Pocket Guide to Project Management

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This handbook is based on HRD Press' best-selling publication ***The Project Manager's Partner: A Step-by-Step Guide to Project Management.*** Like its predecessor, this handbook builds upon The Project Management Institute's ***PMBOK*** (Project Management Body of Knowledge), seeking to provide specific how-to-do-it tips for achieving many of PMBOK's recommended best practices.

Compared to the ***Project Manager's Partner*** this handbook provides substantially less project management (PM) theory and background information.* Instead, it is designed as a quick reference guide for the busy manager and includes all the ***Partner's*** time-tested PM worksheets and guidelines. In addition, the author has drawn on his recent experiences implementing the ***Partner*** in training and consulting engagements to create more than a dozen powerful new PM tools which are published here for the first time. These include:

- Worksheet: My Unique Project Life Cycle
- Worksheet: The Project Charter
- Worksheet: Project Scope Statement
- Worksheet: Estimating Duration of Activities and Resources Required
- Worksheet: Project Communications Planner
- Worksheet: Risk Assessment & Response Analyzer

- Guidelines: Keeping Things Moving—A "To-Do" List and Tools to Help You Control and Close Out Your Project
- Worksheet: Project Deliverables Status Analyzer
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- Worksheet: The Project Status Report
- Worksheet: Sample Project Sign-off Form
- Guidelines: When to Kill the Project

We hope you enjoy this handbook and that you find it to be a valuable tool for planning and managing your projects.

This handbook is divided into three major sections. Each major section corresponds to one of the "big picture" chores project managers face when setting up and managing a project.

Part I: Your Deliverables, Phases, and Project Life Cycle

This part of the handbook will help you complete your first big chore: Figuring out your ***project life cycle***—in particular, figuring out how your project's major ***deliverables (results)*** will determine your appropriate ***project phases*** and how these phases may be grouped together to make up the ***life cycle*** of your project. This section presents a generic project life cycle, as well as a tool and suggestions that will help you develop your own customized project life cycle.

Part II: Your Essential Project Actions

This part of the handbook will help you complete your second big chore: Figuring out which ***actions*** you need to take to complete your project. In other words, given the phases and life cycle you identified in Part I, what actions must you take to get the project done effectively? This section provides a list of project management best practices from which you may select those most applicable to your project.

Part III: Your Project Management Action Tools

This part of the handbook will help you complete your third big chore: Figuring out what specific steps to take to accomplish our essential project management actions. This is the heart of the handbook. It contains ***tools*** in the form of worksheets, guidelines, and checklists to help guide you through each of the actions you identified as important in Part II. While you won't need to use every tool for every project, you are likely to find that these tools contain valuable solutions to many of your typical project problems.

Where to Begin

The table below will help you figure out where to begin.

If . . .	***Then . . .***
You are a new project manager working on your first project . . .	Work through Parts I and II, then refer to appropriate sections of Part III, as needed
You are a first-time project manager working in an organization that has clearly prescribed for you your project's deliverables, phases, and project life cycles . . .	Skim through Part I and try to relate your organi-zation's phases and life cycle to those presented in the text. Then work through Part II and appropriate sections of Part III.
You are an experienced project manager who is clear about your project's deliverables, phases, and appropriate life cycle . . .	Skip Part I. Skim through Part II and continue to appropriate sections of Part III.

If . . .	***Then . . .***
You have a lot of experience managing projects, but would like to review some	Skim through all sections of the handbook and challenge yourself by trying to apply any

Part I: Your Deliverables, Phases, and Project Life Cycle

A ***project*** is a *temporary endeavor undertaken to create a unique product or service.*[1] Because projects by definition are temporary, project managers must make sure their projects are completed by expending only the amount of time, money, labor, and other resources that have been allocated. In addition, because projects result in unique products or services (deliverables), projects are typically organized into specific phases which most appropriately reflect the evolution of these unique deliverables. These project phases, taken as a whole, make up the overall life cycle of the project. Thus the deliverables of your project, the project's phases, and your project's life cycle are inextricably linked. Let's look at each of these.

Project Deliverables

By ***deliverables*** we are referring to *any measurable, tangible, verifiable output that must be produced to complete the project.*[2] These may include *interim deliverables* (like scripts, system specifications, or blueprints) and *finished deliverables* (like the finished motion picture, software package, or com

pleted building). Let's say you are creating a new product that will help your organization obtain a larger market share and greater profits. The deliverables for your project might include the following:

- An analysis of the market describing where your new product will fit in among its competitors and what specific needs it will meet in the marketplace.
- A feasibility study detailing how your organization will be able to design, manufacture, and distribute the new product.
- A description of the overall project concept.
- A detailed project plan.
- Product specifications (blueprints, flowcharts, etc.).
- A prototype or mock-up of the new product.
- Tests of the new product using members of the product's target audience or buyers.
- Enhancements or revisions to the new product based on the test results.

Project Phases

A ***project phase*** is a *collection of project activities, usually resulting in the creation of a major deliverable.*[3] Consider the list of deliverables above. There are literally hundreds of project activities that must be undertaken in order to complete all the deliverables listed. We could jump right in and try to complete all of these activities at once, but this would likely result in chaos. Instead, we combine the activities into clusters and sequence them so that we can proceed logically and systematically. In short, we group the project activities into phases. To continue our example, here are some appropriate project phases that would systematically yield the deliverables from our example above:

- ***Phase I: Determine Need and Feasibility***—In this phase we would complete all the detailed analysis work, including the market analysis, feasibility study, and overall project concept.
- ***Phase II: Create Project Plan***—In this phase, after the need and feasibility are approved, we would complete all the activities necessary to create a detailed plan for completing the rest of the project.

- ***Phase III: Create Product Specifications***—In this phase we would create detailed product blueprints, flowcharts and so on. These would then be reviewed by outside experts and managers, then revised as needed.
- ***Phase IV: Create Prototype Product***—In this phase we would complete all the activities necessary to create our prototype or mock up.
- ***Phase V: Test and Implement***—In this phase we would organize and conduct tests, make enhancements and revisions, and finalize the product.

Notice that our project phases are logically related to the deliverables we are creating. Within the phases, the deliverables evolve gradually, in successive approximations. In particular, the phases assure that our new product provides plenty of opportunity for project players to review our results and make changes before too much time and money are spent.

The Project Life Cycle

The ***project life cycle*** is a *collection of project phases whose name and number are determined by the control needs of the organization involved in the project.*[4] For example, the five-phased sample project life cycle above affords plenty of opportunity for control by the sponsoring organization. At the end of each phase the project may be reviewed, deliverables may be revised, or the entire project may be stopped. In this way the organization may protect its investment.

Because the types of deliverables resulting from projects differ widely from one industry to another, the project controls and phases used also can be quite different. For example, most film production projects include an editing or post-production phase, while most homebuilding projects include a blueprint phase.

So different deliverables evolve in different ways, requiring different project phases. Yet no matter what the industry, ***stakeholders*** (i.e., *those who are affected by project activities*)[5] review and approve deliverables at each phase before allowing the next phase to begin. In this way, stakeholders try to assure that deliverables evolve in a steady, controlled fashion and that resources are not wasted.

As an industry matures, its typical project life cycles come to represent industry-wide “best practices.” By using an industry-standard project life cycle, project managers can help assure that deliverables will conform to recognized quality standards and that the project schedule and budget will be maintained. What’s more, when you compare your project to the industry standard, you can quickly identify how your project will differ. This allows you to isolate activities that require especially thorough analysis and planning.

Sometime, however, you might find yourself in charge of planning and managing a project that doesn’t seem to fit one of the industry-specific life cycles. In such situations, you can apply our Generic Project Life Cycle. It incorporates phases and activities that we believe are nearly universal in their application. The five phases of the Generic Project Life Cycle are illustrated in the diagram below:

Let's briefly examine each of these phases:

Phase I: Determine Need and Feasibility

In this phase, the project manager and application specialists attempt to confirm that there is a need for the project deliverables. In addition, they try to decide whether the project is "doable"—that is, whether it is possible to plan and execute a project to create these deliverables.

Activities

Activities that should be undertaken during this phase include, but are not limited to, the following:[6]

- Goal definition
- Concept definition
- Needs analysis
- Market analysis
- Strategy definition
- Preliminary benefit/cost analysis

This phase culminates in a formal approval of the project concept or a "go/no go" decision.

Phase II: Create Project Plan

Because projects are of finite duration and sometimes use unique work processes, the planning of a project is particularly important. In this phase, the project manager and/or application specialists create a formal document to guide the project team as they execute the project.

Activities

Activities that should be undertaken during this phase include:[7]

- Creating a formal planning document that may be used to:
- Linking project activities to expressed needs and feasibility studies (i.e., tying the plan to the outputs of Phase I: Determine Need and Feasibility).
- Providing a written record of assumptions regarding deliverables, work processes, resources required, and so forth.
- Helping communicate clearly among stakeholders.
- Providing a written record of agreed-upon scope, costs, and schedule
- Facilitating critique of project assumptions by stakeholders

- Getting the project plan approved by sponsors and other stakeholders before project work begins.

Phase III: Create Deliverables Specifications

In this phase, application specialists create a formal document that describes in substantial detail the deliverables to be created. Examples of such detailed specifications include:

- Software design documents
- Blueprints for a building
- A detailed media treatment for a videotape production

It's important to distinguish the extensive Phase III deliverables specifications from the preliminary specifications created as part of the Phase II planning process. In the Phase II planning process, the project team describes the deliverables in just enough detail to create a project plan. Once the plan is approved, the project team may begin spending resources (including time and money) on the project. Thus it is simply good business to wait until Phase III to extend the preliminary specifications. At this time they should be "fleshed out" substantially so that project stakeholders can

evaluate them at length. In this way, the project team can make modifications “on paper” instead of reworking the deliverables.

Note that these detailed specifications sometimes identify unanticipated deliverables. Therefore, this phase often includes descriptions of ways in which schedules or budgets need to be refined, as well as new project assumptions.

Activities

Activities that should be undertaken during this phase include:[8]

- Creating one or more documents describing deliverables specifications in substantial detail
- Obtaining approval of the deliverables specifications from sponsors and other stakeholders

Phase IV: Create Deliverables

Typically the most time-consuming and resource-intense phase of the project is the phase in which the project deliverables are created according to the approved deliverable specifications. In other words, to extend our Phase III examples, the software is developed,

the building is built, the videotape is produced, and so on.

The specific activities involved in this phase differ dramatically from one industry or application to another. For example, a defense contractor may first need to create a working model to prove the concept works before building the full-blown version of the defense system. Or a software developer will likely create and test small units of code before programming and integrating all software modules. And a video producer would likely create scripts, conduct casting sessions and rehearsals, and produce other interim deliverables prior to engaging in full-blown production activities.

Activities

Activities that should be undertaken during this phase include, but are by no means limited to, the following:[9]

- Creating prototypes of deliverables
- Creating portions or pieces of deliverables
- Providing services as promised in the project plan
- Completing fully integrated deliverables
- Obtaining sponsor and other stakeholder approval of each deliverable or service provided, as appropriate

Phase V: Test and Implement

Deliverables

In this phase, the project deliverables are shown to work as planned and are turned over to the sponsor or customer for use. As in Phase IV, the specific activities involved in this phase differ dramatically from one industry or application to another. The defense contractor will likely test and refine the product and manufacturing processes many times prior to full production and deployment. The software producer is likely to run user tests and make revisions prior to delivery to the customer. And the video producer may conduct audience tests of "rough cuts" prior to final editing and delivery to the client.

Activities

Activities that should be undertaken during this phase include, but are certainly not limited to, the following:[10]

- Testing of deliverables, together or in parts
- Refinement of deliverables based on test results
- Implementation of deliverables on a limited basis (such as a field trial)
- Further refinement of deliverables based on preliminary implementation
- Full production of final deliverables

- Sponsor or other stakeholder approval of test results, resulting plans for modification of deliverables, and final deliverables

Assignment: Your Unique Project Life Cycle

Bearing in mind your project's unique deliverables, use the worksheet on the next page to determine your project's unique phases and life cycles.

Worksheet: My Unique Project Life Cycle

Instructions: This tool will help you to create your own custom-tailored project life cycle—one that best reflects the unique requirements of your project's deliverables and your organization. Refer to the first two columns as your "crib sheet," then fill in the third column with between 3 and 7 broad phases which you project should employ. In the last column, note the key activities that will be essential to the success of each phase. (Continue on the back of the page, if necessary.)

Typical Project Phases	***Typical Project Activities***	***My Project's Phases***	***My Project's Activities***
Determine Need and Feasibility ***Purpose:*** Confirm that project is needed, do-able; formal "go/no go" approval.	• Goal and concept definition • Needs or market analysis • Strategy definition • Preliminary bene-fit/cost analysis		

Typical Project Phases	*Typical Project Activities*	*My Project's Phases*	*My Project's Activities*
Create Project Plan ***Purpose:*** Create formal document to guide project team as they execute project.	• Involve stakeholders in specifying and agreeing upon project outcomes and methodology • Create written record of assumptions, agreed-upon scope, resources, schedule, costs, etc. • Obtain consensus and formal approval		

Typical Project Phases	*Typical Project Activities*	*My Project's Phases*	*My Project's Activities*
Create Deliverables	• Create design plans,		

Spec's ***Purpose:*** Describe deliverables in sub-stantial detail "on paper."	flowcharts, blueprints, media treatments, other "on paper" deliverables descriptions and samples as appropriate • Circulate and obtain feedback, revise, obtain formal approval		

Typical Project Phases	*Typical Project Activities*	*My Project's Phases*	*My Project's Activities*
Create Deliverables ***Purpose:*** Create prototypes, pieces; create full-blown, fully integrated deliverables	• Create all promised deliverables, in "chunks" or completely • Provides planned services, execute planned activities, obtain formal approval		

Typical Project	*Typical Project*	*My Project's*	*My Project's*

Phases	*Activities*	*Phases*	*Activities*
Test & Implement Deliverables ***Purpose:*** Make sure project deliverables work as planned; turn over to sponsor for use	• Testing of deliver-ables (in whole or in part) • Refinement, revision • Full production, implementation, and final approval		

Part II: Your Essential Project Actions

Given the deliverables and phases you identified in Part I, what actions must you take to get the project done effectively? This section provides a review of essential PM (project management) ***processes*** as identified in the Project Management Institute's PMBOK (Project management Body of Knowledge).[11] In addition, we provide a list of ***essential PM actions*** derived from those processes from which you may select those most applicable to your project.

Project Management Processes

In Part I we identified three important ***whats*** related to the project:

- What are the deliverables to be created?
- What are the phases by which we will organize the project?
- What is our overall project life cycle?

Now it's time to consider some of the ***hows*** related to the project:

- How will we move from phase to phase within the project?

- How should the project manager determine specific assignments and "to dos" for the project team?
- In short, how will we take action to complete the project?

The answers to these "how" questions may be found by examining the essential project management processes.

A ***process*** may be defined as *a series of actions designed to bring about specific results.*[12] There are five processes that should be applied to *each phase* of a project in order to bring about the completion of the phase. These processes are listed below:[13]

- Initiating
- Planning
- Executing
- Controlling
- Closing

Three of these processes (planning, executing, and controlling) apply to any type of management activity, whether it involves a project or an ongoing operation. Since projects are temporary (i.e., they have an identifiable starting point and require timely completion),

they must also include the processes of initiating (starting up) and closing (formally accepting the results and ending the phase).[14]

Note that all of these processes eventually become unconscious habits of effective project managers. Through practicing them in a conscious way at first, you can eventually internalize them and begin to move among them in a fluid way, helping to ensure your project's success.

The diagram shown below illustrates how these project management processes are linked.

Let's take a closer look at each of these processes.

FIGURE1: Project Management Processes[15]

Initiating

Initiating means getting the project authorized. It involves obtaining the organization's commitment to the project as a whole. Alternately, initiating may involve getting the organization's commitment that a particular project phase should be started.[16]

Typically, the sponsor, customer, or person providing the funds gives the authorization to begin a project or phase. So, in effect, initiating means getting the "green light" from the client to begin work.

Planning

Planning is of major importance on a project because by definition the project involves creating something unique.[17] In other words, you may be heading into uncharted waters, so you should have a plan to help you get through them safely. There are two types of planning: essential planning and discretionary planning.

Essential Planning

Essential planning consists of these four subprocesses:[18]

- Defining scope (all the products and services to be provided by the project)
- Determining required activities, resources, and schedule
- Creating detailed cost estimates and budgets

- Integrating all of the above into a comprehensive project plan

We label these subprocesses as “essential” because no one should undertake a project or project phase without first completing all four of them.

Discretionary Planning

Discretionary planning processes are desirable, but not necessarily required to complete a project.[19] These processes are performed as needed and include creation of formal plans such as these:

- Quality plan
- Communications plan
- Staffing plan (over and above that described in the essential plan above)
- Procurement plan
- Risk assessment/response plan
- Others, as dictated by organizational values and policies

Some veteran project managers would no doubt argue that adopting one or more of these plans is not simply discretionary, but essential. Depending on your organization and your industry, you may agree. At minimum, you should quickly skim through the Action Tool associated with each of these planning processes and decide whether it might apply to your project; if it clearly does not apply, then you can reject it. In this way, you will be sure that you have done your job as project manager by challenging all assumptions about the work process, selecting the best possible approaches, and taking nothing for granted.

In any case, whether you classify the particular outputs as essential or discretionary, planning is a vital process of project management. As you will see in Part III, the majority of the Action Tools in this handbook are designed to support the planning process.

Executing

Executing is the process by which project plans are carried out. Executing involves several subprocesses:[20]

- **Project Plan Execution**—carrying out the project plan as written. Specifically, project plan execution involves building the house, producing the motion picture, developing the new software, or carrying out whatever activities the plan called for.

- **Team Development**—developing individual and group skills to enhance project performance. This may include formal and informal training, coaching, and so on.
- **Information Distribution**—making needed information available to project stakeholders in a timely manner.
- **Solicitation**—obtaining quotations, bids, offers, or proposals from contractors, vendors, or other providers of essential goods or services.
- **Source Selection**—choosing from among potential contractors, vendors, or providers.
- **Contract Administration**—managing the relationship with the contractor, vendor, or other provider. This includes such activities as handling paperwork and assuring payment.

Controlling

Controlling involves comparing actual performance with planned performance. In other words, are you doing exactly what you planned to do? If you discover deviations from the plan (often called “variances”), you must analyze these variances and figure out

alternative actions that will get the project back on track. You can then decide which alternative is best and take appropriate corrective action.[21] Controlling involves several subprocesses:[22]

- **Progress Reporting**—collecting and disseminating progress information to all project stakeholders.
- **Overall Change Control**—coordinating changes across the entire project.
- **Scope Change Control**—controlling changes to project scope. This often means limiting the project's deliverables to only those planned.
- **Cost Control**—controlling changes to the project budget.
- **Quality Control**—monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance.
- **Quality Assurance**—evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards.
- **Risk Control**—attempting to minimize the effect that "unknowns" or potentially negative events will have on the project.

Closing

Because projects are temporary endeavors, projects and project phases must eventually come to an end. But who is to say when a project or phase has ended? More importantly, how do you know when to stop expending effort and money on a project or project phase?

Projects typically involve many stakeholders, each of whom is likely to have an opinion about the suitability of deliverables. To help prevent disputes, it is necessary to set up a formal process by which the project or project phase may be declared officially completed. This formal process is called closing. Closing involves formally accepting the results and ending the project or phase. This includes several subprocesses.[23]

- **Scope Verification**—ensuring that all identified project deliverables have been completely satisfied.
- **Administrative Closure**—generating, gathering, and disseminating information to formalize project completion. Often "sign-off" or written approval of the deliverables or phase is obtained.
- **Contract Close-Out**—completion and settlement of the contract, including resolution of any outstanding items.

Note that clear-cut and effective closing is based on the formal project plan. The project plan should spell out exactly what the deliverables will look like, how and by whom the deliverables will be approved, and so on. By formally agreeing to the plan, the stakeholders have in advance agreed to specific deliverables to be created by specific methods. In this way, the finished results can be compared to the planned results, thus minimizing disputes over whether the deliverables are suitable.

Project Phases and the Project Management Process

The life cycle of a project and the processes used to manage the project are distinct and separate, yet inextricably linked. The project manager uses the processes in order to complete each phase of the life cycle. The diagram on the following page illustrates how the phases and processes interrelate.

FIGURE 3. Project Phases and the Project Management Processes

Note that the project life cycle is essentially linear: each phase results in a work product that is passed on to the next phase. The project deliverables evolve gradually, culminating in the finished product.

On the other hand, the project management processes are non-linear. They recur over and over again throughout the project, in all phases.

The project life cycle influences the final deliverables by identifying the essential outputs of each phase. In contrast, the project management processes influence the project manager by identifying the actions that he or she must take to help make the project a success.

Assignment: Your Essential Project Actions

Bearing in mind your project's unique deliverables, phases, and life cycle, use the worksheet on the next page to determine the essential actions you must take as project manager to complete your project.

SUMMARY OF KEY PROJECT MANAGER ACTIONS & RESULTS

Below is a list of actions which project managers should take in order to successfully complete a project. Beside each action is a description of one or more specific results that the action should produce. Place a check mark (✓) beside each action and result that will be essential to your project's success.

INITIATING	
ACTION	***RESULTS OF SUCCESSFUL PERFORMANCE***
1. Demonstrate Project Need and Feasibility	• A document confirming that there is a need for the project deliverables and describing, in broad terms: the deliverables, means of creating the deliverables, costs of creating and implementing the deliverables, benefits to be obtained by implementing the deliverables

2. Obtain Project Authorization	• A “go/no go” decision is made by the sponsor • A project manager is assigned • A “project charter” is created that: – formally recognizes the project – is issued by a manager external to the project and at a high enough organizational level to meet project needs – authorizes the project manager to apply resources to project activities
3. Obtain Authorization for the Phase	• A “go/no go” decision is made by the sponsor that authorizes the project manager to apply organizational resources to the activities of a particular phase • Written approval of the phase is created that: – formally recognizes the existence of the phase – is issued by a manager external to the project and at a high enough organizational level to meet project needs

PLANNING	
ACTION	***RESULTS OF SUCCESSFUL PERFORMANCE***
4. Describe Project Scope	• Statement of project scope • Scope management plan • Work breakdown structure
5. Define and Sequence Project Activities	• An activity list (list of all activities that will be performed on the project) • Updates to the work breakdown structure (WBS) • A project network diagram
6. Estimate Duration for Activities and Resources Required	• Estimate of duration (time required) for each activity and assumptions related to each estimate • Statement of resource requirements • Updates to activity list

7. Develop a Project Schedule	• Project schedule in the form of Gantt charts, network diagrams, milestone charts, or text tables • Supporting details, such as resource usage over time, cash flow projections, order/delivery schedules, etc.
8. Estimate Costs	• Cost estimates for completing each activity • Supporting detail, including assumptions and constraints • Cost management plan describing how cost variances will be handled
9. Build a Budget and Spending Plan	• A cost baseline or time-phased budget for measuring/monitoring costs • A spending plan, telling how much will be spent on what resources at what time
10. **(Optional):**Creat e a Formal Quality Plan	• Quality management plan, including operational definitions • Quality verification checklists

11. **(Optional)**: Create a Formal Project Communications Plan	• A communication management plan, including: – Collection structure – Distribution structure – Description of information to be disseminated – Schedules listing when information will be produced – A method for updating the communications plan
12. Organize and Acquire Staff	• Role and responsibility assignments • Staffing plan • Organizational chart with detail, as appropriate • Project staff • Project team directory
13. **(Optional)**: Identify Risks and Plan to Respond	• A document describing potential risks, including their sources, symptoms, and ways to address them

14. **(Optional)**: Plan for and Acquire Outside Resources	• Procurement management plan describing how contractors will be obtained • Statement of work (SOW) or statement of requirements (SOR) describing the item (product or service) to be procured • Bid documents, such as RFP (request for proposal), IFB (invitation for bid), etc. • Evaluation criteria—means of scoring contractor's proposals • Contract with one or more suppliers of goods or services
15. Organize the Project Plan	• A comprehensive project plan that pulls together all the outputs of the preceding project planning activities
16. Close Out the Project Planning Phase	• A project plan that has been approved, in writing, by the sponsor • A "green light" or okay to begin work on the project
17. Revisit the Project Plan and Replan, If Needed	• Confidence that the detailed plans to execute a particular phase are still accurate and will effectively achieve results as planned

EXECUTING	
ACTION	***RESULTS OF SUCCESSFUL PERFORMANCE***
18. Execute Project Activities	• Work results (deliverables) are created • Change requests (i.e., based on expanded or contracted project) are identified • Periodic progress reports are created • Team performance is assessed, guided, and improved, if needed • Bids/proposals for deliverables are solicited, contractors (suppliers) are chosen, and contracts are established • Contracts are administered to achieve desired work results

CONTROLLING	
ACTION	***RESULTS OF SUCCESSFUL PERFORMANCE***
19. Control Project Activities	• Decision to accept inspected deliverables • Corrective actions such as rework of deliverables, adjustments to work process, etc. • Updates to project plan and scope • List of lessons learned • Improved quality • Completed evaluation checklists (if applicable)

PLANNING	
ACTION	***RESULTS OF SUCCESSFUL PERFORMANCE***
20. Close Out Project Activities	• Formal acceptance, documented in writing, that the sponsor has accepted the product of this phase or activity • Formal acceptance of contractor work products and updates to the contractor's files • Updated project records prepared for archiving • A plan for follow-up and/or hand-off of work products

Phases, Processes, and Action Items: Pulling It All Together

So far we have described five generic project phases that may be used as a baseline to organize nearly any project. In addition, we have described five processes that project managers need to perform in order to complete these project phases.

But how do these elements fit together? The following table makes the connections clear. Here's how to use it:

1. Figure out which phase your project is in (refer to the left column).
2. Decide which project management processes you need to complete (refer to the middle column).
3. Identify the relevant Action Tools that can help you perform the process (refer to the right column).
4. Turn to Part III and locate the relevant Action Tools.
5. Skim through them and decide how you can put them to work for you. Make additions or deletions as appropriate to accommodate your particular industry or organization.

IF… *You are in this generic project phase*	*…AND* *You want to perform this process*	*…THEN* *Refer to these Action Tools*
Phase I: Determine Need and Feasibility *(Define goals, concept; analyze need, market; define strategy; do benefit/ cost analysis)*	Initiating Phase I Planning Phase I Executing Phase I Controlling Phase I Closing Phase I	• Demonstrate Project Need and Feasibility • Obtain Project Authorization

Phase II: Create Project Plan *(Make a record of all planned deliverables, work processes, resources, scope, etc., and get it approved)*	Initiating Phase II	• Obtain Authorization for the Phase
	Planning Phase II Controlling Phase II	• Describe Project Scope • Define and Sequence Project Activities • Estimate Duration for Activities and Resources Required • Develop a Project Schedule • Estimate Costs • Build a Budget and Spending Plan • **(Optional)**: Create a Formal Quality Plan • **(Optional)**: Create a Formal Project Communications Plan • Organize and Acquire Staff • **(Optional)**: Plan for and Acquire Outside Resources
	Closing Phase	• Organize the Project Plan • Close Out the Project Plan

Phase III: Create Deliverables Specifications *(Describe deliverables in detail; get description approved)*	Initiating Phase III Planning Phase III Executing Phase III Controlling Phase III Closing Phase III	• Obtain Authorization for the Phase • Revisit the Project Plan and Replan, if Needed • Execute Project Activities • Control Project Activities • Close Out Project Activities
Phase IV: Create Deliverables *(Create prototype pieces; full-blown, fully integrated deliverables; get them approved)*	Initiating Phase IV Planning Phase IV Executing Phase IV Controlling Phase IV	• Obtain Authorization for the Phase • Revisit the Project Plan and Replan, if Needed • Executive Project Activities • Control Project Activities

	Closing Phase IV	• Close Out Project Activities
Phase V: Test and Implement Deliverables *(Test, refine, produce, and install deliverables)*	Initiating Phase V Planning Phase V Executing Phase V Controlling Phase V Closing Phase V	• Obtain Authorization for Phase • Revisit the Project Plan and Replan, if Needed • Execute Project Activities • Control Project Activities • Close Out the Project Activities

Part III: Your Project Management Action Tools

This section contains *tools* in the form of worksheets, guidelines, and checklists to help you complete each of the actions you identified as important in Part II. While you won't need to use every tool for every project, you are likely to find that these tools contain valuable solutions to most of your typical project problems.

Overview

This section provides specific tools to help you "work through" each of the five project management processes. Specifically, these processes are:

- Initiating
- Planning
- Executing
- Controlling
- Closing

(For detailed explanations of these processes, see Part II: Your Essential Project Actions.)

Each Action Tool is divided into these sections:

- ***Assignment***—a description of the assignment or specific project management task that this Action Tool will support.
- ***Desired Outputs***—the results that should be achieved when you complete this Action Tool.
- ***Worksheet and/or Guidelines***—a set of step-by-step procedures to guide you through the completion of the Action Tool.

Below is a list of all the Action Tools. Note that they are organized according to the project management process they support.

Initiating

- Action Tool: Demonstrate Project Need and Feasibility
- Action Tool: Obtain Project Authorization
- Action Tool: Obtain Authorization for the Phase

Planning

- Action Tool: Describe Project Scope
- Action Tool: Define and Sequence Project Activities
- Action Tool: Estimate Duration of Activities and Resources Required
- Action Tool: Develop a Project Schedule
- Action Tool: Estimate Costs

- Action Tool: Build a Budget and Spending Plan
- Optional Action Tool: Create a Formal Quality Plan
- Optional Action Tool: Create a Formal Project Communications Plan
- Action Tool: Organize and Acquire Staff
- Optional Action Tool: Identify Risks and Plan to Respond
- Optional Action Tool: Plan for and Acquire Outside Resources
- Action Tool: Organize the Project Plan
- Action Tool: Close Out the Project Planning Phase
- Action Tool: Revisit the Project Plan and Replan, if Needed

Executing

- Action Tool: Execute Project Activities

Controlling

- Action Tool: Control Project Activities

Closing

- Action Tool: Close Out Project Activities

Action Tool: Demonstrate Project Need and Feasibility

Assignment

Decide whether you have enough information to prove to the sponsor that the project is needed and feasible.

Desired Outputs

- A document confirming that there is a needed for the project deliverables; this would describe the following items in broad terms:

  The project goal and/or underlying concepts

  The deliverables

  By what means the deliverables might be created

  The costs of creating and implementing the deliverables

  The benefits to be obtained by implementing the deliverables

  Who are the sponsor(s) and stakeholders

  In what ways the sponsor(s) and stakeholders are prepared to support the project

Worksheet: Demonstrating Project Need and Feasibility

Instructions: This worksheet is designed to help you decide whether you've "done your homework" and obtained enough information to prove to your sponsor* that the project you propose is needed and feasible.

Evaluate your project documentation to date by asking yourself each of these questions. (Alter-nately, you might have a colleague or project supporter review the document with the sponsor's point of view in mind.) Check *Yes* for those you have answered adequately. If you check *No*, review the follow-up suggestion and figure out what to do next.

YES	NO	QUESTIONS
❑	❑	Have I defined the project goal clearly, in terms the sponsor* can understand? *If no, redefine the goal statement and have it checked by someone who "thinks like the sponsor."*
❑	❑	Is the sponsor financially and organizationally able to provide all needed support? *If no, who is the real sponsor and how can we get the real sponsor involved?*

YES	NO	QUESTIONS
❑	❑	Have I expressed the core project concept clearly and succinctly? *If no, redefine the core project description and have it checked by someone who "thinks like the sponsor."*
❑	❑	Does a market analysis or needs analysis show a bona fide need for the product (deliverables) of the project? *If no, consider abandoning the project or conducting an appropriate analysis that "proves" project need.*
❑	❑	Have we clearly expressed the costs and benefits of the project? *If no, restate the description of costs and benefits and have it checked by someone who 'thinks like the sponsor."*
❑	❑	Have I consulted all project stakeholders to obtain their opinions about the need and feasibility? *If no, identify missing stakeholders and review the need/feasibility with them, asking for feedback.*
❑	❑	Have we defined a project strategy in enough detail to enable the sponsors to really understand "what they're getting into?" *If no, restate the project strategy and have it checked by someone who "thinks like the sponsor."*

YES	NO	QUESTIONS
❑	❑	Have I assembled the results of my research into a well-written document and/or presentation? *If no, create your document or presentation and have it checked by someone who "thinks like the sponsor."*
❑	❑	Have I determined an appropriate audience and scheduled a time, place, and date for presenting my project proposal? *If no, discuss these items with your supervisor (or a more experienced project manager) and figure out what to do next.*
❑	❑	Have I rehearsed the presentation, including my answers to potentially controversial questions? *If no, plan and conduct such a rehearsal.*

**Sponsor* is the customer, client, final owner, or entity providing funding. The sponsor has the power to provide funds, approve the use of resources, and/or stop the project.

Action Tool: Demonstrate Project Need and Feasibility

Assignment

Obtain suitable authorization from the sponsor to begin the project.

Desired Outputs

- A "go/no go" decision is made by the sponsor.

  If "*no go*," all planning typically stops.

  If "*go*," the next items apply.

- A project manager is identified and assigned.
- A "project charter" is created that:

  Formally recognizes the existence of the project

  Is supported by a manager external to the project and at a high enough organizational level so that he or she can support project needs

  Authorizes the project manager to apply organizational resources (people, equipment, materials) to project activities

Worksheet: Is This Project Authorized?

Instructions: This worksheet will help you figure out whether you have been fully authorized to continue with the project you proposed. Assuming that you have been given some form of approval to begin the project, evaluate that approval to determine if it provides you with the authority you need in order to do the job. (*If you are working with a formal or informal advisory group, you might ask its members to complete this worksheet for you.*)

YES	NO	QUESTIONS
❑	❑	Has the project been formally recognized as a project by one or more sponsors? *If no, find out why not and discuss with your supervisor or the potential sponsor what to do next.*
❑	❑	Has news of the project been widely circulated in written form? *If no, find out why not and figure out what to do next.*
❑	❑	Has project authorization been issued by a manager external to the project and at a high enough organizational level to help meet project needs? *If no, identify an appropriate sponsoring manager and figure out how you can get his or her authorization.*

YES	NO	QUESTIONS
❑	❑	Has the project manager been clearly identified? *If no, find out who should identify the project manager and what steps are needed to get the project manager officially identified.*
❑	❑	Is the project manager authorized to apply organizational resources (people, equipment, materials) to project activities? *If the project manager has not been formally authorized, then ask the sponsor by whose authority project resources will be applied.*
❑	❑	Has the project manager been given the "green light" to move on to the next project phase? *If no, decide what conditions need to be met to get authorization, and begin to meet them.*
❑	❑	Has a project charter been created and approved by appropriate decision-makers? *If no, create one and get it approved. (See Worksheet: The Project Charter)*

Remember: If the project isn't authorized, you probably should not be expending resources (including your own time) working on it.

Worksheet: The Project Charter

Project Name:

Project Manager:

Project Tracking Number: **Date:**

Project Justification (Problem or Opportunity Addressed):

Overview of Deliverables (high-level, broad-brush only—provide details, if any, in appendices*):

Specific Project Objectives & Success Criteria (schedule, cost, quality):

Primary Stakeholders & Roles (including broad statement of roles and responsibilities of all customers, sponsors, contributors, reviewers, managers, sign-off authorities, project manager, etc.):

Key Assumptions:

Signatures—The following people agree that the above information is accurate:

- Project team members:

- Project sponsor and/or authorizing manager(s):

Action Tool: Authorization for the Phase

Note: Whether you will need authorization to begin each phase will depend on the type of project and the organizations involved. Initial approval of the entire project may be enough to initiate authorization of each project phase automatically. However, see *Pitfalls and Cautions* below.

Assignment

Obtain suitable authorization from the sponsor to begin a particular project phase.

Desired Outputs

- A "*go/no go*" decision is made by the sponsor concerning whether the project manager will be authorized to apply organizational resources (people, equipment, materials) to the activities of a particular phase (as opposed to the entire project).

  If "*no go*," all work typically stops.

  If "*go*," continue with the next items.

- The phase is given written approval that:

  Formally recognizes the existence of the phase

Is supported by a manager external to the project and at a high enough organizational level so that he or she can support the needs of the phase

Authorizes the project manager to apply organizational resources (people, equipment, materials) to activities of the phase

Worksheet: Is This Phase Really Authorized?

Instructions: This worksheet will help you figure out whether you have been fully authorized to begin a project phase. Assuming that you have been given some form of approval to begin the phase, evaluate that approval to determine if it provides you with the authority you need to do the job. (*If you are working with a formal or informal advisory group, you might ask its members to complete this worksheet with you.*)

YES	NO	QUESTIONS
❑	❑	Is the phase we are about to begin part of a project that has been formally recognized as a project? *If no, return to Action Item: Obtain Project Authorization.*
❑	❑	Have all appropriate stakeholders approved the results of the preceding phase? *If no, consider how and why the results of the preceding phase were not approved. Ask yourself: "Should we really continue to the next phase without reworking the deliverables, changing the formal project specifications, or otherwise changing our project plans?"*

YES	NO	QUESTIONS
❑	❑	Have the authorization for this phase has been issued by a manager external to the project and at a high enough organizational level to help meet project needs? *If no, identify an appropriate sponsoring manager and figure out how you can get his or her authorization.*
❑	❑	Is it clear who the project manager is for this phase? *If no, find out who should identify the project manager and what steps are needed to get the manager officially identified.*
❑	❑	Is the project manager authorized to apply organizational resources (people, equipment, materials) to the phase? *If the project manager has not been formally authorized, then ask the sponsor by whose authority project resources will be applied.*
❑	❑	Has the project manager been given the "green light" to continue with this project phase? *If no, decide what conditions need to be met to get authorization and begin to meet them.*

Remember: If the phase isn't authorized, you probably should not be expanding resources (including your own time) working on it!

Action Tool: Describe Project Scope

Assignment

Create an adequate description of project scope.

Desired Outputs

- Statement of project scope, to include:

  Project justification

  List of major project deliverables

  List of project objectives (quantifiable criteria that must be met for success—at minimum: cost, schedule, and quality measures)

- Scope management plan, to include:

  How scope will be managed (i.e., how scope changes will be identified and integrated into the project)

  Expected stability of the project

- Work breakdown structure—a "family tree" that organizes and defines the total scope of the project.

Checklist: Evaluating Project Scope

Instructions: This checklist is designed to help you evaluate your description of project scope; then, using the list below, check off the items that you have completed. (*If you are working with a formal or informal advisory group, you might ask all of its members to work through this checklist with you.*)

- ❑ There is a clear project justification (i.e., a clear explanation of why the project has been undertaken).
- ❑ There is a list of all major project deliverables.
- ❑ There is a list of project objectives.
- ❑ The project objective list includes quantifiable criteria for success, including:
  - Cost criteria (i.e., What cost limits will be met in order for the project to be judged a success?)
  - Schedule criteria (i.e., What calendar dates will be met in order for the project to be judged a success?)
  - Quality measures (i.e., By what measures will we know that the project has produced quality deliverables or achieved quality results?)

- ❑ Project objectives do ***not*** take the form of fuzzy descriptions such as "to provide maximum customer satisfaction" or "to create state-of-the-art deliverables."
- ❑ There is a description of what constitutes an "out-of-bound" condition that could lead to a change in project scope (e.g., excess costs, schedule extensions, reduction in quality, increase in deliverables).
- ❑ There is a description of what to do when project scope changes are identified (e.g., notify sponsor, execute a contract change order, stop project work).
- ❑ There is a description of the expected stability of the project (e.g., "We have anticipated and spelled out potential unstable factors").
- ❑ There is a work breakdown structure (WBS) or a "family tree" chart that organizes and defines the total scope of the project.
- ❑ All the items above have been organized into a single, comprehensive document (see Worksheet: Project Scope Statement.)

Worksheet: Project Scope Statement

Project Name:

Project Manager:

Project Tracking Number: **Date:**

Project Justification (Problem or Opportunity Addressed):

Overview of Deliverables (. . . broad brush only—Place detailed WBS in appendices"):

Specific Project Objectives & Success Criteria (schedule, cost, quality):

Scope Management Issues (including ways scope changes will be handled, contract change orders will be processed, etc.):

Primary Stakeholders & Roles (including broad statement of roles and responsibilities of all customers, sponsors, contributors, reviewers, managers, sign-off authorities, project manager, etc.):

Key Assumptions:

Signatures—The following people agree that the above information is accurate:

- Project team members:

- Project sponsor and/or authorizing manager(s):

*Appendices (Needs Analysis/Feasibility Study Notes, Detailed Work Breakdown Structure, Preliminary Schedule, Preliminary Cost Estimate, Sample Deliverables, Background Memos/Reports, Organization Chart of Project Team, others as needed).

Example: Work Breakdown Structure

(WBS)

A work breakdown structure describes the components and subcomponents of the project's various work products as a "family tree." Consider this example. A couple has decided that they would like to change their lifestyle by moving to their own custom-made log cabin in the wilderness. Below is a work breakdown structure for this project.

Note that the client shows *all* the various outputs that must be created, not just the most obvious. We can see, for example, that getting the financing arranged and the services installed will be important project outcomes, so the couple must account for these in their plans. Had they focused only on the most obvious (the cabin's construction), they may have overlooked these outcomes.

FIGURE 4. Work Breakdown Structure Chart

As this example shows, a main benefit of starting a project with a work breakdown structure is that it keeps the project manager focused on uncovering all the “hidden” deliverables. Only after all these specific outputs are examined in detail can the project manager build an accurate list of activities (i.e., the project work tasks) necessary to create these deliverables.

Action Tool: Define and Sequence Project Activities

Assignment

Define and sequence all the activities necessary to complete the project.

Desired Outputs

- An activity list (list of all activities that will be performed on the project)
- Updates of the work breakdown structure (WBS) (*For details, see Action Tool: Describe Project Scope.*)
- A project network diagram showing the relationships among project activities

Guidelines for Defining and Sequencing Project Activities

Instructions: Follow these steps to define and sequence your project activities. You may use the check boxes to mark the items as completed. (*If you are working with a formal or informal advisory group, you might ask its members to work through these guidelines with you.*)

STEP 1: Assemble the following:

- ❑ Description of project scope
- ❑ Historical data an activities that were required for similar projects (i.e., What activities are usually completed for similar types of projects?)
- ❑ One or more experts who have defined and sequenced activities for similar projects

STEP 2: Create detailed activities lists.

- ❑ Examine the WBS, and for each product (deliverable) to be created, make a list of specific activities.
- ❑ Group these activities into clusters or groups of related activities. Keep in mind the typical project phases required by your industry's best practices.

- ❑ Separate some of the clustered activities into activities that may "stand alone."
- ❑ Identify review, revision, and sign-off points, if appropriate.
- ❑ Identify closure points for completing deliverables.

STEP 3: Create the project network diagram.

- ❑ Draw a diagram showing the relationships among activities (which must come first, which must come next, which ones may proceed at the same time, etc.).

STEP 4: Evaluate the detailed list of activities and the network diagram, and revise/adjust.

- ❑ Revisit your network diagram and list of activities, and decide if they can be refined in any way.
- ❑ Ask an outside advisor (an expert in the project activities) to evaluate your network diagram and supporting activity list.
- ❑ Consider expanding or adding a level of detail to all activities whose measures of quality, cost, or schedule are unclear.

Example: Project Network Diagram

When you have listed all your project tasks and have figured out all of the task relationships, you are ready to organize them into a network diagram. Such a diagram can highlight important relationships among project activities, allowing project planners to analyze these relationships and, if necessary, change them. Figure 5 shows two different types of network diagrams. Both of the diagrams below illustrate a do-it-yourself kitchen remodeling project. The kitchen owner has decided to repaint the walls, regrout the tile on the countertop, and install some new appliances. Note how the progress from one project activity to another can easily be seen in the diagrams.

FIGURE 5. Network Diagrams for Kitchen Remodeling Project

Action Tool: Estimate Durations for Activities and Resources Required

Assignment

Estimate duration for activities and resources required to complete those activities.

Desired Outputs

- Estimate of duration (time required) for each activity, and assumptions related to each estimate.
- Statement of resource requirements (What people, equipment, and materials will be needed for each activity?)
- Updates of activity list (How will the activities list need to be modified now that we have looked at durations and resources in greater detail?)

Guidelines for Estimating Duration of Activities and Resources Required

Instructions: Follow these steps to estimate the duration for project activities and the resources required. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask its members to work through this worksheet with you.*)

STEP 1: Assemble the following:

- ❑ Scope statement
- ❑ Activity list and network diagram
- ❑ Description of the resource pool, including resources available and their capabilities
- ❑ Historical data on similar activities from project files, commercial databases, or project team knowledge
- ❑ Organizational policy regarding staffing, rental/purchase of equipment and supplies, and so forth
- ❑ One or more experts who have estimated duration and resources required for similar projects

STEP 2: Examine each activity, then estimate its duration and probable resources required (see Worksheet: Estimating Duration of Activities and Resources Required).

- ❑ Estimate of duration for each activity
- ❑ Estimate of resources required for each activity
- ❑ Assumptions about the resources to be assigned (for example, employees will need to work 10-hour days or the machine will need to process 75 units per hour)

Note: Some organizations can supply you with data on what can reasonably be expected from a particular resource in order to achieve a quality work product. For example, a reasonable expectation for a veteran bricklayer might be to lay X number of bricks per day. If the project manager is forced, due to budget cuts, to hire fewer bricklayers or inexperienced bricklayers, then you may not be able to maintain your project schedule. Your assumptions should clearly state any "reasonable expectancies" such as these so that they may be captured in your project plan.

- ❑ Maximum time some staff members may devote to a particular activity.

STEP 3: Re-evaluate the activity relationships, given your duration and resource assumptions.

- ❑ Examine clusters or groups of related activities.
- ❑ Examine “stand alone” activities.

STEP 4: Adjust the project network diagram as needed.

- ❑ Network diagram adjusted.

STEP 5: Informally present your estimates of duration and resources required to an expert colleague to “reality check” it; adjust as needed.

- ❑ Expert review, adjustment

Worksheet: Estimating Durations of Activities and Resources Required

Instructions: In the *Activity* column, list the phases and activities that must be completed. In the *Duration* column, list the amount of time required to complete each activity. In the *Resources* column, enter the names of all resources which are required to complete each activity. Resources should include all people (including contractors), equipment, facilities, or materials. In addition, your assumptions about experience level, brand names of equipment, facility or equipment specifications, number of resources, and so on should be clearly spelled out, since failure to acquire resources with the assumed characteristics will likely impact the time required to complete the activity.

Phase and Activity	Duration (hours or days)	Resources Required with Assumptions
Total Time Required:		

Phase and Activity	Duration (hours or days)	Resources Required with Assumptions
Total Time Required:		

Action Tool: Develop a Project Schedule

Assignment

Develop a project schedule.

Desired Outputs

- Project schedule (planned start-and-finish dates for each activity) in the form of Gantt charts, network diagrams, milestone charts, or text tables.
- Supporting details, as required, to show resource usage over time, cash flow projections over time, order/delivery schedules, or other schedule-related details.
- Schedule management plan describing how schedule changes will be handled.

Guidelines for Developing the Project Schedule

Instructions: Follow these steps to develop a project schedule. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask its members to work through these guidelines with you.*)

STEP 1: Assemble the following:

- ❑ Your estimates of duration and resources required
- ❑ Information about availability of resources—how many will be available and when
- ❑ Organization calendars—these identify when work is allowed (when resources will be available, which days are holidays, which days are vacation days, and so on)
- ❑ Project constraints, including:
  - ❑ Imposed dates based on stakeholder requirements, seasonal weather, etc.
  - ❑ Key events or major milestone completion dates
  - ❑ Unusual assumptions about resources or duration

❑ A blank calendar or other blank form on which to record the schedule

STEP 2: On the blank calendar, label any holidays or other dates when resources won't be available

❑ Identify holidays, vacations, and the like.

STEP 3: Examine each activity and its duration, and plot the activity on the calendar. On a separate page labeled "*assumptions*," capture any assumptions about the activity, including assumptions about the resources to be assigned

❑ Plot activities, duration.

❑ List assumptions about resources.

STEP 4: After the days are plotted on a standard calendar, create other types of schedule displays that will be useful (e.g., Gantt charts, network diagrams, milestone charts, text tables).

❑ Create specialized project-wide charts, schedules.

Continued . . .

STEP 5: If your project's network diagram or Gantt chart shows many different activities happening at the same time, consider finding the *critical path* and attempting to shorten it in order to reduce the project's overall duration. (The critical path is that sequence of activities which take the most time to complete.)

Here are some ways you can shorten the critical path:

- ❑ *Reduce the duration* of some of the activities. (Simply allow less time for them.)
- ❑ *Add more resources* to some of the activities. (If you assign more people or equipment, you can often reduce the time required. Be careful, however, since this can increase the coordination time required.)
- ❑ *Allow more hours* in the workday. (allow for overtime or add another shift.)
- ❑ *Allow more workdays* in the schedule. (allow for weekend or holiday work.)

- ❑ *Change the relationships of activities:* (Instead of performing some tasks sequentially, one at a time, perform them at the same time, in parallel fashion.)
- ❑ *Use slack time more effectively.* (Find slack between activities or "downtime" for some resources, and "move up" or plan to complete pending activities during this time.)
- ❑ *Redefine one or more project phases.* (Check to see if some activities contained within a phase are causing the phase to be delayed needlessly; then consider moving these activities to the next phase.)
- ❑ *Redefine "done."* (Consider whether some deliverables, particularly interim deliverables such as blueprints, prototypes or drafts, might be defined as "finished" in a less complete form.)
- ❑ *Reduce the amount of deliverables* that a particular activity produces. (It takes less time to do less work!)
- ❑ *Reduce the overall project scope.* (Eliminate some work products, processes, or deliverables.)

Caution: After you have determined which of the methods you would like to use to shorten the critical path, you should discuss them with your sponsors or stakeholders. Since many of these methods result in fundamental changes in project structure, you should discuss the positive and negative effects they might have on the project, and obtain sponsor/stakeholder approval.

STEP 6: Consider making customized activity schedules. They could be tailored for executive overview, for individual categories of resources (e.g., electricians, carpenters, landscapers), or for special project teams (workers in Argentina, England, France).

❑ Consider creating/create customized schedules.

STEP 7: Informally present your preliminary schedules to an expert colleague to "reality-check" it; adjust as needed.

❑ Reality-check with peer or expert.

Examples: Project Schedules

A ***Gantt chart*** is a graphic display of schedule-related information. In the typical Gantt chart, activities are listed down the left side of the chart, dates are shown across the top or bottom, and planned activity duration are shown as horizontal bars, placed according to the dates. A Gantt chart is sometimes called a “bar chart.” Because the Gantt bars are proportionally longer for project activities that take longer to complete, Gantt charts can effectively display relative differences in duration of activities.

Choose a Gantt chart when you want to show which activities will take longer than others. Note that project management software packages create high-quality Gantt charts quickly and easily. A sample of a Gantt chart is shown below.

FIGURE 6. Sample of Gantt Chart

A ***network diagram***, as discussed in Action Item: Define and Sequence Project Activities, shows which project activities depend on which other activities in order to be completed. Choose a network diagram when you want to clearly show the relationships among activities. Network diagrams may be presented with schedule data included on each activity description, as shown below.

FIGURE 7. Network Diagram With Schedule Data

In addition, network diagrams may be time-scaled to show the relative amount of time passing between activities. In the example below, we not only see the relative length of time to be spent on each activity, we have identified a delay or period of “downtime” between regrouting the tile and installing the appliances.

FIGURE 8. Network Diagram With Time Scale

Milestone charts show only the most significant project events. Choose a milestone chart when you want to provide broad overviews of the project's main events for executive audiences or others who want to see only the "big picture." Below is an example of a milestone chart.

FIGURE 9. Sample of a Milestone Chart

Finally, project events and dates may be presented as ***text tables***, as shown in Figure 10.

FIGURE 10. Sample of a Text Table

You should select your schedule format carefully, keeping the needs of the audience in mind. Ask yourself:

- Who are the readers of this schedule?
- How much information do they need? ("Big picture" or details?)
- What form of schedule does this reader like (or expect) to see?
- Should I create customized versions of the schedule for certain audiences, certain activities or phases, or certain display purposes?

Finally, since everyone is familiar with its format, an ***ordinary calendar*** can be a powerful way to communicate the project schedule. As the example below illustrates, a calendar can show relative duration and concurrence of activities, as well as days of the week and month, including weekends.

Action Tool: Estimate Costs

Assignment

Estimate the costs of completing all project activities.

Desired Outputs

- Cost estimates for completion of each activity.
- Supporting detail, including assumptions and constraints related to costs.
- Cost management plan describing how cost variances will be handled.
- Revisions to the project activity list or network diagrams in response to the need for more detail about costs.

Example; A "Bottom Up" Cost Estimate

There are three popular methods of cost estimating:

- ***Bottom up estimating***—estimating the cost of individual activities and summarizing or "rolling up" these costs to determine project costs. (This method is preferred, since it is typically most accurate given unique project requirements.)
- ***Analogous estimating***—sometimes called "top down" estimating, this involves using the actual cost of a previous, similar project to make an estimate of costs for a planned project.

  Caution: Project managers should be sure to challenge the assumption that the previous analogous project was actually similar to the project they are planning. It must be truly similar in order for the cost estimates to be accurate.
- ***Fixed budget estimating***—taking the total amount of money you have available for the project and dividing it across the various project components to see what you can and can't afford.

Figure 11, on the following page, is an example of a “bottom up” cost estimate. In this sample, we have estimated the cost of removing brush from a vacant lot. This one-day project will involve one laborer, one truck driver/laborer, and one supervisor/laborer. In addition, we have assumed that we will need to rent a truck to carry the brush away and pay a fee at the landfill to dispose of the brush.

Note that the worksheet lists all activities, the amount of time each activity will take, and the resources to be applied to complete each activity. Note also that some resources (the workers) will incur costs based on the number of hours they take to perform the task. These are typically referred to as *variable cost* resources, since the cost varies according to the effort expended.

Other resources (like the truck and landfill dumping fee) are typically referred to as *fixed cost* resources, since they involve a one-time cost, no matter how much effort is expended. Finally, note that the worksheet is designed to provide total costs for each resource, for each activity, and for the entire project.

Activity	***Duration***	***Resource Name:*** Laborer ***Resource Rate:*** $10/hour ***Cost of Resource for This Activity***	***Resource Name:*** Truck driver/ laborer ***Resource Rate:*** $15/hour ***Cost of Resource for This Activity***	***Resource Name:*** Supervisor/ laborer ***Resource Rate:*** $20/hour ***Cost of Resource for This Activity***	***Misc. Costs***	***Total Costs Activity***
Travel to site	1 hr.	$10.00	$ 15.00	$ 20.00	$150.00 rent truck	$195.00
Determine strategy for clean up	. 5 hr.	$ 5.00	$ 7.50	$ 10.00		$ 22.00
Remove brush	3 hrs.	$30.00	$ 45.00	$ 60.00		$135.00

Load brush in truck	1 hr.	$10.00	$ 15.00	$ 20.00		$ 45.00
Haul brush to landfill	. 5 hr.	$ 5.00	$ 7.50	$ 10.00		$ 22.00
Unload brush at landfill	1 hr.	$10.00	$ 15.00	$ 20.00	$25.00 dump fee	$ 70.00
Return from site	1 hr.	$10.00	$ 15.00	$ 20.00		$ 45.00
Return truck	. 5 hr.			$ 10.00		$ 10.00
TOTAL:	8.5	$80.00	$120.00	$170.00	$175.00	$545.00

FIGURE 11. Sample Cost-Estimation Worksheet—
Brush Removal Project

This example is overly simplified in order to illustrate the relationship among cost elements. However, when you plan your projects, you will likely need to add many more columns for resources and break down “Misc. Costs” into subcategories based on the deliverables you are creating. In addition, you should consider adding blanks for contingency fees, administrative costs, profit, and other items related to your particular organization’s needs.

Guidelines for Making a "Bottom Up" Cost Estimate

Instructions: Follow these steps to develop a project cost estimate using the "bottom up" estimating technique. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: Assemble the following:

- ❑ Descriptions of all project activities.
- ❑ Description of resource requirements.
- ❑ Description of resource rates (e.g., how much resources will cost per hour or per day)
- ❑ Duration estimates for each activity.
- ❑ Historical data regarding costs of activities, resources, and projects.

STEP 2: Set up a worksheet similar to the same worksheet shown earlier.

- ❑ Set up worksheet.
- ❑ Consider making a new electronic spreadsheet, using a template electronic spreadsheet file from a similar project, or

using project management software to estimate the costs.

STEP 3: Evaluate your worksheet according to these checkpoints:

- ❑ All project activities are listed.
- ❑ All project resources are assigned to the appropriate activities, including variable resources (paid by the hour or day) and fixed resources (paid a one-time fee).
- ❑ Costs are summarized by activity.
- ❑ Costs are summarized by resource.
- ❑ Miscellaneous fees, such as profit, standard contingencies, administrative costs, shipping, communications (fax, phone, e-mail), and other costs are considered.
- ❑ Detailed cost estimates for similar projects were consulted when building this worksheet.

STEP 4: Use the worksheet to complete the cost estimate, filling in all the blanks as required.

- ❑ Complete the cost estimate.

STEP 5: Informally present your preliminary cost estimate to an expert colleague to 'reality-check" it; adjust as needed.

❑ Reality-check.

STEP 6: Create summaries of costs and/or graphical displays of costs for presentation to stakeholders.

❑ Create cost summaries and graphics.

Action Tool: Build a Budget and Spending Plan

Assignment

Build a project budget and spending plan.

Desired Outputs

- A cost baseline or time-phased budget that will be used to measure and monitor project costs.
- A spending plan, telling how much will be spent on what resources at what time.
- A set of procedures by which project team members will monitor costs and update the budget.

Guidelines for Building a Budget and Spending Plan

Instructions: Follow these steps to build a budget and spending plan. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: ASSEMBLE THE FOLLOWING:

- ❑ Project cost estimates
- ❑ Work breakdown structure (WBS)
- ❑ Project schedule
- ❑ Budget forms or sample budget/spending plans approved by your organization

STEP 2: MAKE A WORKSHEET WITH HEADINGS SIMILAR TO THESE:

Activity	Account Code	Budgeted, January	Budgeted, February	Budgeted, March	Budgeted, April (etc.)

Note: If you want to monitor your spending on a quarterly or weekly basis, then label the column headings accordingly.

- ❑ Worksheet is completed.

STEP 3: List all project activities in the left column of the worksheet.

❑ Project activities are listed.

STEP 4: For each activity, examine the project schedule and cost estimate to determine how much will be spent the first month, how much the second month, and so on. Then list the appropriate dollar amounts in the columns beside each activity.

❑ Dollar amounts are listed by time.

> ***Note:*** *You might want to create a more detailed spending plan by breaking out specific resource costs under each activity. Consider the example provided on the following page.*

STEP 5: Informally present your preliminary budget and spending plan to an expert colleague to "reality-check" it; adjust as needed based on his or her feedback.

❑ Budget spending plan is "reality-checked" and revised.

STEP 6: Present your budget and spending plan to your supervisor and (if appropriate) to the sponsor; adjust as needed and obtain approval.

❑ Budget spending plan is approved.

Optional Action Item: Create a Formal Quality Plan

Assignment

Create a quality plan.

Desired Outputs

- ❑ Quality management plan, including operational definitions
- ❑ Quality verification checklists
- ❑ Amendments to the project activity list, budget, and schedule to allow implementation of the quality plan

Guidelines for Creating a Formal Quality Plan

Instructions: Follow these steps to build a formal quality plan. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: Assemble the following documents:

- ❑ Your organization's quality policy
- ❑ Project scope statement
- ❑ Project product description (preliminary deliverables specifications)
- ❑ Standards and regulations
- ❑ Descriptions of process outputs in particular project team disciplines

STEP 2: Analyze each of the items assembled in Step 1, and distill from each item, a list of operational definitions of quality.

- ❑ For each item, complete this statement: "According to this item, quality means…"
- ❑ Compile the items in a list and sort them into related groups.

STEP 3: Based on the list created in Step 2, make checklists that the various project team members can use to inspect for quality. (Checklists should be expressed as "Do this…" or "Have you done this…?")

❑ Checklists are created.

STEP 4: Develop a statement describing how quality management will be implemented on the project. It should describe specific methods of:

- **Quality control**—*examining specific project results to see if they comply with quality standards, and identifying ways to eliminate causes of unsatisfactory performance.*[42]
- **Quality assurance**—*evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant project quality standards.*[43]

❑ Statement of quality control and quality assurance is developed.

Optional Action Item: Create a Formal Project Communications Plan

Assignment

Develop a project communications plan.

Desired Output

A communications management plan, including:[38]

- Collection structure
- Distribution structure
- Description of information to be disseminated
- Schedules listing when information will be produced
- A method for updating the communications plan

Guidelines for Developing the Project Communications Plan

Instructions: Follow these steps to build your project communications plan. You may use the check boxes to mark items as completed. Refer to the Worksheet: Project Communications Planner, as needed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: Assemble the following:

- ❑ List of project stakeholders and their roles, responsibilities, and physical locations
- ❑ Any descriptions of communication requirements or related assumptions among stakeholders
- ❑ Information about external reporting requirements (What do the public, the press, the government, and other outsiders need to know about the project? How will they find out?)
- ❑ Information about technology available to support communication on the project (e.g., fax, e-mail, voice mail, messenger, postal service, radio)

- ❑ Information about typical project communications methods for the industry or in your organization.

STEP 2: Answer this question: "What kind of information does each stakeholder need?"

- ❑ List of information needed by each stakeholder.
- ❑ Typical information needed by stakeholders on similar projects.

STEP 3: Analyze all stakeholder information needs and answer this question: "What methods/technologies will provide all information needed by stakeholders without wasting resources on providing unneeded information or using inappropriate technology?"

- ❑ List of appropriate communications methods and technologies

STEP 4: Create a project communications plan that includes information about:

- ❑ Collection structure—How and by whom will project information be gathered, what information will be gathered, and from whom?

- ❑ Distribution structure—To whom will information flow, and by what methods?
- ❑ Description of each type of information to be disseminated—What format, content, level of detail, conventions/ definitions will be used?
- ❑ Schedules listing when each type of information will be produced
- ❑ A method for updating the communications plan as the project progresses

Worksheet: Project Communications Planner

Instructions: Look at the chart on the following page. In the **Who** column, list all the different project stakeholders who will be needing information as the project unfolds. (You may want to list some stakeholders as a group, such as “Engineering” or “Marketing.” However, be careful that you have a clear idea about the specific people within the group to whom communications should be going.)

In the **What Information** column, list the type of information this person or group will need.

In the **When** column, list how often or at what points in the project this person or group will need the information. (For example, you might say “weekly” or “monthly” here, or “at sign-off of Phase II.”)

In the **How (Form/Medium)** column, list the appropriate medium of communication. (For example, you might say “e-mail status report,” “team meeting,” “broadcast voice mail,” or “update to project web page.”)

Who	What Information	When	How (Form/Medium)

Action Tool: Organize and Acquire Staff

Caution: This Action Item describes comprehensive organizational planning and staffing approaches, which might be "overkill" for a smaller project. Use your judgment to determine how many of the elements listed here make sense for your project.

Assignment

Develop an organizational plan and a strategy for acquiring staff.

Desired Outputs

Desired outputs include:[39]

- Role and responsibility assignments
- Staffing plan
- Organizational chart
- Organization detail as appropriate
- Project staff
- Project team directory

Guidelines for Developing the Organizational Plan and Strategy for Acquiring Staff

Instructions: Follow these steps to develop the organizational plan and strategy for acquiring staff. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: Given your description of project activities in earlier statements of scope, and so forth, list the job titles (roles) of people who will be needed to complete each activity.

❑ Job titles or roles are listed

STEP 2: For each job title, list the responsibilities (tasks) to be performed. Consult these sources as needed:

- Project templates—role and responsibility definitions from similar projects.
- Organization-specific human resource practices—policies, guidelines, and procedures that dictate how people are deployed (e.g., Will managers serve as "coaches?" If so, then what exactly is the role of "coach?")

❑ Job responsibilities are listed.

STEP 3: Create a Responsibility/Accountability Matrix; refer to the example below.[40]

RESPONSIBILITY/ACCOUNTABILITY MATRIX

Phase ↓ *Person* →	Bill	Alia	Juan	Leticia	Mary
Determine need and feasibility	A	S	P	P	P
Create project plan	A	S, I	I	I	I
Create deliverables specifications	A, P	S	R	P	P
Create deliverables	A, R	S	P	P	P
Test and implement	A	I	R	R	P

P=Participate A=Accountable R=Review
I=Input Required S=Sign-off Required

❑ Responsibility/Accountability Matrix is created

STEP 4: Create a staffing plan that answers these questions:[41]

- When and how will people be added?
- Will the project use both internal and external resources? (Refer to Action item: Plan For and Acquire Outside Resources)

- When will people be "let go" from the project team?
- How long should people be held when there is "downtime" (absence of work on their assigned activity)?

❑ Staffing plan is created

STEP 5: Create an organization chart that graphically displays project reporting relationships.[42] The chart should take into account reporting relationships among:

- Different organizational units (subcontractors, departments, etc.
- Different technical disciplines (engineers, builders, etc.)
- Different individuals

❑ Organization chart is created.

STEP 6: Flesh out the organizational plan with these details as needed:

- Warnings describing what you will not be able to do if you cannot staff the project as recommended. (Describe what project deliverables cannot be created, how the schedule will be delayed, how safety may be jeopardized, and so on.)

- Specific job descriptions or position descriptions, including job title, skills, responsibilities, knowledge, authority, expected physical work environment, and so on.
- Training needs, if the staff to be acquired may not have all the skills required.

❑ Warnings related to essential staffing are stated

❑ Job descriptions and training needs are detailed

STEP 7: Use appropriate procurement practices to identify and recruit resources. Take into account the staffing plan from Step 4, as well as standard recruiting practices dictated by your organization's policies (*also see "Optional Action Item: Plan to Acquire Outside Resources.*)

❑ Identify resources

❑ Recruit resources

❑ Confirm resources as part of project team

STEP 8: When all (or most) staff positions have been filled, create a project team directory consisting of:

- Names of team members and stakeholders
- How to reach each person listed (fax, phone, e-mail, postal service address, and so on)
- Other information such as direct reports, responsibilities, administrative support people, and so on as needed

❑ Project team directory is created

Note: Will you be working with experts whose area of expertise is unknown to you? If so, review the Guidelines: Tips for Working with Experts Outside Your Area of Expertise.

Worksheet: Project Responsibility/ Accountability Matrix

Instructions: Using the matrix on the next two pages, list the project phases, activities, or deliverables in the first column. Label each of the remaining columns with the name of a project team member. Fill in the blanks underneath each team member's name with the appropriate initial to indicate his or her role related to this phase, activity, or deliverable. (Example: "I" for input, "S" for sign-off, etc.) Try to avoid using more than one initial per cell on the grid. ***Note:*** For best results, consider making this a team effort and complete the worksheet early in the project.

PROJECT RESPONSIBILITY/ACCOUNTABILITY MATRIX							
Phase ↓	***Person*** →						

P=Participate A=Accountable R=Review I=Input Required S=Sign-off Required

***This column might also be labeled "activities" or "deliverables."**

PROJECT RESPONSIBILITY/ACCOUNTABILITY MATRIX

Phase ↓ *Person* →						

P=Participate A=Accountable R=Review I=Input Required S=Sign-off Required

***This column might also be labeled "activities" or "deliverables."**

Guidelines: Tips for Working With Experts Outside Your Area of Expertise

Try some of these techniques for working with experts outside your area of expertise.

- ❑ Get them involved early on in the project, and ask them to help you plan, in detail, all the activities associated with their part of the project.
- ❑ Openly express your respect for their professional judgment, and frequently seek their opinions.
- ❑ Let them know you aren't pretending to know their profession.
- ❑ Don't try to micromanage their specific actions. Instead, focus on their results by repeatedly referring to the deliverables specifications and formal statement of project scope.
- ❑ Ask them to provide you with overview information relating to their field. (These might take the form of handbooks, primers, slide presentations, promotional videos, and so on.)

- ❏ Ask them to describe for you the essential characteristics of finished products and work processes in their field. In other words, find out where their professional values lie and in what situations you can expect them to fight for these values.
- ❏ Single out a “friendly” expert and ask him or her to help you learn the jargon, acronyms, and underlying values of the profession. Ask this person to coach you or help you prepare for difficult meetings with his or her colleagues.
- ❏ Try to establish some basis of commonality. Go to lunch and get acquainted. Do you both enjoy hiking? The opera? Your children? Remember, when you regard each other as people and not merely as robots performing job roles, you are both more likely to spend the energy necessary to achieve understanding.

Optional Action Tool: Identify Risks and Plan to Respond

Assignment

Given a potential project, identify risks and plan to respond to them.

Desired Output

A document that describes the following:[43]

- Sources of risk
- Potential risk events
- Risk symptoms
- Ways to improve other processes or activities
- Opportunities to pursue or threats to which to respond
- Opportunities or threats to ignore
- Risk management plan
- Contingency plans
- Descriptions of desired reserves
- Contractual agreements to mitigate risks

Guidelines for Identifying Risks and Planning to Respond

Instructions: Follow these steps to identify project risks and to plan responses to them. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask its members to work through these guidelines with you.*)

STEP 1: Determine what sources of risk and which risk events may reasonably be expected to affect the project.[44]

- ❑ Examine the product (deliverables) description. Which require creation by using unproven technology? Or which deliverables are themselves made up of unproven technology?
- ❑ Examine the scope statement. Are the project costs or objectives overly aggressive?
- ❑ Examine the work breakdown structure. Are there hidden dependencies that should be explored? Could the work breakdown structure be broken into greater detail in some areas to "shine a light" on risks or opportunities? If so, then create this detail.

- ❑ Examine the staffing plan. Are there "irreplaceable" team members who might be made unavailable somehow?
- ❑ Examine the resource requirements (people, equipment, and materials). Could market conditions make it difficult to obtain some resources (a risk) or easier to obtain some resources (an opportunity)?
- ❑ Examine the history of similar projects. What potential opportunities or threats might we identify based on previous experience?
- ❑ Use established checklists from your project's discipline to evaluate risk and opportunities.
- ❑ Interview various stakeholders to uncover opportunities or risks.

STEP 2: Quantify the risks identified in Step 1 to determine which risk events warrant response. Consider:

- Expected monetary value or impact of the risk
- Expected impact on project quality
- Expected impact on project schedule.

- ❑ Risks are quantified.

STEP 3: Decide which risks or opportunities to

focus on and document them by making a list of "risks to pursue."

❑ "Risks to Pursue" list is created.

STEP 4: For each risk warranting response, choose one of these risks responses:[45]

Avoid it—by eliminating the cause. This might involve using different approaches to the work process, different staffing, redefined deliverables, revised (lower-risk) schedules, or modified stakeholder expectations.

- Mitigate it—by reducing the expected monetary value. For example, you could:
  - ❑ Contract out high-risk activities to specialists who have more experience.
  - ❑ Obtain insurance policies to deal with some types of risk.
  - ❑ Develop contingency plans that identify specific actions that will be taken if an identified risk should occur.
  - ❑ Set aside a "desired reserve" of cash or other resources to use if the risk occurs.
- Accept it—and take the consequences.

(***Note:*** See the Risk Assessment and Response Analyzer.)

❑ Each risk is examined and a decision to avoid, mitigate, or accept it is made.

STEP 5: Create a risk management plan that

contains these sections:

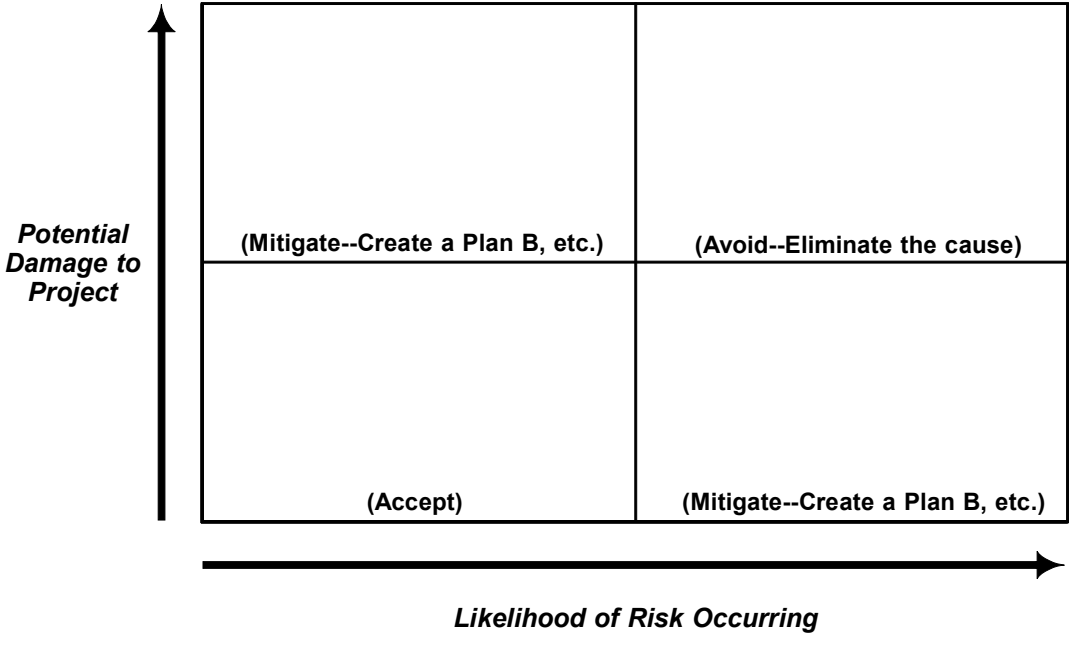
- List of potential risk events
- Description of risk symptoms
- Ways to improve processes or activities to reduce risks
- Opportunities to pursue or threats to which to respond
- Opportunities or threats that have been identified and consciously ignored
- Description of contingency plans and steps to take to mitigate risks
- Recommended contractual agreements to mitigate risks

❑ Risk management plan is created.

Worksheet: Risk Assessment and Response Analyzer

Instructions: Make a list of risks to your project. Using the grid on the following page, examine each risk separately and try to place it in the appropriate grid cell. Using the hints provided in each cell, determine an appropriate response to the risk.

For example, let's say that we are managing a technical project that faces the risk of losing the only scientist who understands the science behind the project. This would be enormously damaging to the project. At the same time, we know that she is being aggressively pursued by other companies and is unhappy with her current salary. This means it is highly likely that she will leave before the project is completed. Given these circumstances, this risk fits into the upper right grid square (high potential damage, high likelihood). So our overall approach should be to avoid this risk—eliminate its cause. We may do this by obtaining a higher salary for her, by hiring someone else with equivalent expertise as a back-up, or by insisting that the thoroughly train others so they develop her level of epxertise.


Potential Damage to Project
(Mitigate--Create a Plan B, etc.)
(Avoid--Eliminate the cause)
(Accept)
(Mitigate--Create a Plan B, etc.)
Likelihood of Risk Occurring

Optional Action Tool: Plan for and Acquire Outside Resources

Assignment

Describe your strategy for procuring outside goods or services, soliciting bids, and selecting the best contractor for the job.

Desired Output

A procurement management plan indicating the following:[46]

- ❏ Types of contracts to be used among contractors or vendors
- ❏ How estimates from vendors will be obtained
- ❏ Responsibilities of the project management team versus people in any "procurement" department
- ❏ How to use any standardized procurement documents
- ❏ Statement of work (SOW) or statement of requirements (SOR) describing the item (product or service) to be procured. The statement should provide prospective contractors with enough detail that they can evaluate their ability to provide the item

- ❏ Bid documents, such as RFP (request for proposal), IFB (invitation for bid), invitation for quotation, and other similar documents
- ❏ Contract with one or more suppliers of goods or services

Guidelines for Planning to Procure Outside Goods or Services

Instructions: Follow these steps to plan to procure (acquire) the help of outside contractors to provide certain goods or services for your project. You may use the check boxes to mark items as completed. (*If you are working with a formal or informal advisory group, you might ask some of its members to work through these guidelines with you.*)

STEP 1: Assemble the following:

- ❑ Scope statement
- ❑ Detailed product description (details of all deliverables to be created)
- ❑ Description of resources that support procurement (procurement department, internal project experts who can help find contractors, professional directories, and so on)
- ❑ Information on market conditions for the particular type of contractor you are trying to procure
- ❑ Any relevant planning inputs, such as cost estimates and quality management plans

- ❑ Constraints and assumptions that will likely limit options (such as funds or schedule)

STEP 2: Decide to "make or buy" the goods or services

- ❑ Examine the costs and benefits of creating the goods or services yourself. Consider:
  - Workload of existing resources
  - The time required to locate and acquire additional resources (such as new staff or new equipment)
  - Your expertise in managing these resources
  - Whether you want to have this resource available on an ongoing basis, as part of your organization
- ❑ Examine the costs and benefits of procuring the goods or services from an outside contractor. Consider:
  - The actual cost of purchase compared to the cost of using internal resources
  - The cost (including "headaches" and time spent) in soliciting bids and selecting vendors

- What external contractors can provide that your organization cannot or should not be able to provide on an ongoing basis

❑ Involve subject-matter experts from the project team, industry groups, consultant organizations, or even prospective contractors in these preliminary discussions

❑ Decide to buy goods or services from an outside resource

Note: *If you decide to make the goods or perform the services internally, stop here.*

STEP 3: Create a procurement management plan indicating the following:[47]

- Types of contracts to be used among contractors or vendors
- How estimates from vendors will be obtained
- Responsibilities of the project management team versus responsibilities of people in any "procurement" department
- How to use any standardized procurement documents

❑ Procurement management plan is created

STEP 4: Create a statement of work (SOW) or statement of requirements (SOR) describing

the item (product, deliverables or service) to be procured. The statement should provide prospective contractors with enough detail that they can evaluate their ability to provide the item.[48]

- ❑ Statement of Work or Requirements is created

STEP 5: Create bid documents, such as RFP (request for proposal), IFB (invitation for bid), invitation for quotation, and similar documents.[49]

- ❑ Refer to any standard forms required by your organization
- ❑ Refer to past versions of these documents for similar projects, and use "boilerplate" text if appropriate
- ❑ Discuss your draft bid documents with someone who has solicited bids similar to yours
- ❑ Finalize your RFP, IFP, or similar document

STEP 6: Create bid/proposal evaluation criteria (means of scoring contractors' proposals). Consider these typical criteria and possibly weight some of them to count higher than others:

- Cost
- Quality
- Vendor team members
- Track record
- Facilities and equipment
- Creativity of proposal
- Referrals from former customers
- Ability to meet the schedule

❑ Bid/proposal evaluation criteria are established