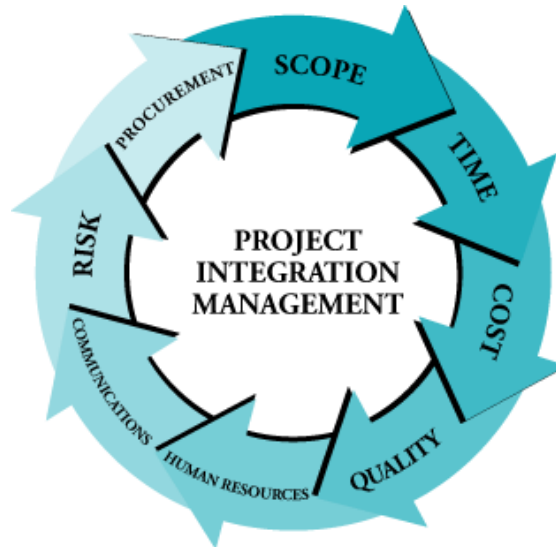# Project Integration Management

First PMP, 3rd Edition

Project Integration Management Definition

A subset of project management that includes:

"The processes and activities needed to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups."

PMBoK® Guide, 5th Edition, p. 63

Knowledge Areas

- Scope
- Time
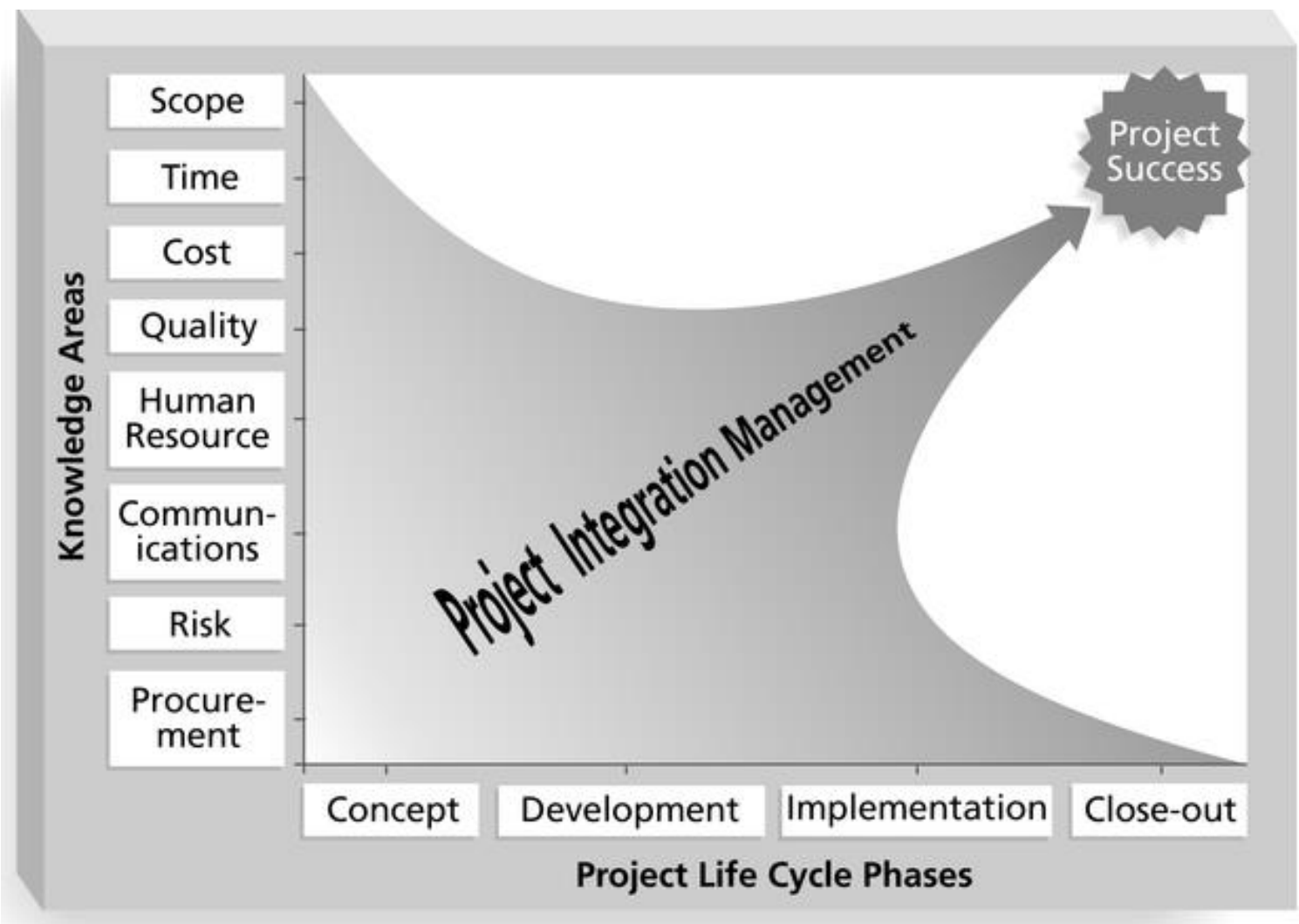- Cost
- Quality
- Human Resource
- Commun-ications
- Risk
- Procure-ment

Project Integration Management

Project Success

Project Life Cycle Phases

- Concept
- Development
- Implementation
- Close-out

Project Integration Management is . . .

Primarily concerned with effectively integrating the processes among the Project Management Process Groups that are required to accomplish project objectives within an organization's defined procedures.

Project Integration Management Processes

4.1 Develop Project Charter

4.2 Develop Project Management Plan

4.3 Direct and Manage Project Work

4.4 Monitor and Control Project Work

4.5 Perform Integrated Change Control

4.6 Close Project

Develop Project Charter Process

Knowledge Area	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase

Across Project Management Process Groups →

Sharpen your pencil

Here are a few of the things you might have to deal with in working on the teachers' vacation trip. Figure out which of the six Integration Management processes you'd use in each situation, and write down the process name in the blank.

1 It turns out that one of the teachers is a vegetarian, so some of the restaurant reservations will need to be canceled, and new reservations will need to be made at restaurants that can accommodate him.

_____

2 You come up with a detailed description of everything that you plan to do to get the teachers where they want to be.

_____

3 The CEO of Acme Travel sends you a document that assigns you to the project.

_____

4 You check in with the teachers at each destination to make sure everything is going according to plan.

_____

5 When the teachers get back, you write up everything you learned while handling the trip so other travel agents can learn from your experience.

_____

6 You book the tickets and hotel accommodations.

_____

Develop Project Charter

Develop Project Management Plan

Direct and Manage Project Work

Monitor and Control Project Work

Perform Integrated Change Control

Close Project or Phase

Sharpen your pencil Solution

Here are a few of the things you might have to deal with in working on the teachers' vacation trip. Figure out which of the seven Integration Management processes you'd use in each situation, and write down the process name in the blank.

1 It turns out that one of the teachers is a vegetarian, so you need to change your plans to include vegetarian meals on the airlines and find restaurants that accommodate him.

Perform Integrated Change Control

2 You come up with a detailed description of everything that you plan to do to get the teachers where they want to be.

Develop Project Management Plan

3 The CEO of Acme Travel sends you a document that assigns you to the project.

Develop Project Charter

4 You check in with the teachers at each destination to make sure everything is going according to plan.

Monitor and Control Project Work

5 When the teachers get back, you write up everything you learned while handling the trip so other travel agents can learn from your experience.

Close Project or Phase

6 You book the tickets and hotel accommodations.

Direct and Manage Project Work

Develop Project Charter

Develop Project Management Plan

Direct and Manage Project Work

Monitor and Control Project Work

Perform Integrated Change Control

Close Project or Phase

4.1 Develop Project Charter

Definition: "The process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to the project activities"

PMBoK® Guide, 5th Edition, p. 66

Inputs	Tools & Techniques	Outputs
.1 Project statement of work .2 Business case .3 Agreements .4 Enterprise environmental factors .5 Organizational process assets	.1 Expert judgment .2 Facilitation techniques	.1 Project charter

PMBoK® Guide, 5th Edition, p. 66

4.1.1 Develop Project Charter Inputs

4.1.1.1	**Project Statement of Work**	A narrative description of product or services to be supplied by the project: • Business need • Product scope description • Strategic plan
4.1.1.2	**Business Case**	The facts that determine whether the project is worth the investment to achieve the project objectives: ➤ Used to justify spending organizational assets (resources, time, money, etc.) ➤ Used to select projects from among a list of potential projects
4.1.1.3	**Agreements**	Define the goal of the project. Agreements can be formal or informal: • Contract • SLA's (service level agreements) • Letter of Intent and Memorandums • eMails • Verbal agreement

4.1.1 Develop Project Charter Inputs

4.1.1.4	**Enterprise Environmental Factors**	External and internal environmental conditions that influence the project: ➢ Government or industry standards ➢ Organization culture ➢ Organization structure ➢ Existing infrastructure ➢ Marketplace conditions
4.1.1.5	**Organizational Process Assets**	Process related assets (such as plans, policies, procedures and guidelines) that can be used for the project. ➢ The organization's standard and established policies and procedures ➢ Document and report templates ➢ Historical information (including lessons learned)

4.1.2 Develop Project Charter Tools and Techniques

4.1.2.1	**Expert Judgment**	Expertise provided by any group or individual with specialized knowledge or training: ➤ Within the organization ➤ Consultants ➤ Professional associations and industry groups ➤ Subject matter experts (SME) ➤ Project Management Office (PMO)
4.1.2.2	**Facilitation Techniques**	Used to guide the development of the charter: ➤ Brainstorming ➤ Problem Solving ➤ Conflict Resolution ➤ Meeting Management

Here are a bunch of ways Acme evaluated the inputs for the Develop Project Charter process. Try to figure out which ones involve expert judgment and which are facilitation techniques.

1. Acme Travel creates a committee to review all of the business case documents that have been submitted for possible projects and compare them to figure out which projects should be funded in the next quarter.

A. Expert judgment   B. Facilitation technique

2. Acme hires an outside consultant to help it figure out whether or not its current strategic goals are the right ones for the company.

A. Expert judgment   B. Facilitation technique

3. Acme asks the VP of Asia Travel to review the business case for the Midwest Teachers' Association trip and decide whether or not the projected costs and schedule look right.

A. Expert judgment   B. Facilitation technique

4. Acme has a big meeting with all of the project stakeholders to help it evaluate all of its project proposals and decide which ones are most likely to benefit the company.

A. Expert judgment   B. Facilitation technique

5. The travel agent who is assigned to the project holds a brainstorming session with all of the other travel agents to propose a new goal for the project.

A. Expert judgment   B. Facilitation technique

Here are a bunch of ways Acme evaluated the inputs for the Develop Project Charter process. Try to figure out which ones involve expert judgment and which are facilitation techniques.

Expert judgment always refers to people using their experience to make decisions on your project.

1. A Expert judgment   B. Facilitation technique

2. A. Expert judgment   B. Facilitation technique

3. A. Expert judgment   B. Facilitation technique

Facilitation techniques are the meetings and sessions that are used to get everybody to agree on major project decisions.

4. A. Expert judgment   B. Facilitation technique

5. A. Expert judgment   B. Facilitation technique

4.1.3 Develop Project Charter Outputs

4.1.3.1 Project Charter	• Formally authorizes the project
	
	• Provides the Project Manager with the authority to apply organizational resources to project activities
	
	• The project charter is issued by the project sponsor:
	   ➤ Sponsor can be an individual or a project portfolio steering committee or the Project Management Office
	   ➤ The sponsor must have the authority to fund the project

The Project Charter

The Project Charter addresses:

- Project purpose or justification

- Measurable objectives and success criteria

- High level requirements

- Assumptions and Constraints

- High level project description

- High level risks

- Summary milestone schedule

- Summary budget

- Stakeholder list

- Project approval requirements

- Assigned Project Manager

- Sponsor(s) of the project with authority level

Business Needs

- Market Demand
- Organizational Need
- Customer Request
- Technological Advance
- Legal Requirement
- Ecological Impacts
- Social Need

PMBoK® Guide, 5th Edition, p.69

The Project Charter (cont'd)

The project *cannot* be started without a charter because the charter:

- ➤ Formally recognizes the existence of the project

- ➤ Gives the project manager the authority to spend money and commit resources.

- ➤ Provides the high level requirements and expectations

- ➤ Links the project to the organization's ongoing work

Develop Project Management Plan Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
4. Project Integration Management	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

Across Project Management Process Groups →

The Project Management plan is a collection of other plans

The Project Management plan is a single document, but it's broken into a bunch of pieces called **subsidiary plans**. There's one subsidiary plan for each of the other knowledge areas: Scope Management, Time Management, Cost Management, Quality Management, Human Resource Management, Communications Management, Risk Management, Procurement Management, and Stakeholder Management.

The Project Management plan is the only output of the Develop Project Management Plan process.

The Project Management plan is actually a whole bunch of documents called "subsidiary plans," each dedicated to a knowledge area and the problems that could happen related to that area.

The Project Management plan is all about planning for problems, and having the information you need to correct those problems when they occur.

Communications Management is another knowledge area. In that plan, we've got important numbers for the trip.

Project Management plan

If you take over a project that's already under way, but there isn't a Project Management plan or it's out of date, the first thing you need to do is get a current, accurate plan written up.

There's a subplan for Risk Management. We used it when we took out traveler's insurance for the teachers' trip. That means if bags or cash are stolen, we'll have a plan for dealing with it.

The Project Management plan also has baselines. A baseline is a snapshot of the scope, schedule, or budget that you can use for planning. You'll learn all about baselines in the next three chapters!

19

4.2 Develop Project Management Plan

<u>Definition</u>:   *"The process of defining, preparing, and coordinating subsidiary plans and integrating them into a comprehensive project management plan."*

PMBoK® Guide, 5^h Edition, p. 72

Inputs	Tools & Techniques	Outputs
.1 Project charter .2 Outputs from other processes .3 Enterprise environmental factors .4 Organizational process assets	.1 Expert judgment .2 Facilitation techniques	.1 Project management plan

PMBoK® Guide, 5th Edition, p. 72

4.2.1 Develop Project Management Plan Inputs

4.2.1.1	**Project Charter**	Defined in Section 4.1.3.1
4.2.1.2	**Outputs from Planning Processes**	Defined in Sections 5 through 13
4.2.1.3	**Enterprise Environmental Factors**	• Government of industry standards • Project Management Information System (PMIS) • Organizational structure • Organizational culture • Existing infrastructure • Personnel administration policies and guidelines
4.2.1.4	**Organizational Process Assets**	• 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 from previous projects • Configuration management

4.2.2 Develop Project Management Plan Tools & Techniques

4.2.2.1	**Expert Judgment**	When developing the project management plan use expert judgment to: • Decide which processes are needed for the project and to what degree do they need to be applied • Determine resources needed and the level of involvement to complete the project work the plan • Develop the technical details to be included in the plan • Prioritize work to ensure resources are allocated appropriately
4.2.2.2	**Facilitation Techniques**	Used to guide developing the project management plan.

A quick look at all those subsidiary plans

You'll be learning about each of the knowledge areas throughout this book, and you'll learn all about the subsidiary plan that goes with each area. But let's take a quick look at what each subsidiary plan focuses on.

Project Management Plan—Subsidiary Plans and Baselines

The **Scope Management plan** describes how scope changes are handled—like what to do when someone needs to add or remove a feature for a service or product your project produces.

The **Requirements Management plan** describes how you'll gather, document, and manage the stakeholders' needs, and how you'll meet those needs with the project deliverables.

The **Schedule Management plan** shows you how to deal with changes to the schedule, like updated deadlines or milestones.

The **Cost Management plan** tells you how you'll create the budget, and what to do when your project runs into money problems.

The **Quality Management plan** deals with problems that could arise when a product doesn't live up to the customer or client's standards. The **Process Improvement plan** tells you how you can change the processes you're using to build your product to make them better.

You use the **Human Resource Management plan** to deal with changes in your staff, and to identify and handle any additional staffing needs and constraints you might have in your specific project.

The **Communications Management plan** lists all of the ways that you communicate with your project's team, stakeholders, sponsors, and important contacts related to the project.

The **Risk Management plan** is about detailing all the bad things that might happen and coming up with a plan to address each risk when and if it occurs.

The **Procurement Management plan** focuses on dealing with vendors outside of your company.

The **Stakeholder Management plan** focuses on managing the expectations of all of the people who are affected by the project.

There are three **baselines** in the Project Management plan. The **scope baseline** is a snapshot of the scope, which helps you keep track of changes to the work that you'll be doing and the planned deliverables you'll be building. The **schedule baseline** does the same for the project schedule, and the **cost performance baseline** does the same for the budget.

The Project Management plan is the core of Integration Management. It's your main tool for running a project.

The Project Management Plan

Projects are managed to baselines:

- Schedule Baseline

- Cost Baseline

- Scope Baseline

Below is a whole crop of problems that the teachers are running into. Write down which subsidiary plan you'd look in to get some help. If you're not sure, just reread the descriptions of each subsidiary plan on the previous page, and take your best guess.

1. The teachers want to go Bali, but Acme Travel doesn't book flights there so you need to subcontract one leg of the travel to another travel agency.

   _____

2. The teachers are having so much fun that they want to stay at a better hotel. They tell you to increase their budget by 15% to do that.

   _____

3. Just as you're about to mail off the teachers' tickets, you notice they've been printed incorrectly.

   _____

4. The teachers might run into more bad weather, and you've got to figure out what contingencies you can put into place if that happens.

   _____

5. The teachers are concerned that they won't be able to get in touch with you when they're away.

   _____

6. One of the teachers realizes that he needs to come back earlier, and you want to make sure the budget reflects his lessened costs.

   _____

7. You find out that you need to get the tickets out earlier than expected, because the teachers' contract requires that all trips be preapproved by the superintendent of their school district.

   _____

1. The teachers want to go Bali, but Acme Travel doesn't book flights there so you need to subcontract one leg of the travel to another travel agency.

Procurement Management plan

2. The teachers are having so much fun that they want to stay at a better hotel. They tell you to increase their budget by 15% to do that.

Cost Management plan

3. Just as you're about to mail off the teachers' tickets, you notice they've been printed incorrectly.

Quality Management plan

4. The teachers might run into more bad weather, and you've got to figure out what contingencies you can put into place if that happens.

Risk Management plan

5. The teachers are concerned that they won't be able to get in touch with you when they're away.

Communications Management plan

6. One of the teachers realizes that he needs to come back earlier, and you want to make sure the budget reflects his lessened costs.

Cost Management plan

7. You find out that you need to get the tickets out earlier than expected, because the teachers' contract requires that all trips be preapproved by the superintendent of their school district.

Schedule Management plan
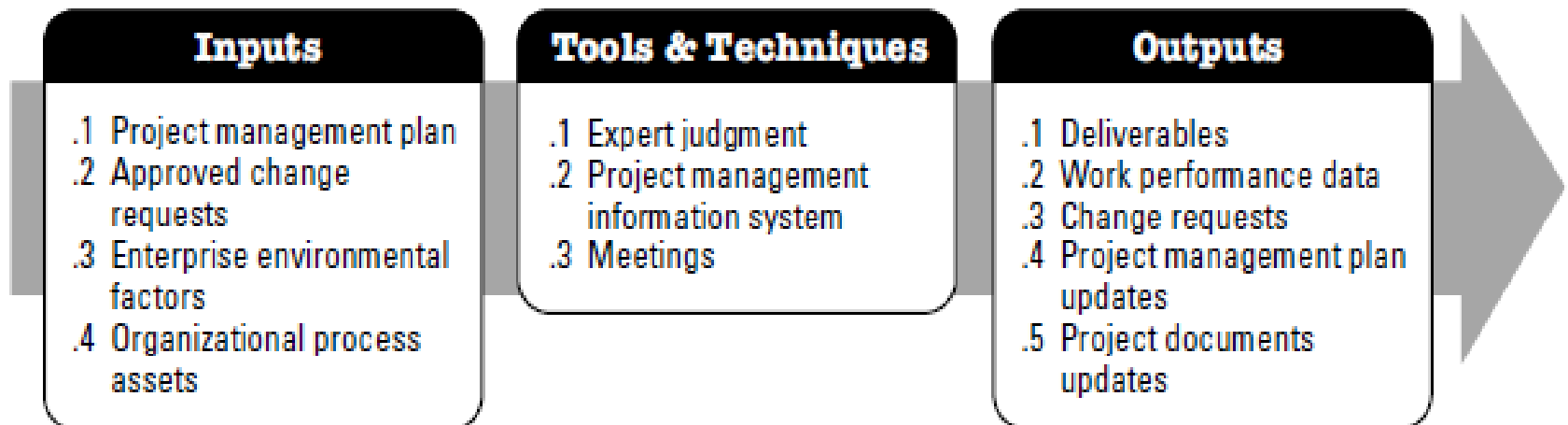
Direct and Manage Project Execution Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
4. **Project Integration Management**	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase

Across Project Management Process Groups ⟶

4.3 Direct and Manage Project Work

<u>Definition:</u>   *"The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve project objectives."*

PMBoK® Guide, 5th Edition, p. 79

Inputs	Tools & Techniques	Outputs
.1 Project management plan	.1 Expert judgment	.1 Deliverables
.2 Approved change requests	.2 Project management information system	.2 Work performance data
.3 Enterprise environmental factors	.3 Meetings	.3 Change requests
.4 Organizational process assets		.4 Project management plan updates
		.5 Project documents updates

PMBoK® Guide, 5th Edition, p. 79

The three components of the Direct and Manage Project Work process:

Deliverables are anything you produce in the course of doing your project activities

1. Use the plan to create deliverables.

2. Repair defects in deliverables.

Your Quality Management plan focuses on catching defects as you go, so you can repair them as soon as possible.

3. As the project plan changes, make sure those changes are reflected in the deliverables.

This is different from fixing defects. A defect means that the plan was right, but your deliverable was built wrong.

Deliverables include everything that you and your team produce for the project

The word **deliverable** is pretty self-explanatory. It means anything that your project **delivers**. The deliverables for your project include all of the products or services that you and your team are performing for the client, customer, or sponsor.

But deliverables include more than that. They also include every single document, plan, schedule, budget, blueprint, and anything else that gets made along the way…including all of the project management documents that you put together.

Deliverables can be either internal to your company or to the customer.

Deliverables

The Direct and Manage Project Work process is where you and your team actually do the work to produce the deliverables.

4.3 Direct and Manage Project Work

Directing and managing project work involves:

- Performing activities to accomplish project requirements
- Creating project deliverables
- Staffing, training and managing project team members
- Obtaining, managing, and using resources (materials, tools, equipment and facilities)
- Implementing the planned methods and standards
- Establishing and managing project communication channels (external and internal)
- Issuing change requests (corrective, preventive and defect repair)

4.3 Direct and Manage Project Work

Directing and managing project work involves: *(continued)*

- Managing risk and implementing risk response activities
- Managing sellers and suppliers
- Including approved changes into the project's scope, plans and environment
- Generating project data (cost, schedule, quality and progress) for reporting and forecasting
- Implementing approved process improvement activities
- Managing stakeholders
- Documenting lessons learned

4.3.1 Direct and Manage Project Work Inputs

4.3.1.1	**Project Management Plan**	See Section 4.2.3.1
4.3.1.2	**Approved Change Requests**	• Corrective Actions • Preventive Actions • Defect Repairs
4.3.1.3	**Enterprise Environmental Factors**	• Organizational, company or customer culture and structure • Existing infrastructure • Personnel administration policies and guidelines • Stakeholder risk tolerances • Project Management Information System (PMIS)
4.3.1.4	**Organizational Process Assets**	• Standardized guidelines and work instructions • Communication requirements and policies • Issue and defect management procedures • Process measurement database • Files and information from previous projects • Issue and defect management database

4.3.2 Direct and Manage Project Work Tools & Techniques

4.3.2.1	**Expert Judgment**	Previously defined
4.3.2.2	**Project Management Information System (PMIS)**	Previously defined
4.3.2.3	**Meetings**	Meetings are held to discuss topics pertinent to the project: ➤ Information exchange ➤ Problem solving ➤ Option evaluation ➤ Decision making

4.3.3 Direct and Manage Project Work Outputs

4.3.3.1	**Deliverables**	
4.3.3.2	**Work Performance Data**	Raw data on the activities being performed to accomplish the project work. This typically includes, but is not limited to: ➤ Start and finish dates of activities ➤ Deliverables that have been completed and those not completed ➤ Costs authorized and incurred ➤ Percent physically complete of the in-progress schedule activities ➤ Documented lessons learned posted to the lessons learned knowledge base ➤ Resource utilization detail ➤ Number of defects ➤ Number of change requests

4.3.3 Direct and Manage Project Work Outputs (cont'd)

4.3.3.3	**Change Requests**	• Corrective Action • Preventive Action • Defect Repair • Documentation Updates
4.3.3.4	**Project Management Plan Updates**	• Subsidiary project plans
4.3.3.5	**Project Document Updates**	• Requirements • Stakeholder Register • Risks Register

Here's a list of things produced by some typical projects. Some of them are deliverables, and others are work performance data produced by running reports. There's also a list of changes, some of which affect the Project Management plan, and some of which just affect the project deliverables. It's up to you to figure out which is which.

1. The software project team builds software.

☐ Deliverable   ☐ Work performance data

2. A builder hangs a door.

☐ Deliverable   ☐ Work performance data

3. A wedding photographer sends the photo proofs to the client.

☐ Deliverable   ☐ Work performance data

4. The cable repair technicians take an average of four hours per job.

☐ Deliverable   ☐ Work performance data

Sometimes something that looks like a defect in a deliverable is really a change that you need to make to the plan.

5. The construction crew worked 46 hours of overtime in March.

☐ Deliverable   ☐ Work performance data

6. The construction crew built the six houses required by the plan.

☐ Deliverable   ☐ Work performance data

7. A software test team finds bugs in the software.

☐ Defect in deliverable   ☐ Change to Project Management plan

8. A bride asks the photographer to stop asking her mother for permission to make changes.

☐ Defect in deliverable   ☐ Change to Project Management plan

9. A construction crew used the wrong kind of lumber in a house.

☐ Defect in deliverable   ☐ Change to Project Management plan

10. A photographer's prints are grainy.

☐ Defect in deliverable   ☐ Change to Project Management plan

Here's a list of things produced by some typical projects. Some of them are deliverables, and others are work performance data produced by running reports. There's also a list of changes, some of which affect the Project Management plan, and some of which just affect the project deliverables. It's up to you to figure out which is which.

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4. The cable repair technicians takes an average of four hours per job.

☐ Deliverable   ☑ Work performance data

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☑ Defect in deliverable   ☐ Change to Project Management plan

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☐ Defect in deliverable   ☑ Change to Project Management plan

9. A construction crew used the wrong kind of lumber in a house.

☑ Defect in deliverable   ☐ Change to Project Management plan

10. A photographer's prints are grainy.

☑ Defect in deliverable   ☐ Change to Project Management plan

4.3 Direct and Manage Project Work Terms

Corrective Action	An action to bring expected future project performance into conformance with the project management plan
Preventive Action	An action to ensure the future project performance does not deviate from the project management plan.
Defect	An imperfection or deficiency in a project component where that component does not meet its requirements or specifications and needs to be either repaired or replaced.
Defect Repair	The action to modify a defective product or product component.
Lessons Learned	The learning gained from the process of performing the project. Also considered a project record to be included in the lessons learned knowledge base.

Exercise

Here is a list of actions that are recommended by a project manager. Which are preventive and which are corrective?

1. A software project is running late, so a software project manager looks to find slack time and reassign resources to get things done more quickly.

    ☐ Preventive action   ☐ Corrective action

2. A caterer notices that the crudités are all gone and assigns a chef to make more.

    ☐ Preventive action   ☐ Corrective action

3. A photographer brings an extra camera body to a shoot, in case one breaks down.

    ☐ Preventive action   ☐ Corrective action

4. A consulting company assigns extra resources to a project to compensate for possible attrition.

    ☐ Preventive action   ☐ Corrective action

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☑ Preventive action   ☐ Corrective action

4. A consulting company assigns extra resources to a project to compensate for possible attrition.

☑ Preventive action   ☐ Corrective action

Monitor and Control Project Work Process

Knowledge Area	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
4. Project Integration Management	**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

Across Project Management Process Groups

4.4 Monitor and Control Project Work

<u>Definition</u>: *"The process of tracking, reviewing, and reporting the progress to the meet the performance objectives defined in the project management plan."*

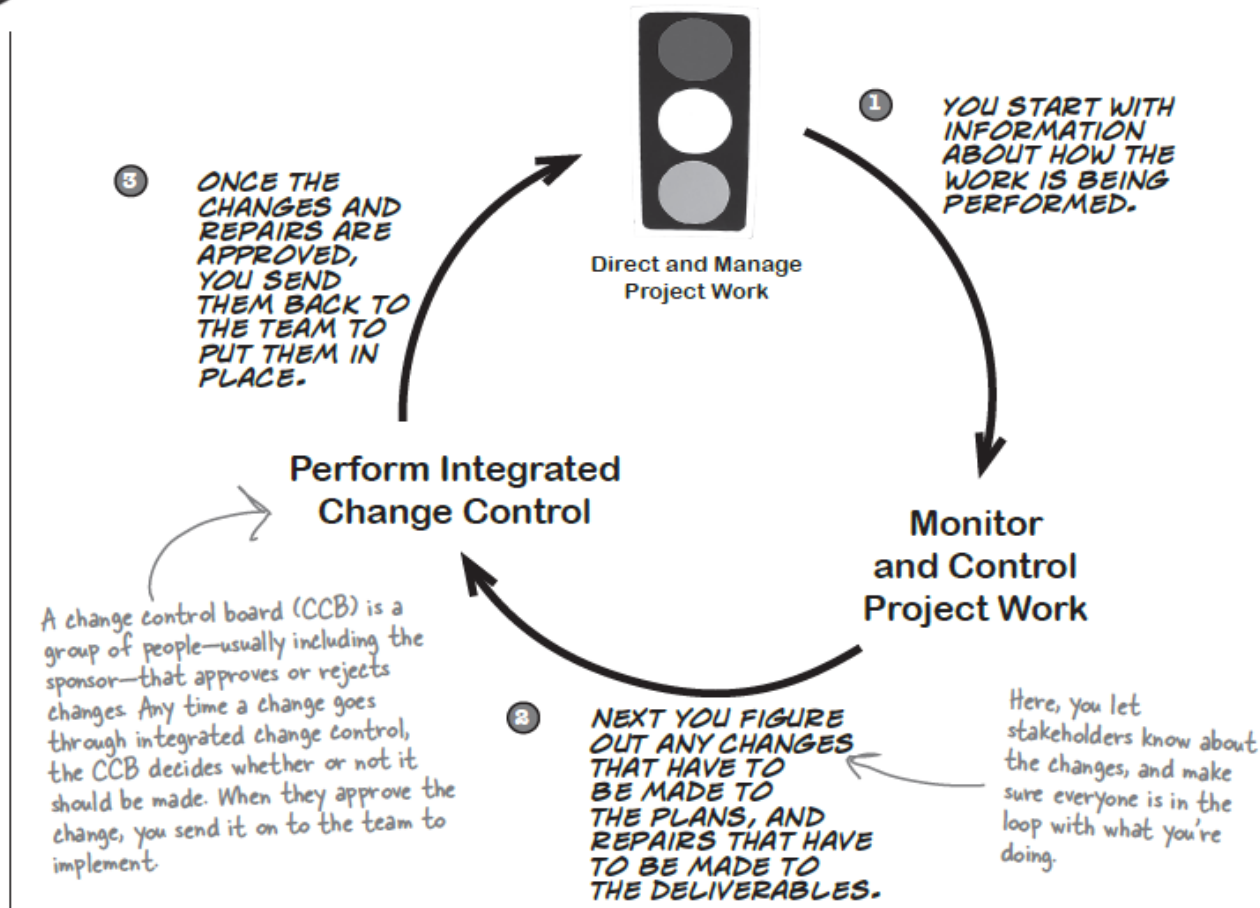| Inputs	Tools & Techniques	Outputs
.1 Project management plan .2 Schedule forecasts .3 Cost forecasts .4 Validated changes .5 Work performance information .6 Enterprise environmental factors .7 Organizational process assets	.1 Expert judgment .2 Analytical techniques .3 Project management information system .4 Meetings	.1 Change requests .2 Work performance reports .3 Project management plan updates .4 Project documents updates
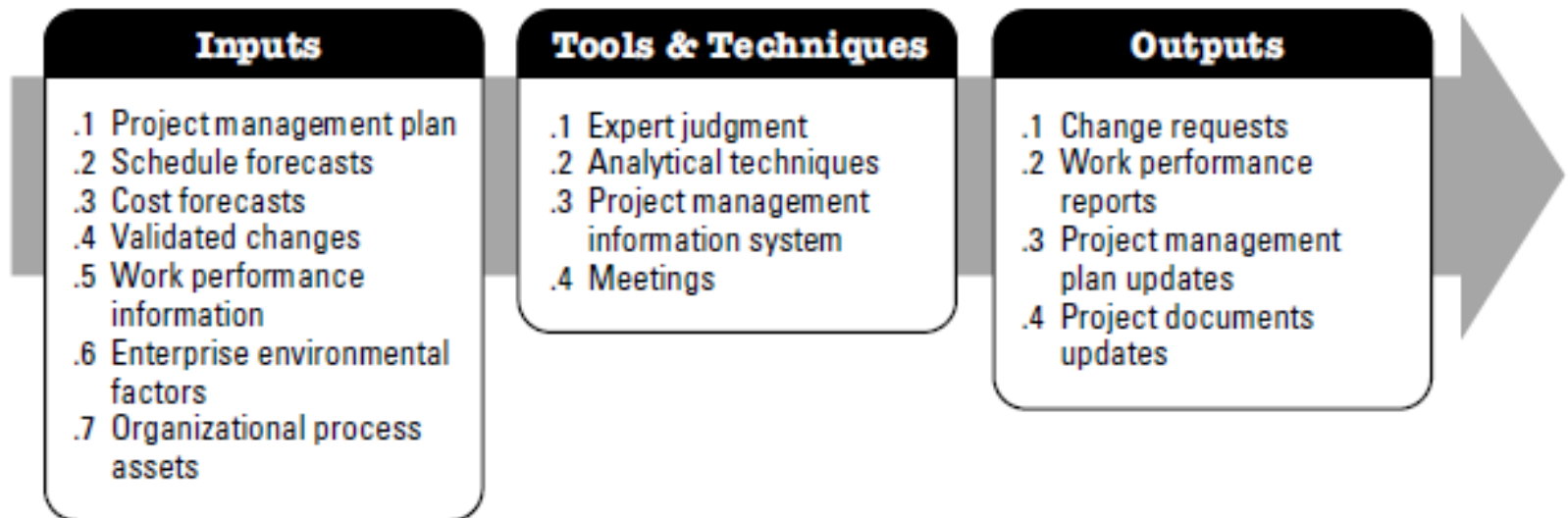
Sometimes you need to change your plans

Take a minute and flip back to page 107. Notice how there's a loop between the Executing and the Monitoring and Controlling processes? That's because when your team is executing the plan and working on the deliverables, you need to keep a constant lookout for any potential problems. That's what the **Monitor and Control Project Work** process is for. When you find a problem, you can't just make a change…because what if it's too expensive, or will take too long? You need to look at how it affects the project constraints—time, cost, scope, resources, risks, and quality—and figure out if it's worth making the change. That's what you do in the **Perform Integrated Change Control** process.

Executing

Direct and Manage
Project Work

Monitor and Control
Project Work

Monitoring and
Controlling

Perform Integrated
Change Control
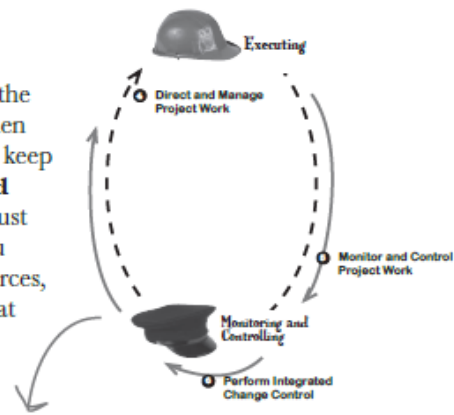
The Monitor and Control Loop Up Close

Direct and Manage Project Work

① YOU START WITH INFORMATION ABOUT HOW THE WORK IS BEING PERFORMED.

③ ONCE THE CHANGES AND REPAIRS ARE APPROVED, YOU SEND THEM BACK TO THE TEAM TO PUT THEM IN PLACE.

Perform Integrated Change Control

Monitor and Control Project Work

A change control board (CCB) is a group of people—usually including the sponsor—that approves or rejects changes. Any time a change goes through integrated change control, the CCB decides whether or not it should be made. When they approve the change, you send it on to the team to implement.

② NEXT YOU FIGURE OUT ANY CHANGES THAT HAVE TO BE MADE TO THE PLANS, AND REPAIRS THAT HAVE TO BE MADE TO THE DELIVERABLES.

Here, you let stakeholders know about the changes, and make sure everyone is in the loop with what you're doing.

4.4.1 Monitor and Control Project Work Inputs

4.4.1.1	**Project Management Plan**	Described in Section 4.2.3.1
4.4.1.2	**Schedule Forecasts**	Described in Section 6.7.3.2 Can be expressed in Earned Value terms or variances of planned finish dates vs. forecasted finish dates
4.4.1.3	**Cost Forecasts**	Described in Section 7.4.3.2 Can be expressed in Earned Value terms or variances of planned vs. actual expenditures and forecasted final costs
4.4.1.4	**Validated Changes**	Described in Section 8.3.3.2 Ensures approved changes were implemented
4.4.1.5	**Work Performance Information**	Analyzed data is transformed into information that can be used for decision making

4.4.1 Monitor and Control Project Work Inputs

4.4.1.6	**Enterprise Environmental Factors**	• Government or industry standards • Company work authorization system • Stakeholder risk tolerances • Project Management Information Systems
4.4.1.7	**Organizational Process Assets**	• Organization communication requirements • Financial controls procedures • Issue and defect management procedures • Risk control procedures • Process measurement database • Lessons learned database

4.4.2 Monitor and Control Project Work Tools & Techniques

4.4.2.1 **Expert Judgment**	Previously defined
4.4.2.2 **Analytical Techniques**	Used to forecast outcomes: • Regression analysis • Root Cause Analysis • Failure Mode Effect Analysis • **Earned Value Management** • Variance Analysis

4.4.3 Monitor and Control Project Work Outputs

4.4.3.1	**Change Requests**	• Corrective action • Preventive action • Defect repair
4.4.3.2	**Work Performance Reports**	Project documents that report work performance information that is used to communicate project progress and generate decisions or activity.
4.4.3.3	**Project Management Plan Updates**	• Schedule Management Plan • Cost Management Plan • Quality Management Plan • Baselines: Scope, Schedule, Cost
4.4.3.4	**Project Document Updates**	• Forecasts • Performance Reports • Issues log

4.4 Monitor and Control Project Work Terms

Earned Value Management	A management methodology for integrating scope, schedule and resources and for objectively measuring project performance and progress: ➤ Performance is measured by determining the budgeted cost of work performed (the earned value) and comparing it to the actual cost of worked performed (the actual cost) ➤ Progress is measured by comparing the earned value to the planned value
Performance Measurement Baseline	• An approved plan for the project work against which project execution is compared and deviations are measured for management control. The project measurement baseline typically integrates scope, schedule, and cost parameters of a project, but may also include technical and quality parameters. • The project baseline may be changed by formally approved changes

Perform Integrated Change Control Process

Knowledge Area	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
4. **Project Integration Management**	**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

Across Project Management Process Groups

4.5 Perform Integrated Change Control

Definition: *"The process of reviewing all change requests, approving changes, and managing changes to the deliverables, organizational process assets, project documents, and the project management plan and communicating their disposition."*

PMBoK® Guide, 5th Edition, p. 94

Inputs	Tools & Techniques	Outputs
.1 Project management plan .2 Work performance reports .3 Change requests .4 Enterprise environmental factors .5 Organizational process assets	.1 Expert judgment .2 Meetings .3 Change control tools	.1 Approved change requests .2 Change log .3 Project management plan updates .4 Project documents updates

PMBoK® Guide, 5th Edition, p. 94

4.5 Perform Integrated Change Control

Integrated Change Control includes the following:

- 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

- Reviewing, analyzing and approving requested changes

- Managing the approved changes by regulating the flow of requested changes

- Maintaining the integrity of baselines by releasing only approved changes

- Reviewing and approving all recommended corrective and preventive actions

- Controlling and updating the scope, cost, budget, schedule, and quality requirements based on approved changes

- Documenting the impact of requested changes

- Validating defect repair

- Controlling project quality to standards based on quality reports

4.5 Perform Integrated Change Control

The Project Manager should be concerned with:

- Ensuring the change is beneficial
- Determining if change is needed
- Looking for alternatives to change
- Minimizing the negative impact of change
- Notifying stakeholders affected by the change

4.5.1 Perform Integrated Change Control Inputs

4.5.1.1	**Project Management Plan**	Defined in Section 4.2.3.1
4.5.1.2	**Work Performance Reports**	Defined in Section 4.4.3.2
4.5.1.3	**Change Requests**	• Corrective Action • Preventive Action • Defect Repair
4.5.1.4	**Enterprise Environmental Factors**	• Project Management Information System
4.5.1.5	**Organizational Process Assets**	• Change control procedures • Change approval and authorization procedures • Process measurement database • Project files

4.5.2 Perform Integrated Change Control Tools & Techniques

4.5.2.1 Expert Judgment	Previously defined
4.5.2.2 Meetings	Change Control Board Meetings: • Roles and responsibilities defined in the change control procedures • Membership on the board will include major stakeholders • The customer may be included for projects being done under contract • Reviews change requests • Approves or rejects change requests
4.5.2.3 Change Control Tools	Used to manage change requests and the final disposition of those requests.

Who can approve changes?

Changes to Project Charter	**Project Sponsor** who signed/approved the Project Charter. The Project Manager can provide input.
Changes to Project Baselines or any Constraints	**The Change Control Board** or **Sponsor** needs to be involved. The Project Manager can recommend options.
Changes within the Project Plan	**Project Manager** can make the change if the change is within the Project Manager's authority and does not require changes to any project baselines.

4.5.3 Perform Integrated Change Control Outputs

4.5.3.1	**Approved Change Requests**	• Approved Change Requests
		    ➤ Corrective Actions
		    ➤ Preventive Actions
		    ➤ Defect Repair
		• Rejected Change Requests
		• Validated Defect Repair

4.5.3.2	**Change Log**	Documents changes made during a project
4.5.3.3	**Project Management Plan Updates**	
4.5.3.4	**Project Document Updates**	

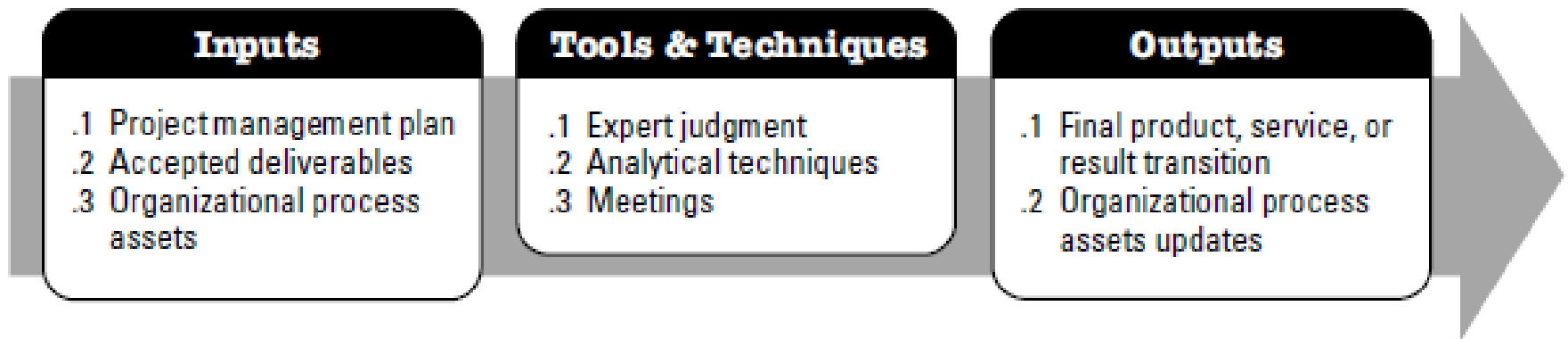✔ *Approved Change Requests are* **INPUTS** *for Directing and Managing Project Work*

Close Project Phase Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
4. **Project Integration Management**	**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

4.6 Close Project or Phase

<u>Definition:</u>   *"The process of finalizing all activities across all of the Project Management Process Groups to formally complete the project or phase"*

Inputs	Tools & Techniques	Outputs
.1 Project management plan .2 Accepted deliverables .3 Organizational process assets	.1 Expert judgment .2 Analytical techniques .3 Meetings	.1 Final product, service, or result transition .2 Organizational process assets updates

Finish the work, close the project

You can't finish the project until you get paid! Most projects start with contracts, and when they do you need to make sure the terms are met. Acme signed a contract with the Midwestern Teachers' Association when the project started, and now it's time to make sure all of the parts of that contract are met. And that's part of what you do in the **Close Project or Phase** process. But an even more important part of this process is that you create the **lessons learned** and add them to your company's organizational process assets. That way you and other project managers can learn from this **historical** information in the future. The inputs to the Close Project or Phase process include the Project Management plan, organizational process assets, enterprise environmental factors, work performance information, and deliverables, along with any contract you have for the work (if there is one). And you use the same familiar **tools and techniques** list that you've seen throughout the chapter.

Close project or phase

The most important output of the Close Project or Phase process is the final product that you deliver to the customer!

4.6.1 Close Project or Phase Inputs

4.6.1.1	**Project Management Plan**	Described in Section 4.2.3.1
4.6.1.2	**Accepted Deliverables**	Scope Verification: Formal acceptance of the completed project deliverables
4.6.1.3	**Organizational Process Assets**	• Closure guidelines, requirements and procedures • Historical information • Lessons learned database

4.6.2 Close Project or Phase Tools and Techniques

4.6.2.1	**Expert Judgment**	Previously defined
4.6.2.2	**Analytical Techniques**	Described in Section 4.4.2.2
4.6.2.3	**Meetings**	• Lessons Learned • User Groups • Review Meetings

4.6.3 Close Project or Phase Outputs

4.6.3.1	**Final Product, Service, or Result Transition**	Transition of the project's (or phase's) product or result to: • The ongoing organization, or • The next phase of the project
4.6.3.2	**Organizational Process Assets Updates**	• Lessons Learned • Corporate Knowledge Base • Project Files • Project or phase closure documents • Historical information

Thanks!!