, the statement of work can be received from the customer as part of the bid document. (request for proposal, request for information, request for bid, as part of a contract)
  - Describes the customer/sponsor needs, product scope and how the project fits into their strategic plan.
4.1 Develop Project Charter: Inputs

- Contract (When Applicable)
  
  - A contract from the customers acquiring organization is an input if the project is being done for an external customer.
  
  - A contract is an input to this process, if the project is being done for an external customer.
4.1 Develop Project Charter: Inputs

- **Enterprise Environmental Factor**
  - Organizational or company culture and structure
  - Governmental or industry standards
  - Infrastructure
  - Existing Human Resources
  - Personnel Administration
  - Company work authorization system
  - Marketplace conditions
  - Stakeholder risk tolerances
  - Commercial databases
  - Project Management Information Systems
4.1 Develop Project Charter: Inputs

- Organizational Process Assets

  - Organizational process assets refers to the organization's policies, guidelines, procedures, plans, approaches, or standards for conducting work, including project work.

  - Organizational process assets also includes the information the organization has learned on previous projects (including how to store and retrieve that information). (Historical Information and lessons learned knowledge base) and templates etc.
4.1 Develop Project Charter: Tools & Techniques

Expert Judgment

• The concept behind expert judgment is to rely on individuals, or groups of people, who have training, specialized knowledge, or skills in the areas you’re assessing and is available from various sources, including:

1. Other units within the organization
2. Consultants
3. Stakeholders, including customers and sponsors
4. Professional and technical associations
5. Industry groups
6. Subject matter experts
7. PMO

• Such judgment and expertise is applied to any technical and management details during this process
Strategic Planning and Project Selection

- **Strategic planning** involves determining long-term objectives, predicting future trends, and projecting the need for new products and services.

- As part of strategic planning, organizations:
  - Identify potential projects
  - Use realistic methods to select which projects to work on
  - Formalize project initiation by issuing a project charter
Focusing on Broad Organizational Needs

➢ *Three important criteria for projects:*

- There is a **need** for the project
- There are **funds** available
- There’s a strong **will** to make the project succeed
4.1 Develop Project Charter: Outputs

- Project Charter

- The *project charter* is the official, written acknowledgment and recognition that a project exists.

- It ties the work of the project with the ongoing operations of the organization. It’s usually issued by senior management and gives the project manager the authority to assign organizational resources to the work of the project.

- The charter documents the business need or demand that the project was initiated to address and the project justification, and it includes a description of the product or service of the project.
4.1 Develop Project Charter: Outputs

- Project Charter

  The project charter documents the business needs, current understanding of the customer’s needs, and the new product, service, or result that it is intended to satisfy, such as:

1. Project purpose or justification
2. Measurable project objectives and related success criteria
3. High-level requirements
4. High-level project description
5. High-level risks
6. Summary milestone schedule
7. Summary budget
8. Project approval requirements
9. Assigned project manager, responsibility and authority level
10. Name and authority of the sponsor or other person(s) authorizing the project charter
Project Charter Contents

- Key details in Project Charter includes but not limited to:
  - Project Title & Description
  - Project Manager Assigned and Authority Level
  - Business Need
  - Project Justification
  - Resources Pre-assigned
  - Stakeholders
  - Stakeholders Requirements as Known
  - Product Description/Deliverables
  - Constraints and Assumptions
  - Project Sponsor Approval
## Sample Project Charter

**Project Charter**  
**July 16, 2007**

<table>
<thead>
<tr>
<th>Project Title: Just-In-Time Training Project</th>
<th>Project Start Date: July 1, 2007</th>
<th>Projected Finish Date: June 30, 2008</th>
</tr>
</thead>
</table>

**Budget Information:** The firm has allocated $1,000,000 for this project. Approximately half of these costs will be for internal labor, whereas the other half will be for outsourced labor and training programs.

**Project Manager:** Kristin Maur, (610) 752-4896, kristin_maur@globalconstruction.com

**Project Objectives:** Develop a new training program that provides just-in-time training to employees on key topics, including supplier management, negotiating skills, project management, and software applications (spreadsheets and Web development). Reduce the training cost per employee by 10 percent, or $100 per employee per year. Develop an approach for measuring productivity improvements from this approach to training on an annual basis.

**Approach:**

- Terminate all internal training courses except the Six Sigma training after new courses are developed.
- Communicate to all employees the plans to improve internal training and let them know that tuition reimbursement will continue as is.
- Work closely with internal managers and employees to determine the best approaches for providing training in supplier management, negotiating skills, project management, and software applications.
- Research existing training, and work with outside experts to develop several alternatives for providing each training topic.
- Develop and implement new training.
- Take advantage of new training approaches and technologies, and encourage employees to take some training during nonworking hours.
- Encourage experts within the company to mentor other workers on current job duties.
- Determine a way to measure the effectiveness of the training and its impact on productivity on an annual basis.
### Roles and Responsibilities:

<table>
<thead>
<tr>
<th>Name and Signature</th>
<th>Role</th>
<th>Position</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Sundby</td>
<td>Project champion</td>
<td>VP of HR</td>
<td><a href="mailto:mike_sundby@globalconstruction.com">mike_sundby@globalconstruction.com</a></td>
</tr>
<tr>
<td>Lucy Camarena</td>
<td>Project sponsor</td>
<td>Training director</td>
<td><a href="mailto:lucy_camarena@globalconstruction.com">lucy_camarena@globalconstruction.com</a></td>
</tr>
<tr>
<td>Kristin Maur</td>
<td>Project manager</td>
<td>Project manager</td>
<td><a href="mailto:kristin_maur@globalconstruction.com">kristin_maur@globalconstruction.com</a></td>
</tr>
<tr>
<td>Julia Portman</td>
<td>Steering committee member</td>
<td>VP of IT</td>
<td><a href="mailto:julia_portman@globalconstruction.com">julia_portman@globalconstruction.com</a></td>
</tr>
<tr>
<td>Tim Nelson</td>
<td>Steering committee member</td>
<td>Supplier management director</td>
<td><a href="mailto:tim_nelson@globalconstruction.com">tim_nelson@globalconstruction.com</a></td>
</tr>
<tr>
<td>Mohamed Abdul</td>
<td>Team member</td>
<td>Senior programmer/analyst</td>
<td><a href="mailto:mohamed_abdul@globalconstruction.com">mohamed_abdul@globalconstruction.com</a></td>
</tr>
<tr>
<td>Kim Johnson</td>
<td>Team member</td>
<td>Curriculum designer</td>
<td><a href="mailto:kim_johnson@globalconstruction.com">kim_johnson@globalconstruction.com</a></td>
</tr>
</tbody>
</table>

**Etc.**

**Comments:** (Handwritten or typed comments from above stakeholders, if applicable)

“I am concerned about people’s reactions to totally changing most training classes. I also hate to terminate some contracts with local training firms we’ve used for several years. We should try to get some of them involved in this project.” Lucy

“I want to review all of the information related to providing the supplier management training. We need to make something available quickly.” Tim
4.2 Develop Project Management Plan

- The Develop Project Management Plan process includes the actions necessary to define, integrate, and coordinate all subsidiary plans into a project management plan.

- The Develop Project Management Plan process brings all these subsidiary plans together, along with the outputs of the Planning group processes, into one document called the project management plan.

- The project management plan defines how the project is executed, monitored and controlled, and closed.
### 4.2 Develop Project Management Plan (Integration) [Planning]

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</table>
Develop Project Management Plan: Inputs

1. Project Charter
2. Outputs from Planning Processes
3. Enterprise Environmental Factors
4. Organizational Process Assets
4.2 Develop Project Management Plan: Inputs

Outputs from Planning Processes:

1. Outputs from many of the planning processes described in chapters 5 through 12 are integrated to create the project management plan.

2. Any baselines and subsidiary management plans that are an output from the other planning processes are inputs to this process.

3. In addition, updates to these documents can necessitate updates to the project management plan.
4.2 Develop Project Management Plan: Inputs

Organizational Process Assets

Include, but not limited to:

1. Standardized Guidelines, work instructions, proposal evaluation criteria, performance measurement criteria

2. Project management plan template

3. Change control procedures: including the steps by which official company standards, policies, plans and procedures, or any project documents will be modified and how any changes will be approved and validated

4. Project files from past projects, historical information and lessons learned knowledge base

5. Configuration management knowledge base containing the versions and baselines of all official company standards, policies, procedures and any project documents
4.2 Develop Project Management Plan: Tools & Techniques

Expert Judgment Is utilized to:

- Tailor the process to meet the project needs
- Develop technical and management details to be included in the project management plan
- Determine resources and skill levels needed to perform the project work
- Define the level of configuration management to apply on the project, and
- Determine which project documents will be subject to the formal change control process
4.2 Develop Project Management Plan: Output

1. Project Management Plan

➢ The project management plan documents the collection of outputs of the planning processes of the Planning Process Group and includes:

  ▶ Processes you’ll use to perform the project
  ▶ Degrees of execution of each of the processes selected for the project
  ▶ Tools and techniques to use from each process
  ▶ Essential inputs and outputs from each of the processes and how they’ll be used to manage the project
  ▶ Dependencies and interactions of the processes used to manage the project
  ▶ Methods for executing the work of the project to fulfill the objectives
Develop Project Management Plan (cont…)

- Methods for monitoring and controlling changes
- 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-phased projects
- Management reviews of issues and pending decisions
Develop Project Management Plan (cont…)

- The project management plan can be either summary level or detailed, and can be composed of one or more subsidiary plans and other components. Each of the subsidiary plans and components is detailed to the extent required by the specific project.

- These subsidiary plans include, but are not limited to:
  - 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
Develop Project Management Plan (cont…)

- These other components include, but are not limited to:
  - Milestone list
  - Resource calendar
  - Schedule baseline
  - Cost baseline
  - Quality baseline
  - Risk register
Note…

- A project management plan is a 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.
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
Sample Project Management Plan

Project Management Plan Version 1.0
September 17, 2007

Project Name: Just-in-Time Training Project

Introduction/Overview of the Project
Global Construction employs 10,000 full-time employees in ten different counties and fifteen U.S. states. The company spends, on average, $1,000 per employee for training (not including tuition reimbursement), which is higher than the industry average. By redesigning training, Global Construction can reduce training costs and improve productivity. The main goal of this project is to develop a new training program that provides just-in-time training to employees on key topics, including supplier management, negotiating skills, project management, and software applications.

Project Organization
The basic organization of the project is provided in Figure 4-1. The project sponsor, Lucy Camarena, will have the final say on major decisions, with consultation from the project steering committee and the project champion, Mike Sudduth. The project sponsor should have time to thoroughly review important project information and provide timely feedback to the project manager. The project manager in this case reports to the project sponsor, and the team leaders and supplier project managers report to the project manager.

FIGURE 4-1 Project organizational chart

Management and Technical Processes
Management Processes:
1. Management Review Process: The project steering committee will meet at least monthly to provide inputs and review progress on this project.
2. Progress Measurement Process: The project steering committee will review project progress during project review meetings, and they can also review information as needed by viewing reports on the enterprise project.
Sample Project Management Plan (continued)

management software system. Earned value data will be provided for this project and available on a weekly basis in the system. Post-project progress will also be measured to see if the project met its goals. These goals include reducing the training cost per employee by $100/person/year and receiving positive results from survey participants on the effectiveness of the training.


Technical Processes:
1. Enterprise Project Management Software: All tasks, costs, resources, issues, and risks will be tracked for this project using our enterprise project management software. Data must be entered on at least a weekly basis to provide timely information.
2. Supplier Evaluation: The project team will coordinate with the purchasing department to follow our standard procedures for selecting and working with suppliers. See Attachment 2 for corporate standards.
3. Productivity Improvement: The project team will work with the finance and quality assurance departments to develop and implement a system to measure improvements in employee productivity that result from this new training program. The finance department will report on this information annually, beginning one year after the first new training course is offered.

Work to Be Performed
Summary: Research, develop or purchase, and implement a new just-in-time training program covering the topics of supplier management, negotiating skills, project management, and software applications, and determine a way to measure the effectiveness of the training and its impact on productivity on an annual basis. See the scope statement, WBS, and other scope documents for further details.

Schedule Information
The entire project will be completed in one year, with a projected completion date of June 30, 2008. See the project schedule and other time management documents for further details.

Budget Information
The total budget for this project is $1,000,000. Approximately half of these costs will be for internal labor, whereas the other half will be for outsourced labor and training programs. See the cost estimate and cost baseline for further details.

References to Other Project Planning Documents
All current project plans created for this project are provided in Appendix A. Initial documents and revisions are available on the project Web site.
4.3 Direct and Manage Project Execution

- The purpose of the Direct and Manage Project Execution process is to carry out the project plan.

- Typical activities of this process:
  - The work is authorized to begin and activities are performed.
  - Resources are committed and carry out their assigned activities to create the product or service of the project.
  - Funds are spent to accomplish project objectives.
  - Performing project activities, training, selecting sellers, collecting project data, utilizing resources, and so on are all integrated with or a part of this process.
4.3 Direct and Manage Project Execution

- The Direct and Manage Project Execution process requires the project manager and the project team to perform multiple actions to execute the project management plan to accomplish the work defined in the project scope statement. Some of those actions are:
  - Perform activities to accomplish project objectives
  - Expend effort and spend funds to accomplish the project objectives
  - Staff, train, and manage the project team members assigned to the project
  - Obtain quotations, bids, offers, or proposals as appropriate
4.3 Direct and Manage Project Execution

- Select sellers by choosing from among potential sellers

- Obtain, manage, and use resources including materials, tools, equipment, and facilities

- Implement the planned methods and standards

- Create, control, verify, and validate project deliverables

- Manage risks and implement risk response activities

- Manage sellers
4.3 Direct and Manage Project Execution

- Adapt approved changes into the project’s scope, plans, and environment
- Establish and manage project communication channels, both external and internal to the project team
- Collect project data and report cost, schedule, technical and quality progress, and status information to facilitate forecasting
- Collect and document lessons learned, and implement approved process improvement activities.
4.3 Direct and Manage Project Execution

- Direct and Manage Project Execution also requires implementation of:
  - Approved corrective actions that will bring anticipated project performance into compliance with the project management plan
  - Approved preventive actions to reduce the probability of potential negative consequences
  - Approved defect repair requests to correct product defects found by the quality process.
Note…

- Project execution involves managing and performing the work described in the project management plan.

- The majority of time and money is usually spent on execution.

- The application area of the project directly affects project execution because the products of the project are produced during execution.
# 4.3 Direct and Manage Project Execution (Integration) [Executing]

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Tools &amp; Techniques</th>
<th>Outputs</th>
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</table>
| 1. Project management plan  
2. Approved corrective actions  
3. Approved preventive actions  
4. Approved change requests  
5. Approved defect repair  
6. Validated defect repair  
7. Enterprise environmental factors  
8. Organizational process assets | 1. Expert Judgement  
2. Project management information system (PMIS) | 1. Deliverables  
2. Work performance information  
3. Change Requests  
4. Project Management Plan updates  
5. Project document updates |
4.3 Direct and Manage Project Execution - Inputs

1. Project Management Plan

2. Approved Corrective Actions – to bring expected project performance into conformance with the project management plan

3. Approved Preventive Actions – to reduce the probability of negative consequences

4. Approved Change Requests – authorized changes to expand or contract project scope.

5. Defect Repair: The formally documented identification of a defect in a project component with a recommendation to either repair the defect or completely replace the component.
4.3 Direct and Manage Project Execution - Inputs

5. Approved Defect Repair – authorized request for product correction of a defect found in quality inspection / audit.

6. Validated Defect Repair – re-inspected repaired items have either been accepted or rejected.
4.3 Direct and Manage Project Execution – Tools & Tech

1. Expert Judgment

2. Project Management Information System:

Provides access to an automated tool, such as scheduling software tool, a configuration management system, an information collection and distribution system, or web interfaces to other online automated systems used during the Direct and Manage Project Execution effort.
Develop Project Management Plan: Tools & Techniques

- Configuration Management System

  - The configuration management system is a subsystem of the overall project management information system. The system includes the process for:
    - Submitting proposed changes
    - Tracking systems for reviewing
    - Approving proposed changes
    - Defining approval levels for authorizing changes
    - Providing a method to validate approved changes
Develop Project Management Plan: Tools & Techniques

- In most application areas, the system configuration management system includes the change control system.

- The configuration management system is also a collection of formal documented procedures used to apply technical and administrative direction and surveillance to:
  - Identify and document the functional and physical characteristics of a product or component.
  - Control any changes to such characteristics
  - Record and report each changes and its implementation status
  - Support the audit of the products or components to verify conformance to requirements.
Change Control System

- The change control system is a collection of formal documented procedures that define how project deliverables and documentation are controlled, changed, and approved.

- The change control system is a subsystem of the configuration management system.

- There can be a change control system for each knowledge area in project management. These systems are described in the management plan for each knowledge area (project scope management plan, schedule management plan, etc.) and are implemented in integrated change control as part of the overall effort to control change.
Change Control System

- The collected change control system may include:
  - A change control plan included in the project management plan outlining how changes will be managed
  - Creation of a change control board to approve all changes
  - Change control procedure (How, Who)
  - Performance statistics (e.g., time/system, time/drawing)
  - Reports (e.g., software output, milestone charts, resource usage)
  - Change forms

- The project scope management plan may add the following in order to control changes to scope:
  - Specification reviews
  - Demonstrations
  - Testing
  - Meetings to review scope to identify changes
4.3 Direct and Manage Project Execution - Output

1. Deliverables
2. Work Performance Information
3. Change requests
4. Project Management Plan Updates
5. Project document updates
Work Performance Information

- Information on the status of the project activities being performed to accomplish the project work is routinely collected as part of the project management plan execution.

- This information includes, but is not limited to:
  - Schedule progress showing status information
  - Deliverables that have been completed and those not completed
  - Schedule activities that have started and those that have been finished
  - Extent to which quality standards are being met
  - Costs authorized and incurred
  - Estimates to complete the schedule activities that have started
  - Percent physically complete of the in-progress schedule activities
  - Documented lessons learned posted to the lessons learned knowledge base
  - Resource utilization detail.
Project Management Plan Updates

Include, but are not limited to:

1. Requirements management plan
2. Schedule management plan
3. Cost management plan
4. Quality management plan
5. Human resource management plan
6. Communication management plan
7. Risk management plan
8. Procurement management plan
9. Project Baselines
Project Document Updates

Include, but are not limited to:

1. Requirement documents
2. Project Logs (issue, assumptions, etc)
3. Risk register
4. Stakeholder register
4.4 Monitor and Control Project Work

- The Monitor and Control Project Work process is performed to monitor project processes associated with initiating, planning, executing, and closing.

- Corrective or preventive actions are taken to control the project performance.

- Monitoring includes collecting, measuring, and disseminating performance information, and assessing measurements and trends to effect process improvements.
4.4 Monitor and Control Project Work

The Monitor and Control Project Work process is concerned with:

- Comparing actual project performance against the project management plan
- Assessing performance to determine whether any corrective or preventive actions are indicated, and then recommending those actions as necessary
- Analyzing, tracking, and monitoring project risks to make sure the risks are identified, their status is reported, and that appropriate risk response plans are being executed
- Maintaining an accurate, timely information base concerning the project’s product(s) and their associated documentation through project completion
- Providing information to support status reporting, progress measurement, and forecasting
- Providing forecasts to update current cost and current schedule information
- Monitoring implementation of approved changes when and as they occur.
Note…

- 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.

- Two important outputs of monitoring and controlling project work include recommended corrective and preventive actions.
## 4.4 Monitor & Control Project Work (Integration) [Monitoring & Controlling]

<table>
<thead>
<tr>
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<td>2. Performance reports</td>
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<td>2. Project Management Plan Updates</td>
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<td>3. Enterprise factors</td>
<td></td>
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<tr>
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<td></td>
<td>2. Document updates</td>
</tr>
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</table>

Inputs:
- Project management plan
- Performance reports
- Enterprise factors
- Organizational Process assets

Tools & Techniques:
- Expert judgement

Outputs:
- Change requests
- Project Management Plan Updates
- Document updates
4.4 Monitor and Control Project Work - Inputs

1. Project Management Plan

2. Performance Reports: Reports should be prepared by the project team detailing activities, accomplishments, milestones, identified issues and problems. Performance reports can be used to report the key information, but not limited to:
   - Current status
   - Significant accomplishments for the period
   - Scheduled activities
   - Forecasts
   - Issues
4.4 Monitor and Control Project Work – Tools & Tech

1. 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 project performance matches expectations.
4.4 Monitor and Control Project Work – Outputs

1. **Change Requests**: Changes include but are not limited to:
   - Corrective Action
   - Preventive Action
   - Defect Repair

2. **Project Management Plan Updates**

3. **Project Document Updates**: include but are not limited to:
   - Forecasts
   - Performance reports
   - Issue Log
4.5 Perform Integrated Change Control

- The integrated change control process is a control function that is done from project initiating through project closing.

- This is where all the recommendations for changes, corrective actions, preventive actions and defect repairs are evaluated across all the knowledge areas and either approved or rejected.

- Changes to any part of the project management plan or the product of the project are handled in the integrated change control process.
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

- A **baseline** is the approved project management plan plus approved changes
Suggestions for Performing Integrated Change Control

View project management as a process of constant communication and negotiation.
Plan for change.
Establish a formal change control system, including a change control board (CCB).
Use effective configuration management.
Define procedures for making timely decisions on smaller changes.
Use written and oral performance reports to help identify and manage change.
Use project management and other software to help manage and communicate changes.
Focus on leading the project team and meeting overall project goals and expectations.
4.5 Integrated Change Control

Integrated Change Control, according to *A Guide to the PMBOK*, is primarily concerned with the following:

- Influencing the factors that cause change and reaching agreement on their resulting change requests.
  - Factors that may cause change include project constraints, stakeholder requests, team member recommendations, vendor issues, and many others.
- Determining that change is needed or has happened
- Managing approved changes
- Updating the requirements that impact scope, quality, schedule, and budgets based on approved changes
- Documenting requested changes and their impacts
Managing changes may involve making changes to the project scope, schedule, or cost baseline, also known as the *performance measurement baseline*.

The performance measurement baseline is the approved project management plan that describes the work of the project.

**Exam Spotlight**

Managing changes involves maintaining accurate and reliable performance measurement baselines, coordinating all processes impacted as a result of the change, including revisiting Planning and Executing processes where needed and updating project scope to reflect any changes in product scope.
4.5 Integrated Change Control

Process for Making Changes

1. Prevent the root cause of change
2. Identify change
3. Create a change request (4 Step Change Request Process)
4. Assess the change
5. Look at the impact of the change
6. Perform Integrated Change Control
7. Look for options
8. Change is approved or rejected
9. Adjust the project management plan and baseline
10. Notify stakeholders affected by the change
11. Manage the project to the new project management plan

UNLESS THE QUESTION SAYS OTHERWISE, if there is a change to the project charter, the sponsor who signed or approved the project charter has to make the final decision. The project manager may provide options.
4.5 Integrated Change Control

> Requirement for Change

- There are two things you should require at the beginning of all projects regarding change.
  - First, require that all change requests be submitted in writing. This is to clarify the change and make sure no confusion exists regarding what’s requested.
  - Second, all change requests must come through the formal change control system. Make sure no one is allowed to go directly to team members and request changes without the project manager knowing about it.
4.5 Integrated Change Control

- Change Control Board
  - The board is given the authority to approve or deny change requests as defined by the organization.
  - The CCB may meet only once a week, once every other week, or even once a month, depending on the project.
  - When emergencies arise, the pre-established procedures allow the project manager to implement the change on the spot.
  - CCB members may include stakeholders, managers, project team members, and others who may not have any connection to the project at hand.
  - Some other names you might see are technical assessment board (TAB), technical review board (TRB), engineering review board (ERB), and change control board (CCB).
### 4.5 Perform Integrated Change Control (Integration) [Monitoring & Controlling]

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Tools &amp; Techniques</th>
<th>Outputs</th>
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<td>1. Expert judgement</td>
<td>1. Change request status updates</td>
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<td>3. Change requests</td>
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<td>3. Project document updates</td>
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<tr>
<td>5. Organizational process assets</td>
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</table>

**Outputs**
- Change request status updates
- Project Management plan updates
- Project document updates
4.5 Perform Integrated Change Control - Inputs

Organizational Process Assets:

Include but are not limited to:

- Change control procedures
- Procedures for approving and issuing change authorizations
- Process measurement database used to collect and make available measurement data on processes and products
- Project files
- Configuration management knowledge base containing the versions and baselines of all official company standards, policies, procedures, and any project documents
4.5 Perform Integrated Change Control – Tools & Techniques

1. Expert Judgment

2. Change Control Meetings:

  ➢ A change control board is responsible for meeting and reviewing the change requests and approving or rejecting those change requests.

  ➢ All change control board decisions are documented and communicated to the stakeholders for information and follow up actions.
4.5 Perform Integrated Change Control - Output

1. Change request status updates:
   - Change requests are processed according to the change control system by the project manager or by the assigned team member.
   - Approved change requests will be implemented by the direct and manage project execution process.
   - The status of all the changes, approved or not, will be updated in the change request log as part of the project document updates.

2. Project Management Plan Updates

3. Project Document Updates: include the change request log and any documents that are subject to the formal change control process.
4.5 Integrated Change Control - Outputs

Exam Spotlight

“Recommended” corrective action is an output of several of the change control processes, including Scope Change Control, Schedule Control, Cost Control, Risk Monitoring and Control, and Perform Quality Control. “Approved” corrective action is an output of the Integrated Change Control process. Remember that Integrated Change Control is where all change requests are processed and either approved or denied. Also note that corrective action is an output of the Monitoring and Controlling processes and an input to the Executing processes.
4.6 Close Project or a Phase

- The Close Project Process involves performing the project closure portion of the project management plan.

- In multi-phase projects, the Close Project process closes out the portion of the project scope and associated activities applicable to a given phase.

- This process includes finalizing all activities completed across all Project Management Process Groups to formally close the project or a project phase, and transfer the completed or cancelled project as appropriate.
4.6 Close Project or a Phase

- Project Ending
  - Projects come to an end for several reasons:
    - They’re completed successfully.
    - They’re canceled or killed prior to completion.
    - They evolve into ongoing operations and no longer exist as projects.
- There are four formal types of project endings you might need to know for the exam:
  - Addition
  - Starvation
  - Integration
  - Extinction
4.6 Close Project or a Phase

1. Addition

- Projects that evolve into ongoing operations are considered projects that end due to *addition*; in other words, they become their own ongoing business unit.

2. Starvation

- When resources are cut off from the project or are no longer provided to the project, it’s starved prior to completing all the requirements and you’re left with an unfinished project on your hands.
4.6 Close Project or a Phase

3. Integration

- Integration occurs when the resources of the project—people, equipment, property, and supplies—are distributed to other areas in the organization or are assigned to other projects.

**NOTE**

The difference between starvation and integration is that starvation results in funding or resource cuts while integration results in reassignment or redeployment of the resources.

4. Extinction

- This is the best kind of project end because extinction means the project has been completed and accepted by the stakeholders. As such, it no longer exists because it had a definite ending date, the goals of the project were achieved, and the project was closed out.
4.6 Close Project or a Phase

- The key activity of the Close Project process is concerned with gathering project records and disseminating information to formalize acceptance of the product, service, or project as well as to perform project closure.

- The Close Project process is also concerned with analyzing the project management processes to determine their effectiveness and to document lessons learned concerning the project processes.

- And one of the other key functions of the Close Project process is the archiving of all project documents for historical reference.
4.6 Close Project or a Phase

- Every project requires closure. According to *A Guide to the PMBOK*, the completion of each project phase requires project closure as well.

**Exam Spotlight**

Project closure occurs at the end of each phase of the project in order to properly document project information and keep it safe for future reference. You shouldn’t wait until project completion to perform the Close Project process but rather perform it at the end of every phase, no matter if the project phase was completed successfully or was ended for some other reason.
### 4.6 Close Project or a Phase Integration) [Closing]

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<td>1. Final product, service, or result</td>
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<tr>
<td>2. Accepted Deliverables</td>
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<tr>
<td>Assets</td>
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</tbody>
</table>
4.6 Close Project or a Phase: Inputs

Accepted Deliverables:

- Those deliverables that have been accepted through the Verify Scope process

Organizational Process Assets:

- Project or phase closure guidelines or requirements (e.g.: project audits, project evaluations, and transition criteria), and
- Historical Information and Lessons Learned Knowledge Base
4.6 Close Project or a Phase: Tools & Techniques

1. Expert Judgment:
   - Is applied when performing administrative closure activities.
   - These experts ensure that project or phase closure is performed to the appropriate standards.
4.6 Close Project or a Phase: Outputs

Final Product, Service, or Result

- This actually refers to the acceptance of the final product, service, or result and the turnover of the product to the organization.

- This refers to the transition of the final product, service, or result that the project was authorized to produce.

- This usually requires a formal sign-off and, in the case of a project performed on contract, definitely requires a formal sign-off or receipt indicating acceptance of the project.

**NOTE**

The final product, service, or result is concerned with obtaining formal acceptance while organizational process assets involves documenting and archiving formal acceptance.
4.6 Close Project or a Phase: Outputs

Organizational Process Assets (Updates)

- The organizational process assets output is where the formal sign-off of the acceptance of the product is documented, collected, and archived for future reference.

- Documenting formal acceptance is important because it signals the official closure of the project and it is your proof that the project was completed satisfactorily.

- Another function of sign-off is that it kicks off the beginning of the warranty period.
4.6 Close Project or a Phase : Outputs

Organizational Process Assets (Updates)

- Project Files
- Project or phase closure documents
- Historical Information
4.6 Close Project or a Phase: Outputs

- Closure will include the development of the index and location of project documentation using the configuration management system.
  - Formal Acceptance Documentation
  - Project Files
  - Project Closure Documents
  - Historical Information

Administrative closure focuses on closing the project or project phase. Contract closure focuses on closing a contract that is part of a project.
4.6 Close Project or a Phase: General Information

Administrative Closure Procedure

- Administrative closure procedures involve collecting all the records associated with the project, analyzing the project success (or failure), documenting and gathering lessons learned, and archiving project records.

- Administrative closure procedures also document the project team members’ and stakeholders’ roles and responsibilities in performing this process. According to A Guide to the PMBOK, this should include the processes and methodologies for defining the following:
  - Approval requirements of the stakeholders for project deliverables and changes to deliverables.
  - Assuring and confirming that the project meets the requirements of the stakeholders, customers, and sponsor. Documenting necessary actions to verify that the deliverables have been accepted and exit criteria have been met.
  - Assuring and confirming that the exit criteria for the project is satisfied.
4.6 Close Project or a Phase : General Information

Contract Closure Procedure

- This procedure is developed to provide a step-by-step methodology that addresses the terms and conditions of the contracts and any required completion or exit criteria for contract closure.

- This procedure details the methodology you use to assure that contract exit criteria and contract conditions have been satisfied.