LOS RIOS COMMUNITY COLLEGE DISTRICT

**Business & Economic Development Center**

# California Department of Fish and Game

## Managing Your Projects

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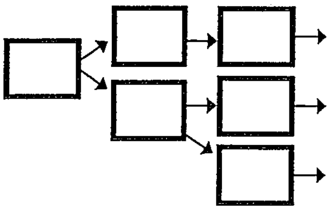
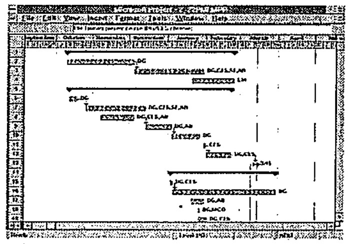
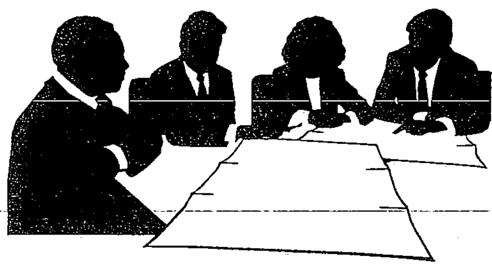




# *Managing Your Projects*



## Introduction

# Project Management

Project management is the application of knowledge, skills, tools, and techniques to a set of activities designed to achieve a desired result.

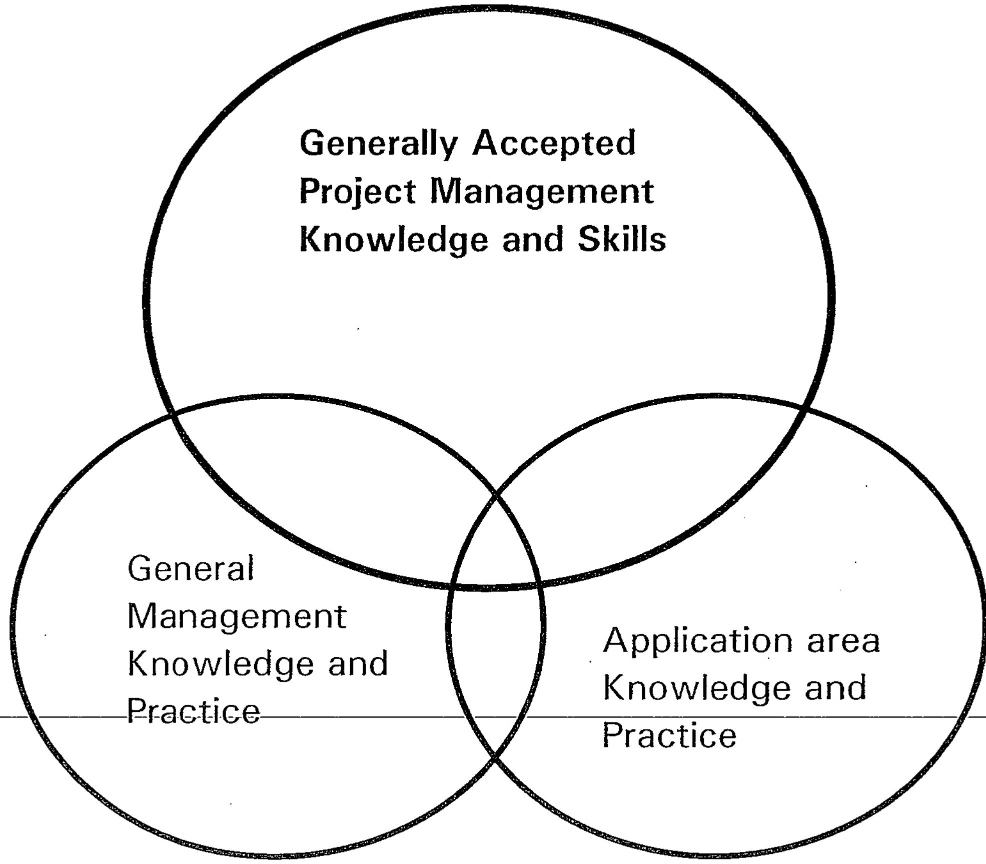
The term project management is sometimes used to describe an organizational approach to the management of ongoing operations. This form of management is more accurately described as management by projects.

This workshop presents best practices for project management as defined by the Project Management Institute Body of Knowledge. The course was developed with Project Management Mentors, a San Francisco based provider of project management and project management training.

Project management is closely related to may other management disciplines including general management and product development cycles as well as program management (management of a group of related projects in a coordinated way to obtain benefits not available if they are managed separately. The Investar ® Conversion is an example of applied program management

Project management is applied to many application areas. The specific discipline used to develop the product will differ from project to project. At Franklin Templeton, we have selected Summit D product development methodology for development of software products. We have also selected specific other product development methodologies to meet other project needs in training, construction, procedure development, and others.

The graphic below form the Project Management Body of Knowledge illustrates the relationship of these disciplines. It is conceptual; the overlaps are not proportional.



## NOTES:

# Project Management Barriers and

◈ What are some of the *challenges* of implementing a formal structured approach to project management?

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

◈ Can you think of some *benefits* of implementing a formal, structured approach to project management?

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

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# Why Projects Fail

- ❒ Poor documentation
- ❒ Inadequate planning
- ❒ No progress measurements
- ❒
- ❒

# Benefits of Project Management

## ♦ Relative to management and the project sponsor:

- Builds credibility and rapport
- Provides a concise project definition with specific deliverables
- Keeps management and project sponsors informed of progress
- Builds quality and control in through management:
  - Stipulated review points
  - Go or no-go points
- Encourages project sponsors' involvement because they know what is happening
- Provides a historical bank of data and project models for future planning

## ♦ Relative to the project:

- Schedules enough time to:
  - make a thorough investigation
  - document
- Aids in scheduling subcontracted segments of the project
- Forces project manager to evaluate and re-plan with the team and project sponsor
- Provides discipline which helps avoid omission of important tasks
- Spots potential problems in time to take preventive action
- Provides basis for considering trade-offs between additional funds, resources, time, or quality

## ♦ Relative to people:

- Eases turnover of project to a new project manager by providing:
  - Detailed project plan
  - Comprehensive documentation
- Focuses on problem resolution by identifying:
  - Where the project is late
  - What task expertise is needed and for how long
  - How long the task experts are needed
- Realistically assigns tasks according to:
  - Skills
  - Available time

The **Benefits of Project Management** can be summarized as a commitment on the part of a project manager to think through all facets of the project relative to:

- **Time**
- **Money**
- **People**
- **Quality**

In other words:

***Communication and Control!***

# *Critical Success Factors of a Project Management Environment*

1. Project Mission/Goal
2. Top Management Support
3. Credible Project Schedule/Plans
4. Consensus Environment
5. Qualified Personnel
6. Resources to Match Technical Tasks
7. Sponsor Buy-In
8. Monitoring and Feedback
9. Communication
10. Troubleshooting

Source: *Survey of 500 PMI members; conducted by Jeffrey Pinto, University of Cincinnati and Dennis Slevin, University of Pittsburgh*

## NOTES:

# Personal

At the end of this course, I hope to be able to:

- ☐ ____________________
- ☐ ____________________
- ☐ ____________________
- ☐ ____________________

# *Understanding Project Management*

## Course Objectives

At the end of this program, you will be able to:

- ☑ Define project management, its benefits, and key applications.
  Solid process
- ☑ Launch the project effectively by focusing the project team on measurable goals and objectives.
  Start to Finish ; Structure
- ☑ Apply project management techniques such as work breakdown structures, project networks, Gantt charts, and resource loading & leveling.
  Tools, techniques, communication
- ☑ Use techniques to facilitate communication, conflict resolution, decision making, and problem solving.
- ☑ Control projects more effectively by utilizing time-management best practices to track progress, analyze performance variances, and define corrective actions.
- ☑ Perform a post-project review and document lessons learned to assist future project teams and provide feedback to management.

Structure helps us to anticipate

Challenges
accountability 1
communication 2
deadlines 3/4
$ 7
perceptions
Flow of information
Focus / energy
unexpected problems

Benefits
less wasted energy
long lasting relationships
make deadlines
organized
pride / accomplishment



effective use of resources
testing

## **DEFINITION**: Project

- If you were asked to define the term *project*, what words come to mind?

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

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timeline

tasks
topic/issue
goal
results

delegation
personnel
resources
teamwork

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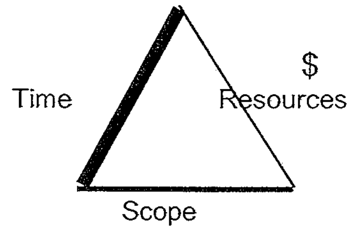


## *What is a Project?*

A project is a unique venture
with a beginning and an end,
carried out by people
to meet a specific objective
within parameters of
schedule, cost, and quality.

- not an ongoing thing
- not day to day

as opposed to a program that is day to day

## <u>DEFINITION</u>: Project Management

◇? If you were asked to define the term *project management*, what are some of the terms you would use?

______________________________________________________________________________________

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## *What is Project Management?*

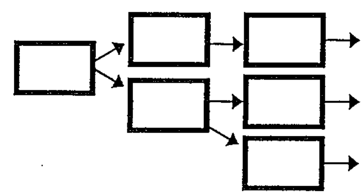
Project management is a set

of processes, systems, and techniques

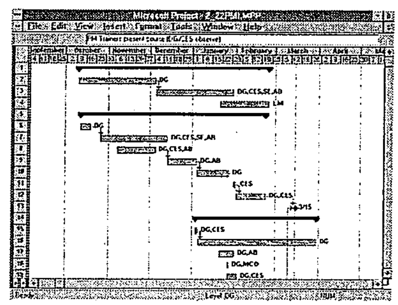
for effective planning and

control of projects and programs.

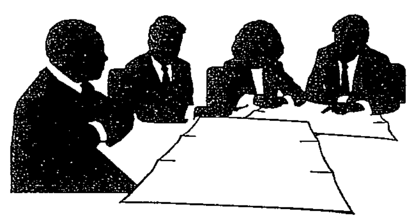
# Project Management requires 2 sets of skills:



- ♦ **Technical:**
  - Project Planning
  - Managing Tasks
  - Reporting Status



- ♦ **People:**
  - Recruiting Project Participants
  - Managing Teams
  - Leading Meetings

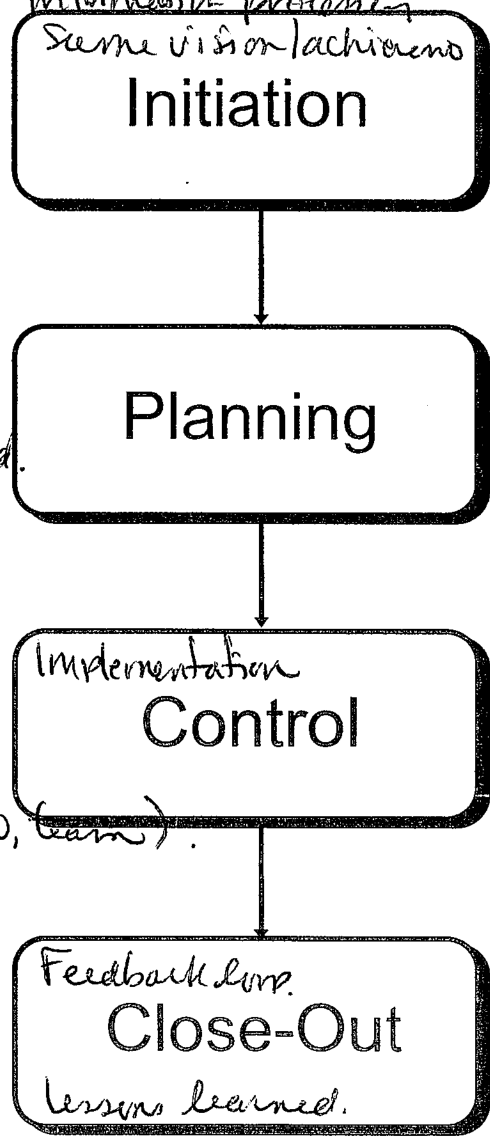


# *Project Management Phases*

Define goals & objectives
Success criteria
Resources

Information processing

Bring team together
Skills of team
who should do what



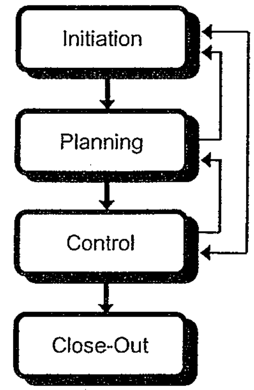

Significant amount of time
Avoid spending energy & effort on things that are not needed.
We often skip this.

tasks, work schedule
~~assign~~ assign responsibility
Resource needs

Everyone disperses resources to do their thing.
Tabs on budgets,
Change management (budget, ~~team~~).

- what went well
- celebrate
- how to improve
- good relationships

## Project Management Phases




The first phase of project management, INITIATION, sets the foundation for the entire project. During this phase, project scope, deliverables and objectives are documented and the project team is selected. The initiation phase establishes expectations that must be met for the project to be judged successful at completion.

The second phase, PLANNING, establishes detailed project plans for all objectives set in the initiation phase. The project manager and team make use of a variety of planning techniques including work breakdown structures, project networks, Gantt charts and resource histograms.

When the project plan is complete and has been approved, the project enters the third phase, CONTROL. As work progresses, the project manager controls the project by monitoring progress, resources and budget, and by supporting team members and removing roadblocks. During this phase, the project manager must keep all interested parties informed through status reporting.

These project management phases are not as linear as they appear. During both the PLANNING and CONTROL phases, changes of scope may necessitate redefinition. During the CONTROL phase, project managers may frequently revise project plans to respond to changes in the environment. Project definitions and plans should be considered to be living documents until the project is complete.

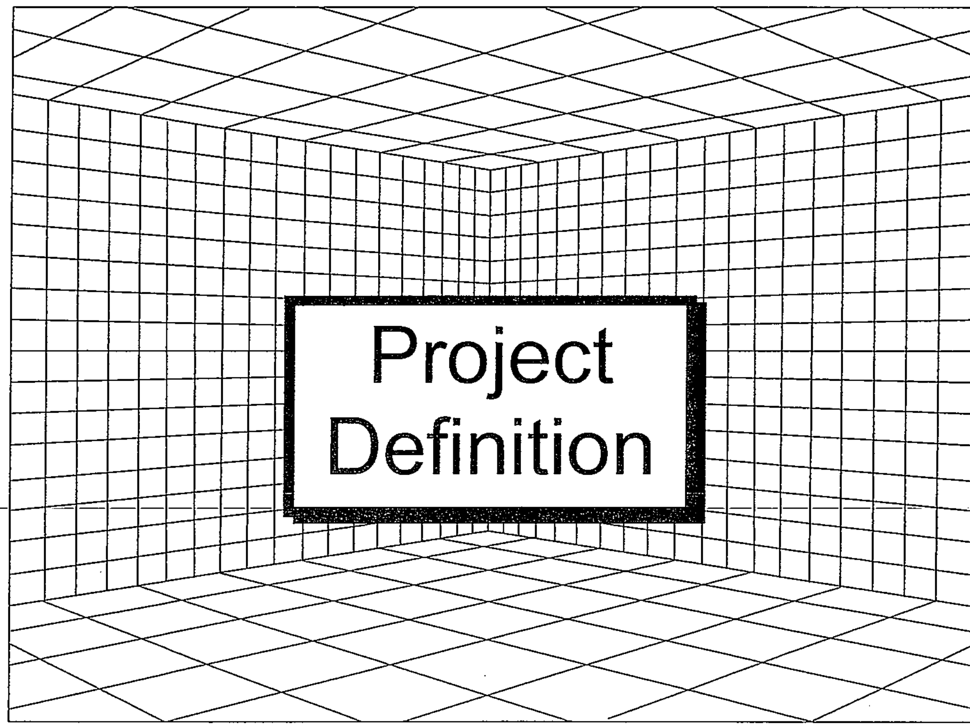
CLOSE-OUT, the final phase of project management, occurs when the project's end product is complete. During this phase, the project manager performs a post-project review or audit to evaluate the schedule, budget, and quality of the end product. This review should also evaluate what was learned about project management during the project. The resulting documentation can provide valuable feedback to management, and can help project participants improve performance through all phases of the next project.

# *Project Management Process*

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans,<br>Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

# Define Your Project

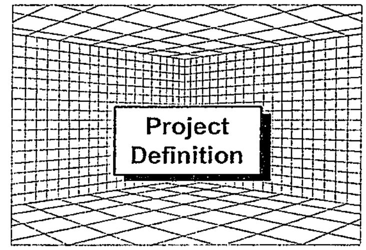
Single most crucial element for success.
Everyone needs to know what needs to be addressed. achieved.




## STEP 1

## NOTES:

Understand the why & what so you can figure out the how.




# Project Management Process

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| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
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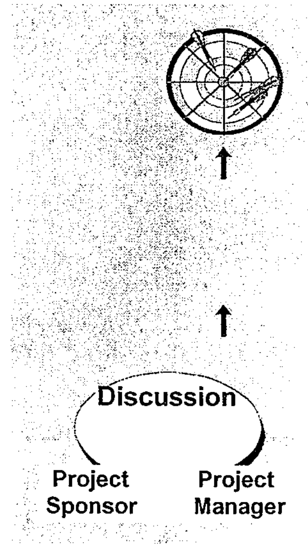
# *Step 1: Define the Project*




## Description

Defining the scope of the project is the first step in the project management process. Defining project scope well is crucial to the success of the project, because it establishes a contract between the project sponsor and the project team. For some project managers, this is a legal contract. For others, the project definition document produced is informal. In either case, it is an agreement to which the project sponsor and project manager are both making a commitment.

This effort can be thought of as "drawing the target." It defines the end result of the project and may be called: boundaries – what's included and what's not.

- ➔ Scope definition – ask questions
- ➔ Statement of Work (SOW) – find your true objective
- ➔ Defining project parameters
- ➔ Business case
- ➔ Project charter
- ➔ Requirements Analysis

The project definition describes what is required as an outcome of the project. This may mean producing a tangible end product, installing a new process, issuing a report, obtaining approval to proceed, or implementing a marketing campaign.

It is important to document all information such as constraints and assumptions that will have an impact on the project, its planning, and its execution.

- Ask questions
- Follow-up research
- Who's involved
- Who needs to.
- Timeline
- $$
- Priority

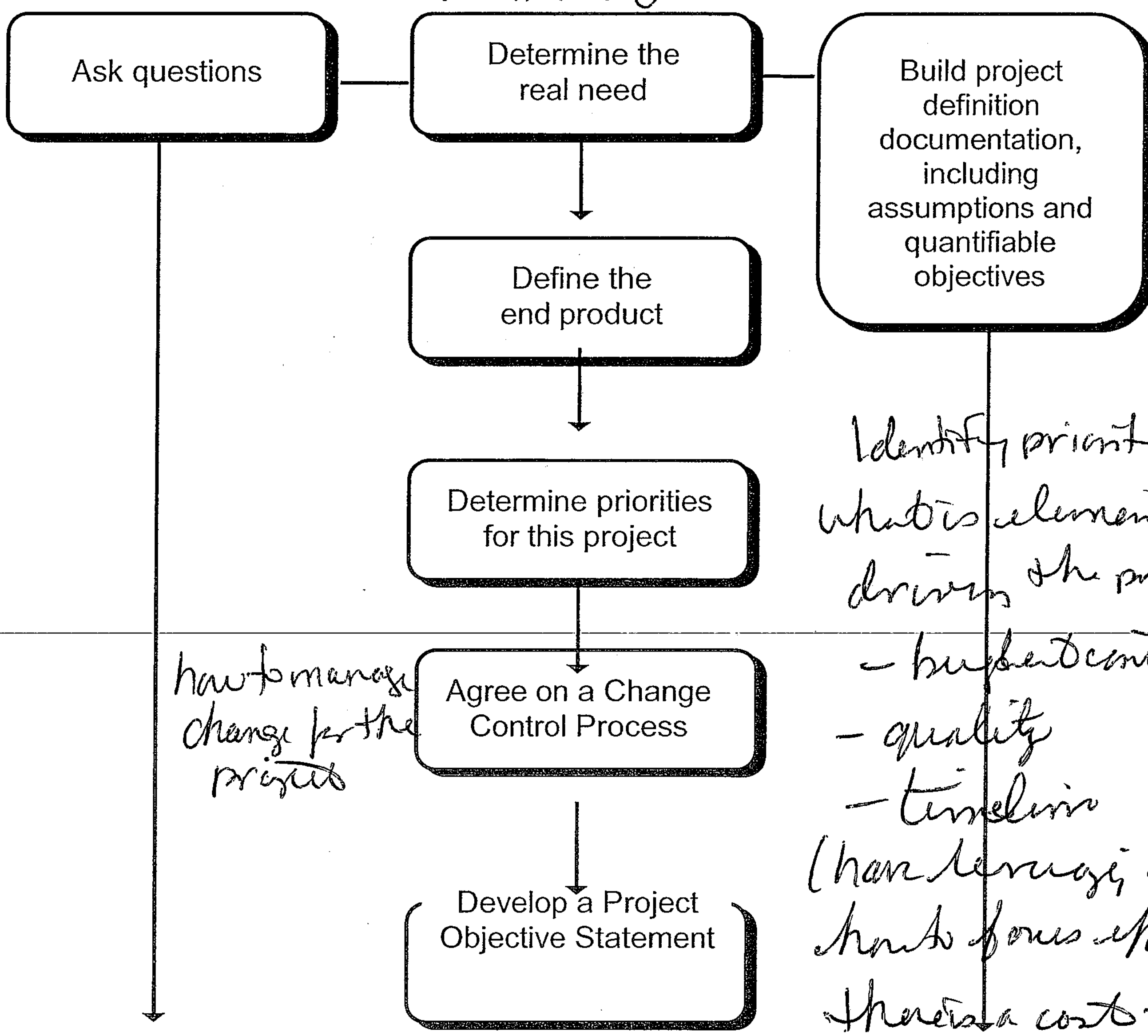
Framework to work in

Statement of Work = deliverable

Scope = additional boundaries

# Project Definition Process

Statement of Work




how to manage change for the project

Identify priority
what is element
driving the project
- budget/contract
- quality
- timeline
(how leverage; know
how to focus effort).
there is a cost to
the need.
negotiate / open
communication

- Need an attainable goal.
- Quantify the success / Make it measurable

Additional consideration

# Project Definition Process

| | Time | Scope | $ |
|---|---|---|---|
| 1 - Constrain | ✓ | | |
| 2 - Optimize | | ✓ | |
| 3 - Accept | | | ✓ |

**Determine Priorities for This Project**

**Example: priorities for a typical time constrained project**

**Throughout the definition process:**

**Ask questions.** Ask questions to clarify project needs and requirements. Use discussions with the project sponsor and others in the sponsor's organization to seek historical information, current problems or concerns, and sponsor expectations.

1. **Determine the real need:** - do our research, look at history of org, what things have changed
   - ⇨ Research circumstances that generated the need for the project
   - ⇨ Investigate any information available from similar projects
   - ⇨ Interview or survey key groups involved in the project
   - ⇨ Ask why it's important to do the project now to substantiate the project's importance

   what's the trend
   what worked & didn't work.

2. **Define the end product:**
   - ⇨ Project deliverables
   - ⇨ Completion and success criteria
   - ⇨ Features and specifications
   - ⇨ Benefits to the project sponsor and end users
   - ⇨ Mandatory vs. wish list features

   have to haves vs. like to haves.

3. **Determine priorities for this project:**
   - ⇨ Discuss project parameters time, cost, and scope (quality) with the project sponsor to ascertain how you will manage trade-offs during the project.
     - ➔ *Constrain* the parameter most important to the project sponsor. This parameter can't be adjusted.
     - ➔ *Optimize* the project sponsor's second priority. This parameter may be maximized or minimized within project objectives.
     - ➔ *Accept* the project sponsor may need to go outside the original estimate. (NOTE: This is not a license to go way over budget or schedule.)

# Project Definition Group Discussion

Do you have input into establishing the project definition? If not, how do you deal with that environment?

| SOLUTIONS |
| --- |
| • |
| • |
| • |

For those who *have* input into establishing the project definition, what problems have you had? What solutions would you recommend?

| PROBLEM | SOLUTION |
| --- | --- |
| • | • |
| • | • |
| • | • |

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**If you have no input into establishing the project definition,** these are typical solutions:

Scenarios that we may experience

| SOLUTIONS |
|---|
| • Validate information and negotiate, if necessary<br>• Educate project sponsors<br>• Involve yourself the next time |

have a meeting

**For those who *do have* input into establishing the project definition,** these are typical problems and solutions:

more than one 'A' person

| PROBLEM | SOLUTION |
|---|---|
| • Multiple project sponsors | • Get project sponsors together |
| • Frequent changes<br>change management process everyone knows how to [illegible] benefit | • Document requirements and communicate impact of changes |
| • Lack of clarity<br>write it in your own words ask for confirmation [illegible] should be changed. | • Float "trial balloons": Describe possible outcomes in detail to generate reactions from the project sponsor. |

***Whether or not you have input in to the initial definition of the project, always ensure that a complete needs or requirements analysis has been completed.***

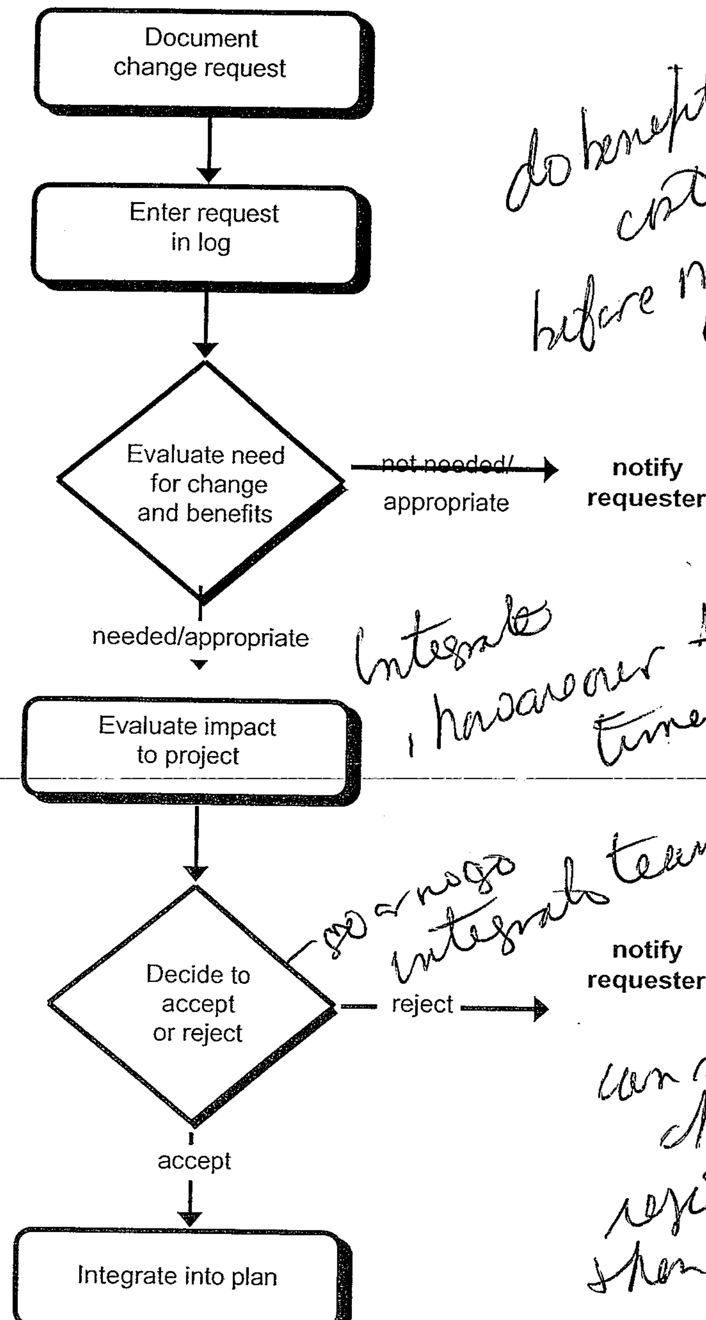
## 4. Agree on a change control process

documented? any changes to
- scope
- players
- products

- for track/need trail
- stay organized

⇨ The project manager should make change management decisions with the project sponsor, then communicate them to the team.

⇨ The model for change control we recommend is the following:




do benefits outweigh cost - decide before making changes.

Integrate, however tasks, timeline affected

go or no go integrate team members so you have buy-in so they can support the change or reject it. then go from there

⇨ The project manager and sponsor should decide on a change control procedure for managing scope, and reconfirm priorities for time, cost, and scope.

Scope

## 5. Develop a project objective statement

**Project Objective Statement**

- **50 words or less**
- **Summary of essential information**
  - **WHO?**
  - **WHAT?**
  - **WHY?**
- **Use to build common vision of project purpose and objectives**

A project objective statement is a brief summary of essential project information, including:

identify assumptions
- no impacts (?)
- what are alternatives of assumptions

**WHO** Identify the project sponsor and users of the end product.

**WHAT** Describe the project's end product. Define success and completion criteria. Include information that project participants may find unique, exciting, or special.

**WHY** Describe why the project is needed. What problems will it solve for the project sponsor? -for end users? Include information about the project's strategic importance that might motivate people to participate in the project.

need to communicate assumptions about what needs to be done, what needs to be communicated

You may also want to include:

**WHEN** State a target time frame (range) for project completion.

**COST** State a budget constraint for the project.

Use the project objective statement to help create a common vision of project purpose and objectives with project sponsors, management, team members, and third parties. It should also help build enthusiasm and interest in the project among project participants.

**Throughout the definition process:**

**Build project definition documentation, including assumptions and quantifiable objectives.** Use documentation to validate all project definition information, including assumptions. Make sure objectives are quantifiable, or at least verifiable.

## Group Discussion

Defining the project forces the project planner to clearly and concisely describe the work and to place boundaries around the project before plans are developed. Review the following examples and **decide what's wrong and how the project definition could be stated more clearly and specifically.**

1. The new system must be better than anything we have used in the past.

- Vague
- define better
- better to who
- when in the past
- which system

2. The new Class II share structure will be implemented 13 months from today.

- missing criteria
- what are the assumptions (what's driving the 13 months).

3. What we need are receptacles situated in strategic places throughout the organization to improve productivity.

- what are we talking about
- what other elements can the impact
- what are the places.

Think through your needs - dig deeper, define things

***Please do not turn the page.***

## Exercise Answers

1. The new system must be better than anything that we have used in the past.

| | |
|---|---|
| ***What's wrong?*** | What does *better* mean? What is the standard of performance that will equate itself to *better* after the project is complete? Do we have a standard of performance for current productivity against which we can compare future productivity after the system is installed? |
| ***Instead:*** | System X performs calculations in only 4 hours, as compared with the 12 hours previously required by System Y. |

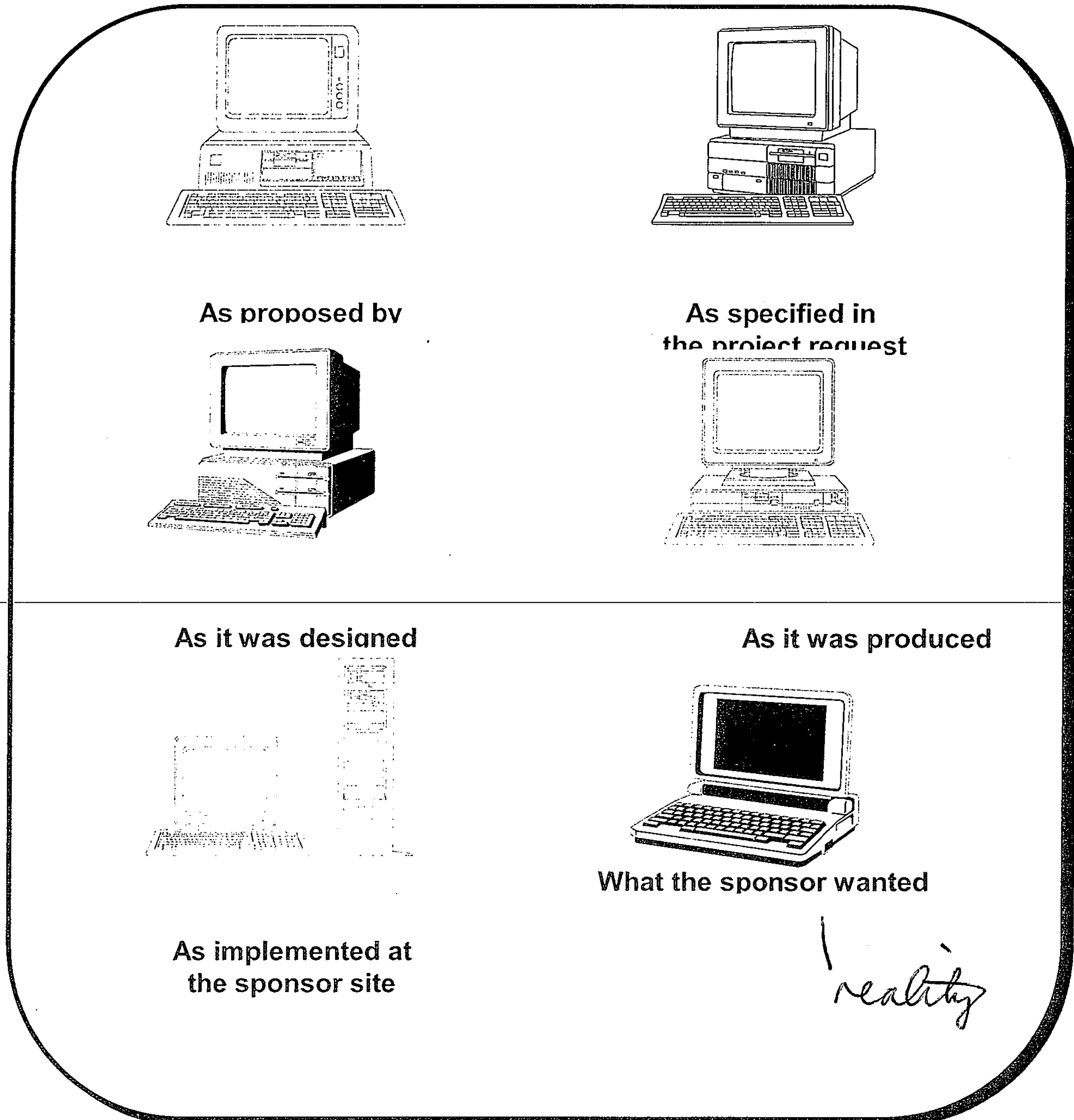
2. The new Class II Share structure will be implemented 13 months from today.

| | |
|---|---|
| ***What's wrong?*** | Where did 13 months come from? Is that a hard date or an arbitrary date? If 13 months is the mandated completion date, are the resources going to be made available to satisfy that time frame? Is the scope flexible and subject to negotiation? |
| ***Instead:*** | According to the current project plan, our best estimate to complete Phase 1 of the Class II share implementation is May 1, 1995. |

3. What we need are receptacles situated in strategic places throughout the organization to improve productivity.

| | |
|---|---|
| ***What's wrong?*** | How many receptacles? Where are the strategic places? And once the project is over, how will the increase (or decrease) of productivity be measured? What is the current base? This scope was stated in generalities. Quantifiable terms must be used. |
| ***Instead:*** | The number of modem pools will be increased from the current average to two per every 10 workstations to accommodate desktop fax capabilities. |

## Whose View Is Correct?




what should the actual outcome be.
define it clearly

# *How to Create the Project Objective Statement*

There are several methods for creating the project objective statement:

1. The project manager can write the project objective statement at the end of the project definition phase and present it in final form to the team.

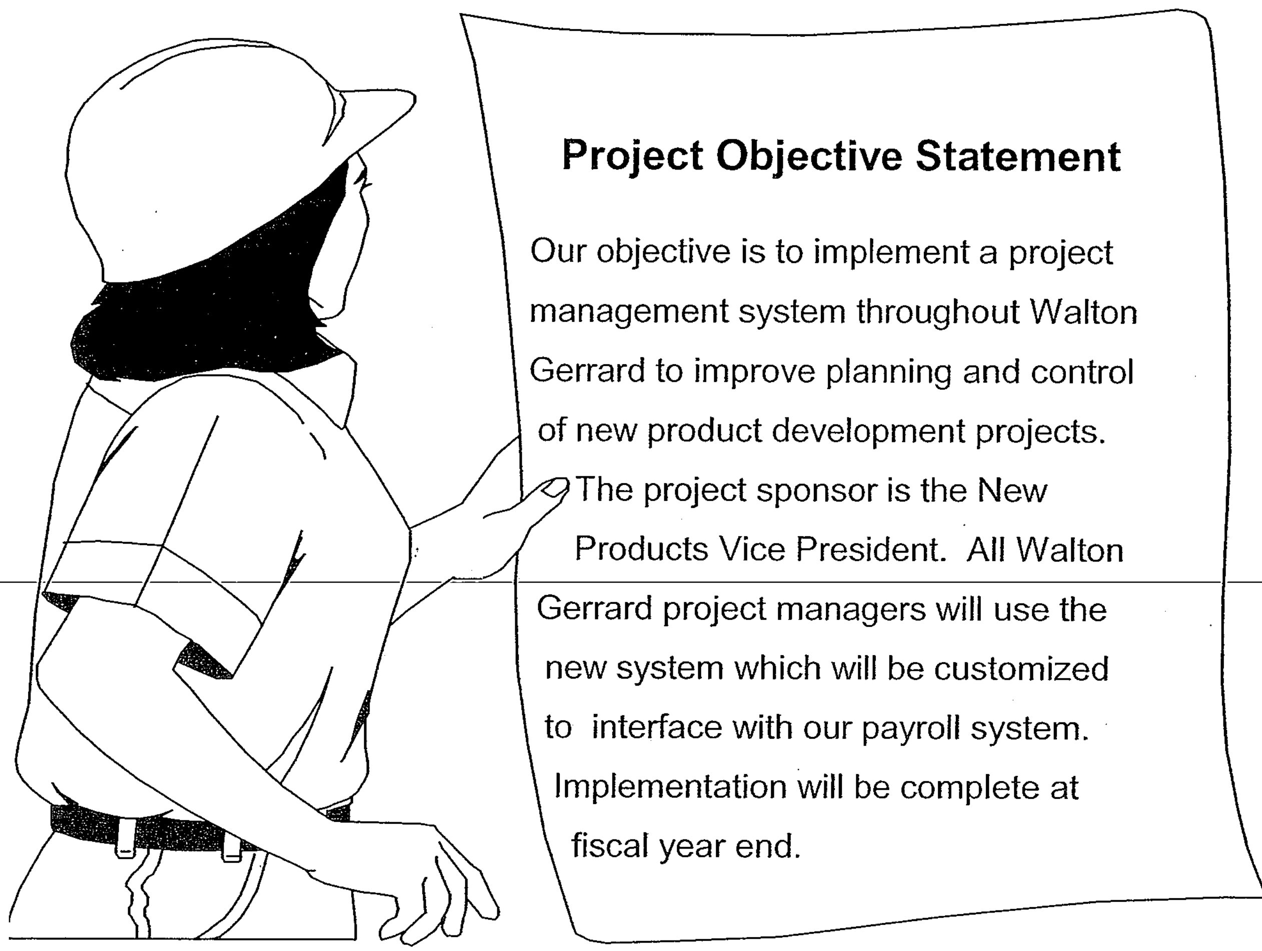
2. The project manager can draft the project objective statement, get input from the project team, and jointly finalize the statement.

3. Based on the information the project manager gathered from the sponsor in the definition phase, the project manager and project team can develop and write the project objective statement together. (NOTE: We will use this method in class.)

All of these techniques are valid. However, each has trade-offs in the areas of time to develop, team members' clear understanding, and team members' commitment to the project.

## Seminar Case Study

Here is the project objective statement written by the project manager for the Project Management System Implementation project:



# Group Project Exercise

This exercise establishes the project your group will use throughout the remainder of this seminar. After you develop the scope of your project, you will generate a work breakdown structure, network diagram, schedule, resource loading, and contingency plans for this project.

**GROUP PROJECT EXERCISE**
**Project Definition**

1. **Select a project**
2. **Develop a project objective:**
   - **WHO? Project sponsor and end users**
   - **WHAT? End product and completion criteria**
   - **WHY? Why the project is needed**
3. **Pick a name for your project**

## Exercise Instructions:

1. Agree upon a project to work on (some sample scenarios on the next page). Your project should:
   - Require approximately 52 weeks (1 year) to complete
   - Be manageable by your project team (take into account the number of people on your team and their skills)
   - Do not worry abour budget constraints

2. Using the Project Definition Worksheet on page 1 - 18, develop these elements for your project objective statement (you can use bullet points if you wish):
   - **WHO** Who is your project sponsor? Who will use the end product?
   - **WHAT** Describe the project's end product. How will you and others determine that the project is complete? How will you and others judge the success of this venture?
   - **WHY** Why is the project needed? What problems will it solve?

3. Write a clear, concise objective statement from the components you developed in Step 2 above.

4. Pick a name for your project.

Be prepared to present these elements to the rest of the class. (NOTE: Keep a record of the assumptions you make as you develop your project objective statement.)

# Project Scenarios

- Create a real-time Global Bulletin Board that will enable live communications across all Franklin Templeton sites worldwide.

- The company has just announced that they will be opening a new division in your location. You are responsible for establishing operations and assuring that the facilities open one year from today.

- Develop a basic project plan for an expansion of your site to 3000 employees over the next 2 - 2 1/2 years in a cost effective manner. This group will be responsible for developing this plan to accommodate the expansion.

- OPTION: Work on a "real" project which your team must agree upon. (Note: This project must be six months or less in duration, and all team members must agree that they will not have time in class for a complete treatment of all tasks and responsibilities.)

- Create your own. Every member of you team must be able to participate in the project.

helps to focus. a day or so to hash things out.

## Define Your Project

Meet, go away, let it evolve.

Sit down w/ Sponsors to fill this out.

# Project Definition Worksheet

| | |
|---|---|
| Project Name: Vessel decontamination | |
| Project Manager: | Date Prepared: |

**BACKGROUND (WHY?)**
*(Need, Problem, or Opportunity)* Contaminated water craft can spread zebra mussels from one water body to another.
Over heats water craft. Filter feeders, population wipe out plankton, no food for others, use habitat of others.

collaborative reward for checking boats
To kill: hot water 140° spray or 100° long, bleach.

**GOAL/OBJECTIVES (WHAT?)**
*(Deliverable or Results)* Protocols for detection.
- # access pts
- water chemistry
- location

Stakeholder inspection in as little time as possible.
Develop the guidance - we want a manual
- inspect boats, how to detect contamination, how to kill them.

Manual to vessel inspectors: 1. inspect 2. detect 3. eradicate

**WHO?**
*(Stakeholders, Project Sponsor, Recipients, or Project Team)*
→ resource managers
→ methods respect time constraints
→ people doing the inspection (biologists, wardens, parks rangers, marina operators - who gets manual).
→ DFG Staff Dale - biol.
Matt - methods, permitting issues
- vessel owners
- marina operators - part of solution to help
- stored & moved boats w/ adults

record boat ID
- performance of decon.
- tracking system
success of decon.
- authority to establish

- bleach
- safety
- hazard condition
- positive detection
- disposal (scraping)

**CONSTRAINTS/PRIORITIES**
*(Time, Money, Resources, or Scope)*
- 1 year
- cooperation
- time; people are in a hurry
- education of public
-

**SUCCESS CRITERIA**
*(Achievement of functional objectives, realization of benefits, and project performance)*

This project will be successful if...
- ID boats
- where to look
- Pilot project to test method.
- get the job done
- so people don't want to avoid
- streamline it,
- participation

Get sign-off from sponsor

- how quickly can you do it. (detection & decon)
- improve inspection time
- increase percent inspection
- decrease contamination
- Useable manual
- criteria for different boats
- location
- Reduce the spread of species

**The project objective statement can be used to:**

- Clarify project expectations with the project sponsor
- Use as a guidepost when developing the project plan
- Keep the team focused as project work occurs
- Communicate with the project community during the planning and control phases of the project
- Assess success in the project close-out phase

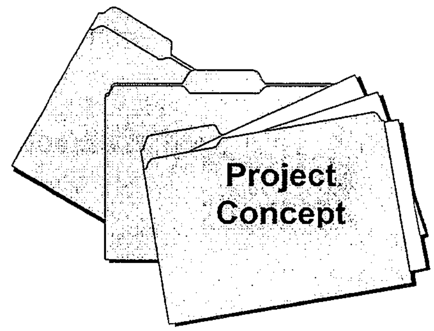
**As a team, write your project objective statement:**

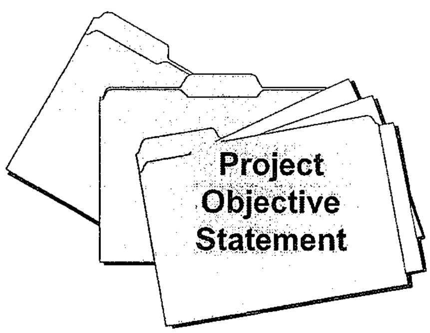
# *Project Definition Documentation Guidelines*

Consider including these elements in your project definition documentation:

**Project Concept:**

- Problem/Opportunity
- Customer needs
- Strategic alignment



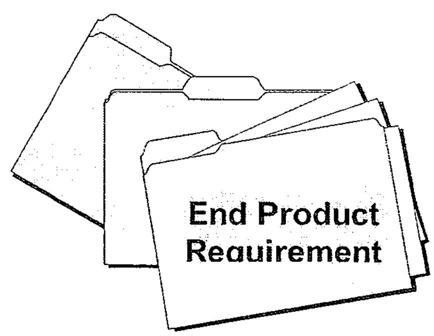




**Project objective statement:**

- Who?
- What?
- Why?
- When?
- Cost?

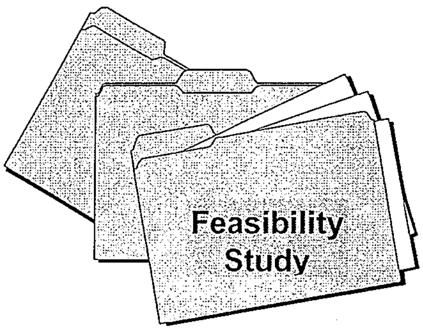
**End product requirements:**

- Inclusions/Exclusions
- Completion/Satisfaction criteria
- Mandatory vs. wish list
- Assumptions



**Alternatives:**

- Competitive product analysis
- Product choices
- Technology assessment
- Development approach

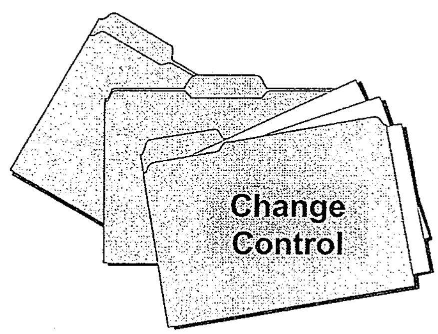




**Feasibility:**

- Costs/Benefits
- Risks/Impact
- Constraints
- Future opportunities
- Recommendations

**Change Control:**

- Reason(s) for change
- Present plan
- Changes to scope/estimates
- Revised plan
- Impact on project
- Recommendations



## Seminar Case Study

This memo was written by the president of Walton Gerrard Company. It describes the mandate for a new program.

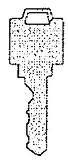
### *Memorandum*

This year has marked a number of changes for both Walton Gerrard and our industry. As a result, we must look ahead with vision and foresight to meet these new challenges.

We must learn to be more efficient, to optimize our use of resources, eliminate waste, and increase productivity. There will be greater emphasis on the bottom line. We expect projects to be completed on time and within budget. Improvements can come from a number of sources, and we must all be open to them.

Therefore, Walton Gerrard must move away from the traditional pyramid structure to a product/project orientation. Each product will be managed as a project, with a product manager held accountable for interfaces with Marketing, Sales, and Manufacturing. We believe that this new structure will create stronger team relationships in our company.

To support this new structure, we plan to implement a project management system and revise our current procedures. Your support in this process will be a key element to its success.



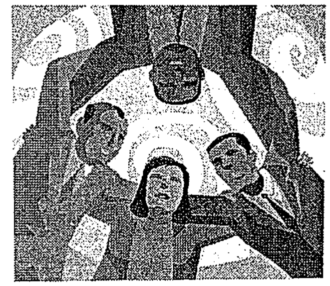
# Define the Project Key Points

1. Content, size
2. Contract/charter
3. Be specific in requirements, not detailed. Details come later

# Establish Project Structure

## STEP 2

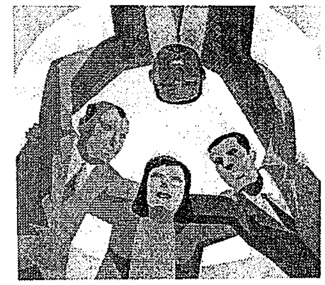
## NOTES:

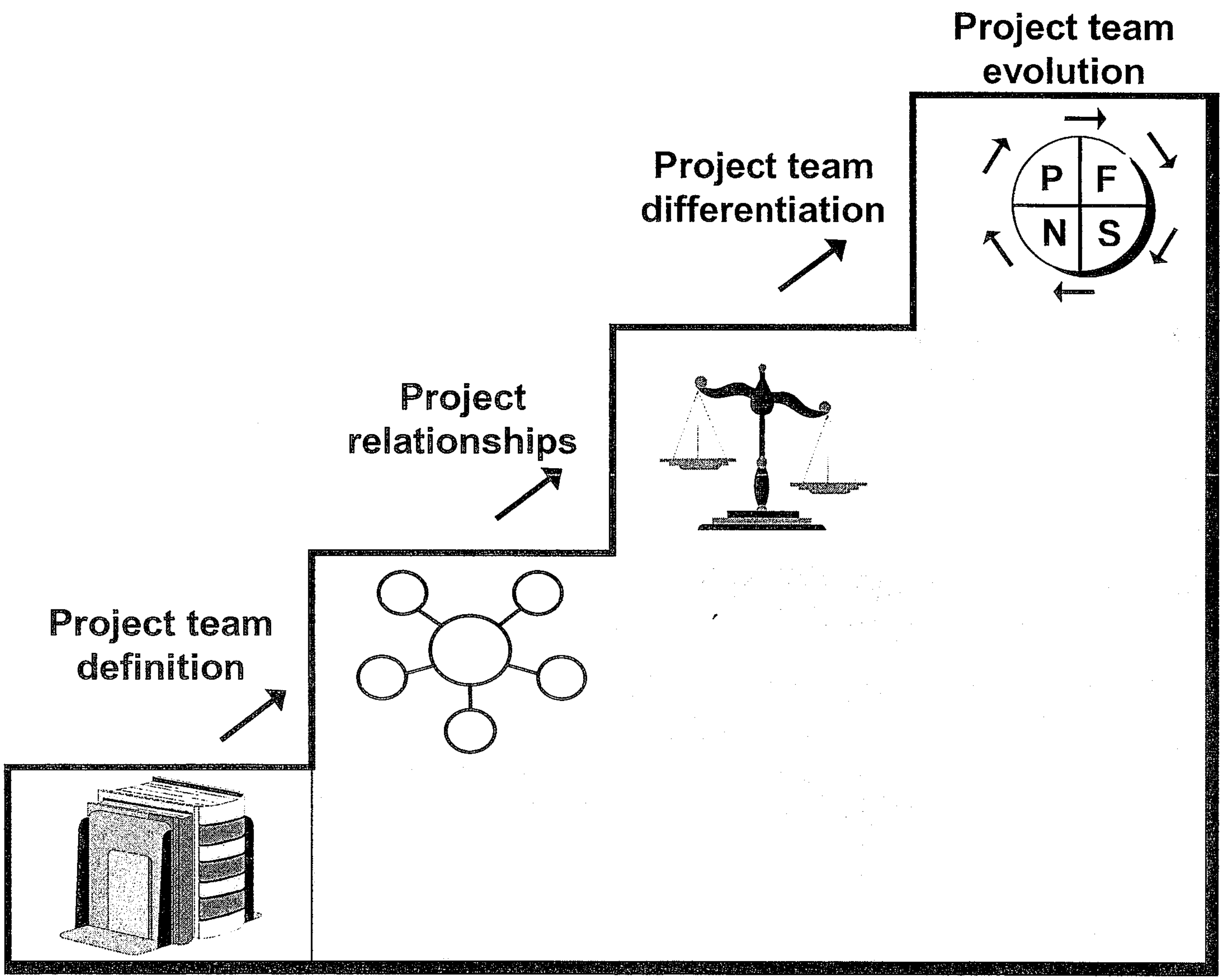


# *Project Management Process*

| Phase | Step | Deliverable |
|---|---|---|
| INITIATION | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| PLANNING | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| CONTROL | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| CLOSE-OUT | 10. Perform Post-Project Review | Project History Documentation |

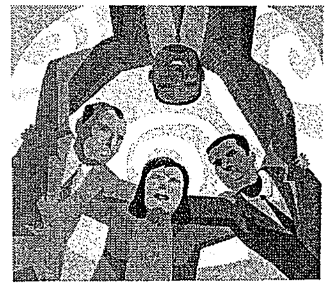
# *Topics to be Covered . . .*





# Project Teams: Definition

- what expertise among members
- relationships
- accountability
- evolution of teamwork



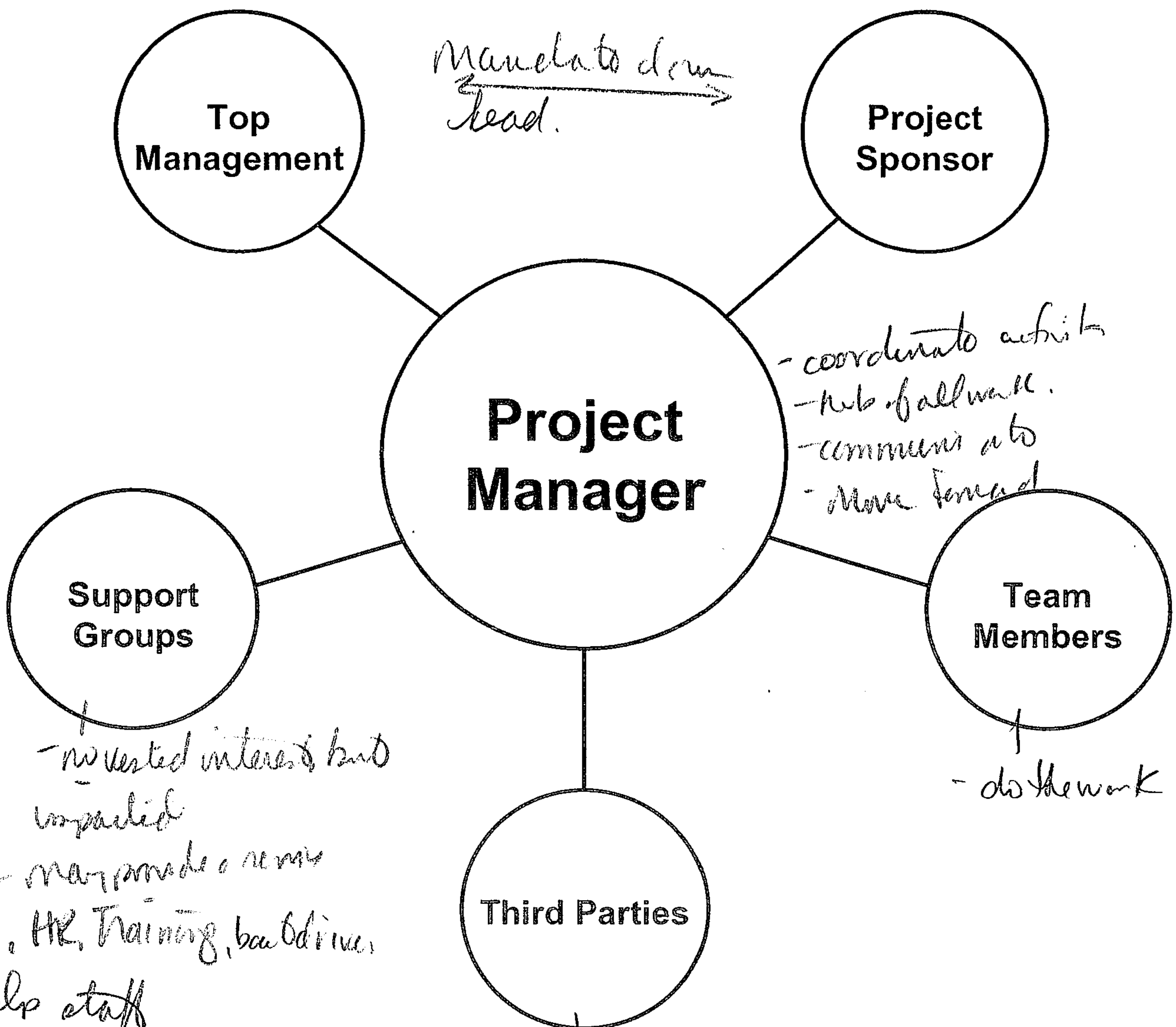
**A project team:**

- Consists of two or more people
- Has a specific objective to be attained within parameters of schedule, cost, and quality
- Requires coordination of activity among the members in order to reach the project objective.

# *Managing Project Relationships*

All individuals who play in project

-eg. NMFS, non-profits,




Mandate down lead.

- coordinate activities
- hub of all work.
- communicate
- Move forward

- no vested interest but impacted
- may provide a service
eg. HR, Training, boat drivers
help staff

- do the work

- support
- outside org.
eg. red cross [illegible]
rent boats

# *Definitions*

## Top Management:

- The president, the operating committee, the body of individuals who head organizations within the corporate or government structure

## Project Sponsor, Client, Customer, User, or Requestor:

- Any individual or individuals requesting our services as project managers.
- This is often a member of top management.

## Team Members:

- People on the project team who may or may not report to you.

## Support Groups:

- Groups who are a part of the project team but who have no vested interest in the end-product.

## Third Parties:

- External groups required to help us develop an end-product (e.g., a company contracted to develop a sub-assembly).

Lean - email
Rich - face to face

**Problems and Solutions**

1. Read and refine descriptions on 2-7.
2. List two problems.
3. Brainstorm solutions.
4. Present problems and solutions

# Group Exercise

Define problems and solutions for project relationships.

## Exercise Instructions:

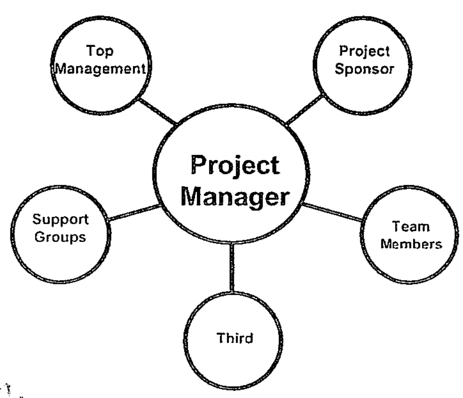
1. Read the description on 2-7 of the project relationship assigned to your team. Refine the description so it reflects the groups you deal with in your environment.

2. List two major problems you face relative to managing this project relationship.

3. Brainstorm at least two solutions to these problems. What actions could you take to orchestrate a more effective working relationship with these people? (Your solutions may solve more than one problem, so consider the entire list of problems as you develop solutions.)

4. Be prepared to present your problems and solutions to the rest of the class.

-Communication
-Assumptions
-Status
-Relationships respectful of others ideas, be sure to communicate your needs. Don't be adversarial, be open. why you are bringing position to table.




-Need to listen; paraphrase back (their idea)
- develop a communication plan; when you communicate & what they communicate. What type of info. do they want from you. not day to day basis. OK barriers that you need to...
When to expect information; how to receive it.

# Managing Project Relationships

Reprinted by permission of *Words by Specialists,* a monthly project management newsletter published by I-J Enterprises, San Francisco, California

The following article is based on a survey of 100 project people.

In our business careers, many of us reach a point when we must decide whether we will continue to be specialists (technicians) or become generalists (managers). Most of us who were promoted from technical to managerial roles probably looked at our boss and subconsciously said: "Why me? I'm a good technician. I like being a good technician. I feel comfortable with what I am doing. I'm good at what I'm doing. Why do I have to go into an unfamiliar world— that of being a 'people manager.' " Our boss's reply was "M-O-N-E-Y", which certainly got our attention and explained very well why suddenly we could not afford the luxury of sitting behind our desks and manipulating our technical tools. It was time to become "people-people."

Most of us had knowledge, education and book learning in the technical part of our business. However, this new requirement to become people-oriented was something that management, our management, didn't seem to sit down to teach us; nor were there the right books to read. No one seemed willing to send us off to a course to learn how to become people-oriented. Our success as a project management professional was going to depend on how well we would get along with the people in our world. Our success was no longer dependent on how technically qualified we were, but on how much cooperation we could get from the people who were working with us on the project.

Now, as project managers, let's take a look at the kinds of relationships we must manage, which typically include:

- Top management
- Project clients
- Team members
- Support groups
- Third parties.

In this article we will define these relationships and then list the kinds of problems that we may encounter with each. The benefit will be less in defining the problems than in devising solutions. So as we proceed, we will look at some of the ways in which we can solve our people-problems and make the "people-side" of our job easier and more successful.

## Relationship With Top Management

By top management, we mean the president, the operating committee, the body of individuals that head each and every organization within the corporate or government structure. They are the people who direct the strategy and the development of the organization.

**PROBLEMS**

Top Management may:

- Not be available for meetings
- Make unrealistic demands
- Want to become too involved in the details
- Not understand enough of what is expected and may give us an unclear picture of what is expected

**SOLUTIONS**

We should:

- Develop in-depth project plans and project objectives which must be approved by top management during design phase of the project
- Develop a status reporting methodology
- Include the dollars involved in every negotiated trade-off alternative
- Start by asking, then demand: We must get management's attention
- Communicate

## Relationship With The Project Sponsor

By project sponsor, we mean any individual or individuals requesting our services as project managers. They should be thought of in our world as our "customer." If it is true that we as project managers provide expertise, a service, then we are truly working for the project sponsor.

**PROBLEMS**

The project sponsor may:

- Resist change by saying, "We've always done it this way before."
- Not understand our special jargon and buzzwords
- Have no real knowledge about project management
- Ask us to drop everything
- Question the project manager's credibility
- Not really know what he or she wants
- Not provide realistic requirements
- Have limited or no time to talk
- Be reluctant to sign-off
- Not be terribly cooperative
- Continually introduce scope changes
- ~~Try to act like an expert~~
- Have no real feeling for acceptance criteria

**SOLUTIONS**

We should:

- Get to know the project sponsor's business as well as possible
- Make sure the project sponsor becomes the Responsible manager
- Do our homework before talking to the project sponsor
- Involve the project sponsor as much as possible
- Define the project quantifiably
- Develop a continuing communication link with the project sponsor

## Relationship With Team Members

By team members, we mean people actively involved in working on the project. They may be at the same managerial level or higher than we are in the organization. These individuals do, in fact, have a vested interest in the end-product; however, they do not have the leadership of the project team as we do, nor do they have the responsibility for the ultimate success of the end-product as we do.

**PROBLEMS**

We may have:

- No direct control over team members
- Difficulty measuring their productivity
- Political brush fires to contend with
  Leadership differences: we may have one set of criteria by which we are measured and they may have another

**SOLUTIONS**

We should:

- Establish direct leadership prior to establishment of the project
- Take a professional approach to our relationship with these team members
- Involve team members from initiation of the project, at every phase through the project, to the completion of the project
- Create an effective reporting system
- Communicate
- Become their decision-authority focal point
- Establish frequent review dates
- Provide frequent feedback
- Give them goals and standards of performance for accomplishment
- Demonstrate a positive attitude

# Relationship With Support Groups

By support groups, we mean those groups that are a part of the project team, but who have no vested interest in the end-product. We, as project managers, need their contributions in order to create our end-product. However, they don't need us nor do they need the end-product(s) we are creating. We have no real leverage. Examples of support groups may be data entry, graphics, or advertising.

**PROBLEMS**

- Setting priorities between all the organizations within the company that need support
- Lack of interest in the end-product
- Questionable quality of their performance
- Conflicts of interest
- **Identifying requirements**
- Often caught in the middle
- We always "need it yesterday"
- No recognition of above-standard performance
- Insane timetables
- Involved too late

**SOLUTIONS**

We should:
- Require early planning and involvement of support groups
- Generate more personal interaction
- Give them a reason to participate
- Communicate

# Relationship With Third Parties

By third parties, we mean external groups whose contributions we need to complete the end-product; for example, a contracting company which is going to develop a sub-assembly.

**PROBLEMS**

- Determining whether we have a real need for the third party group
- The selection process: ensuring we've chosen the right group
- Pulling them into the communication network
- Educating the third party group about project scope and requirements
- Evaluating their performance

**SOLUTIONS**

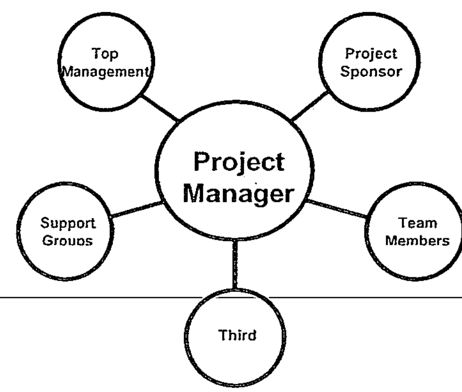
We should:

- Clearly identify their tasks
- Put them through a bid process where they make a commitment to a final bid
- Educate them about the project and its end-product
- Conduct periodic performance reviews
- Communicate

The common thread as we look at our relationships with external groups is communication. First, we must develop a communication system which we will not allow to disintegrate no matter how burdened we become with day-to-day work. Secondly, we must communicate to each group and individual at the beginning of the project:

- Their roles and responsibilities
- Their tasks
- How their tasks relate to those of other groups
- The scheduling and timing of their tasks
- Their budget
- The standard of performance they must achieve for the end-product to achieve its standard of performance

If communication is established up front and managed professionally throughout the project, then we will benefit from the improved teamwork and cooperation and will ultimately produce better project results!

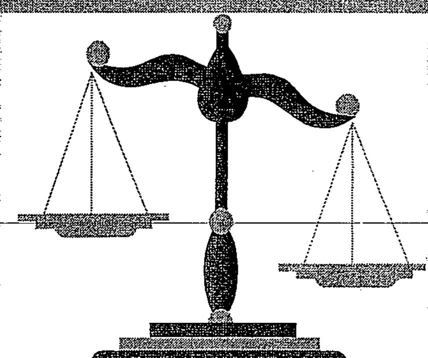


## *Summary*

- **Build relationships *first***
- **Communicate project goals and requirements broadly and obtain agreement early on**
- **Know needs and expectations – yours <u>and</u> others'**
- **Plan with others – *early***
- **Establish communication plans**
- **Work towards common understanding and agreement.**

# Project Teams: Differentiation

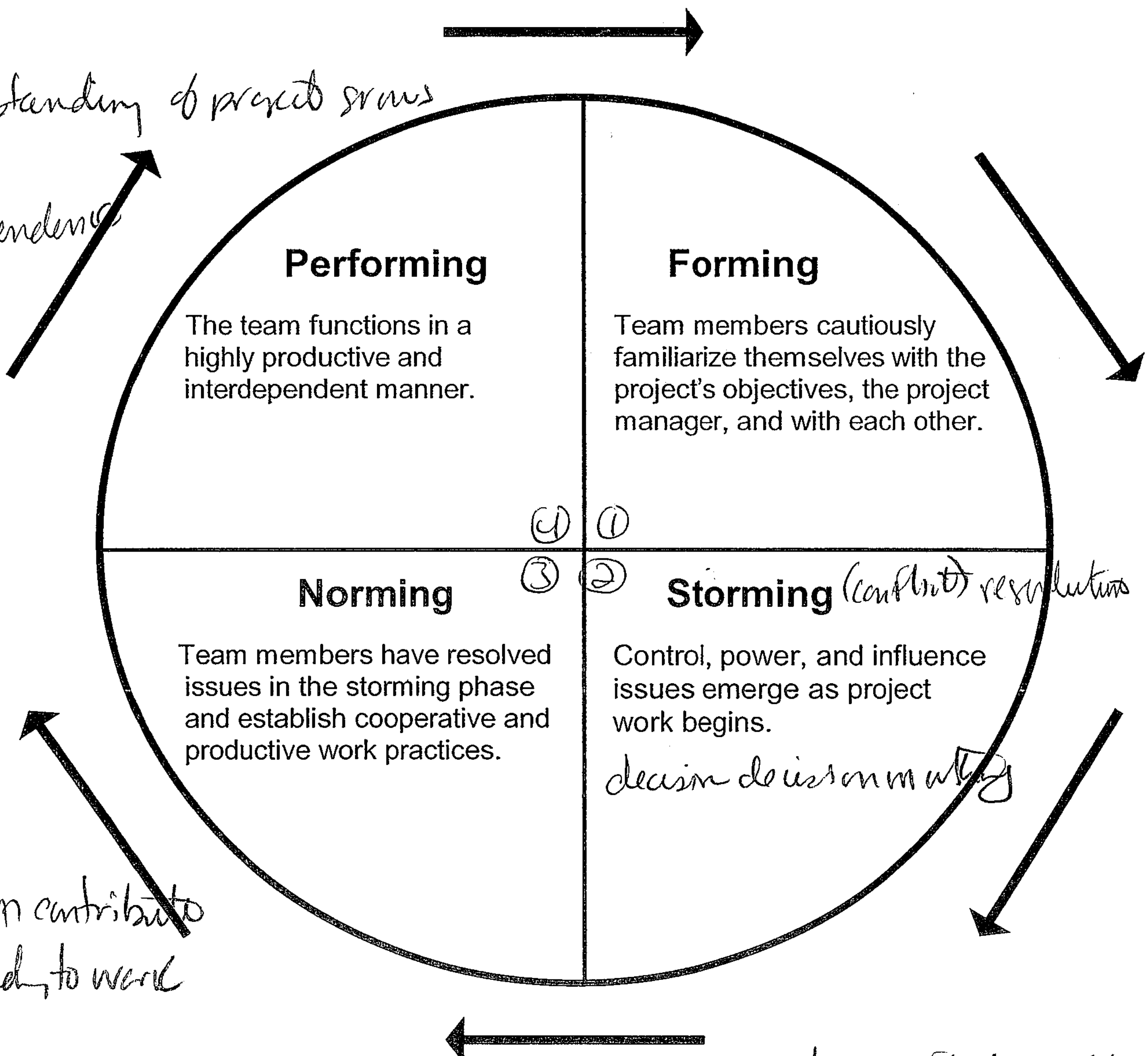
| | Leadership | Membership | Work | Time Frame |
|---|---|---|---|---|
| **Project Teams** | Project manager may or may not be a "formalized" manager in a position of authority | Often composed of members from different functional areas; sometimes includes user groups and customers; members usually don't report to the project manager | Focused, specific effort operating within boundaries of schedule and cost | Specific and constrained; there is a definite endpoint |



| | | | | |
|---|---|---|---|---|
| **Functiona l Groups** | Functional manager with recognized position of authority | All members have similar functional area expertise; differences based on experience/areas of specialization | Process oriented, "keeping the lights on" work; or specific projects | May be ongoing, continuous; or specific and constrained |

Worker vs supervisory

# Evolving Project Teams: The Team Development Wheel




understanding of project grows

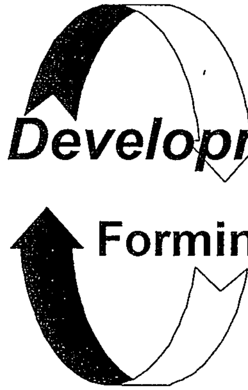
interdependence

- can contribute
- ready to work

1. Good cognitive conflict: problem solving; decide on approach
2. Affective conflict - I don't like

Do team building
- relationship
- team replacement.

# *The Team Development Wheel*



## Forming

### Description:

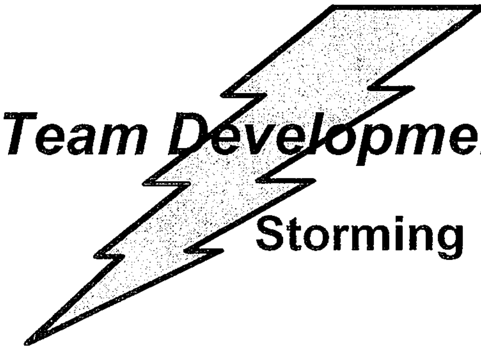
Team members become aware of the project's objectives, the project manager, and each other. They try to ascertain acceptable group behavior.

### Characteristics:

- ✓ Excitement, eagerness, and optimism about the project
- ✓ Fear and anxiety about the tasks and acceptable behavior
- ✓ Confusion and ambiguity about project objectives and roles
- ✓ Team members are polite and superficial, guarded
- ✓ Members attempt to understand the project
- ✓ Discussions tend to be about abstract concepts and issues; but some members want to "just do it"
- ✓ Very little work is accomplished

### Tasks:

- ❑ Orient team members to the project
- ❑ Define the project objective and formulate an objective statement
- ❑ Define high level tasks and roles
- ❑ Provide icebreaker activities and facilitate team members getting to know each other
- ❑ Develop team and project community communication plan
- ❑ Develop team operating agreements



# *The Team Development Wheel*

## Storming

### Description:

Control, power and influence issues emerge as project work begins. Often, team members in this stage realize that the project is probably going to be different and more difficult than they had originally perceived, and they resist doing the work. Instead, they argue about how to proceed, and attempt to assert their needs. Conflicts over priorities may also arise when project members are working on other projects.

### Characteristics:

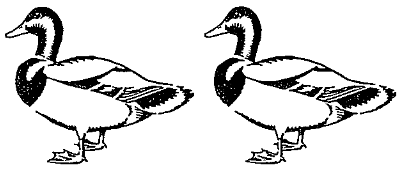
- ✓ Frustration
- ✓ Conflict, arguments
- ✓ Coalition building, polarization, defensiveness and competition
- ✓ Discomfort and resistance to ways of doing work that are unfamiliar
- ✓ Questioning and doubting project objectives and team members
- ✓ Work accomplishment is still limited

### Tasks:

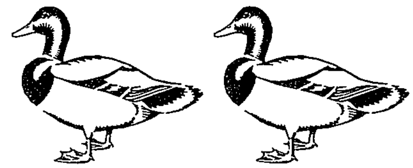
- ☐ Continue to clarify project objectives
- ☐ Define detailed project tasks
- ☐ Refine roles and responsibilities
- ☐ Finalize project performance contracts
- ☐ Facilitate constructive expression of differing viewpoints and opinions
- ☐ Provide training in conflict management and work style preferences

Do team building. Meet, discuss issues, predict barriers, promote interaction.
Need to be politically correct - develop relationships; understand communication styles. Social meeting
Productivity meetings

# *The Team Development Wheel*



## Norming



### Description:

Team members have resolved issues in the storming phase and establish cooperative and productive work practices. They are more accepting of the project objectives, their roles and responsibilities, team members' individuality, and team operating agreements. A sense of cooperation pervades the project team, and work proceeds with new energy.

### Characteristics:

- ✓ Commitment to the project
- ✓ More cohesive team
- ✓ Team operating agreements and work processes are adhered to (norms)
- ✓ Conflict tends to be avoided because harmony is more desirable
- ✓ More open, sharing, and confiding team members
- ✓ Constructively expressed criticism
- ✓ More substantial work progress

### Tasks:

- ❑ Reinforce effective team behaviors
- ❑ Encourage discussion about team performance
- ❑ Begin to share leadership in team meetings
- ❑ Facilitate effective listening, feedback, and problem-solving skills

# The Team Development Wheel

## Performing

### Description:

The team functions in a highly productive and interdependent manner. Work accomplishment is significant. Team members fully accept and embrace the project objectives and team members' roles and uniqueness. They know that they need each others' skills and talents to achieve their goal. The team is highly cohesive.

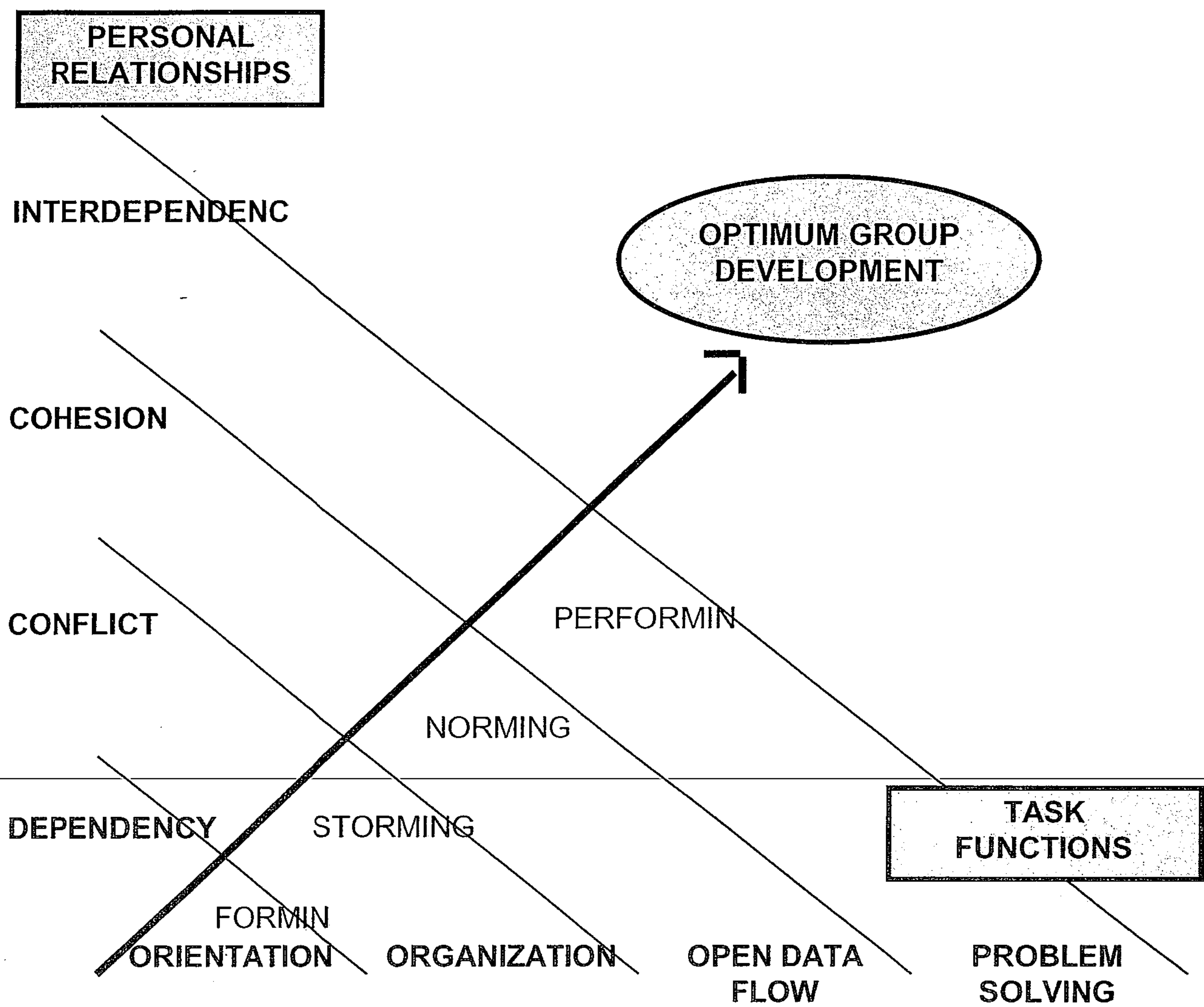
### Characteristics:

- ✓ Maximum work output
- ✓ Satisfaction with the team and its progress
- ✓ Open, trusting, close and supportive team members
- ✓ Flexible and creative team members
- ✓ High morale
- ✓ All are aware of personal and group processes, and all take responsibility for effective team behaviors
- ✓ Personal growth
- ✓ Team may become elitist.

### Tasks:

- ☐ Share leadership more
- ☐ Manage boundaries instead of closely managing team members
- ☐ Monitor and celebrate milestone successes
- ☐ Increase visibility and recognition outside of the team

# Evolving Project Teams



# Working Together: The Operating Agreements

## Operating Agreements:

- Are explicit, documented statements
- Describe how team members will work together
- Can prevent conflicts
- Are developed by consensus:
  - Nominal Group Technique

# *The Operating Agreements*

Consensus decision-making is defined as, "Each team member understands; each person can live with it; and each will support and implement the decision."

## Nominal Group Technique (NGT) Method:

1. Each person silently brainstorms his or her ideas for the team's operating agreements, and writes them down on a piece of paper.
2. A facilitator asks for one statement from each team member, one at a time, and lists them on a flipchart. (It helps to have team members sitting in a circle.) If someone has the same statement as another team member, he or she can pick another from the list. No evaluation or questioning of anyone's statements occurs during this process.
3. The facilitator continues around the team collecting operating agreement ideas, until everyone agrees all have been obtained.
4. Team members can ask for clarification on any statements they do not understand. The goal is to thoroughly understand every listed statement.
5. If anyone feels that he or she cannot live with or support a listed statement, he or she should explain why, so other team members can understand the objection.
6. Once all team members agree that they understand all the listed statements, they can be adopted as the team's operating agreements.

Think about the ***4 stages of team development*** while you go through this exercise and throughout the course. Check ☑ the task boxes on pages 2 - 8 to 2 - 11 that represent the tasks you perform in your project team while on the job.

# Team Operating Agreements

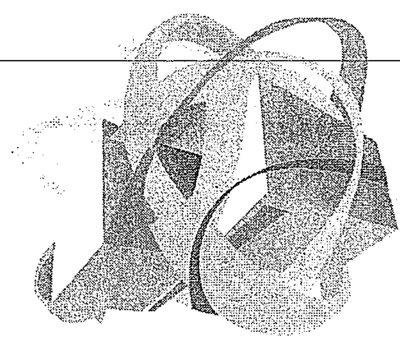
**As a group, generate team operating agreements using the Nominal Group Technique.**

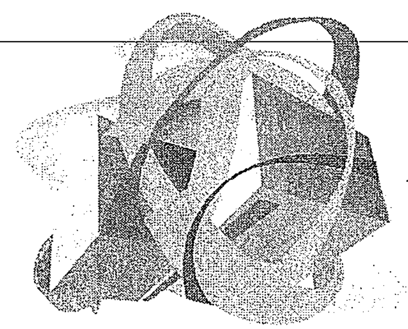
For this exercise, please limit yourselves to 5-7 statements.

# Project Team Communication Boundaries

No project team is an island. The team exists within its organizational context or project community. The project community members have specific needs for information about the project, and the team must adequately meet those needs. If it doesn't, the team runs the risk of creating resistance to the project and its products because the project community has not been continuously involved in the information updating process.

The team must also communicate within itself. Team members need to share critical project information so that informed decision-making can occur. The team must also communicate task progress information, so that task interdependencies can be effectively managed.





# Develop a Project Communication Plan

Identify additional project community members (e.g., sponsor, proje manager, team members, clients/users, support groups, departmer managers, and external vendors) and determine:

- *What* kind of information they need
- *When* and how frequently is the information needed
- *How* will the information be communicated

# Guidelines

When creating a communication plan:

☑ Senior management generally:

- Requires information less frequently and in less detail
- Prefers project progress overviews
- Prefers problems isolated with their recommended solutions

☑ Department managers typically require information on project progress and resource impact updates and projections with intermediate levels of detail.

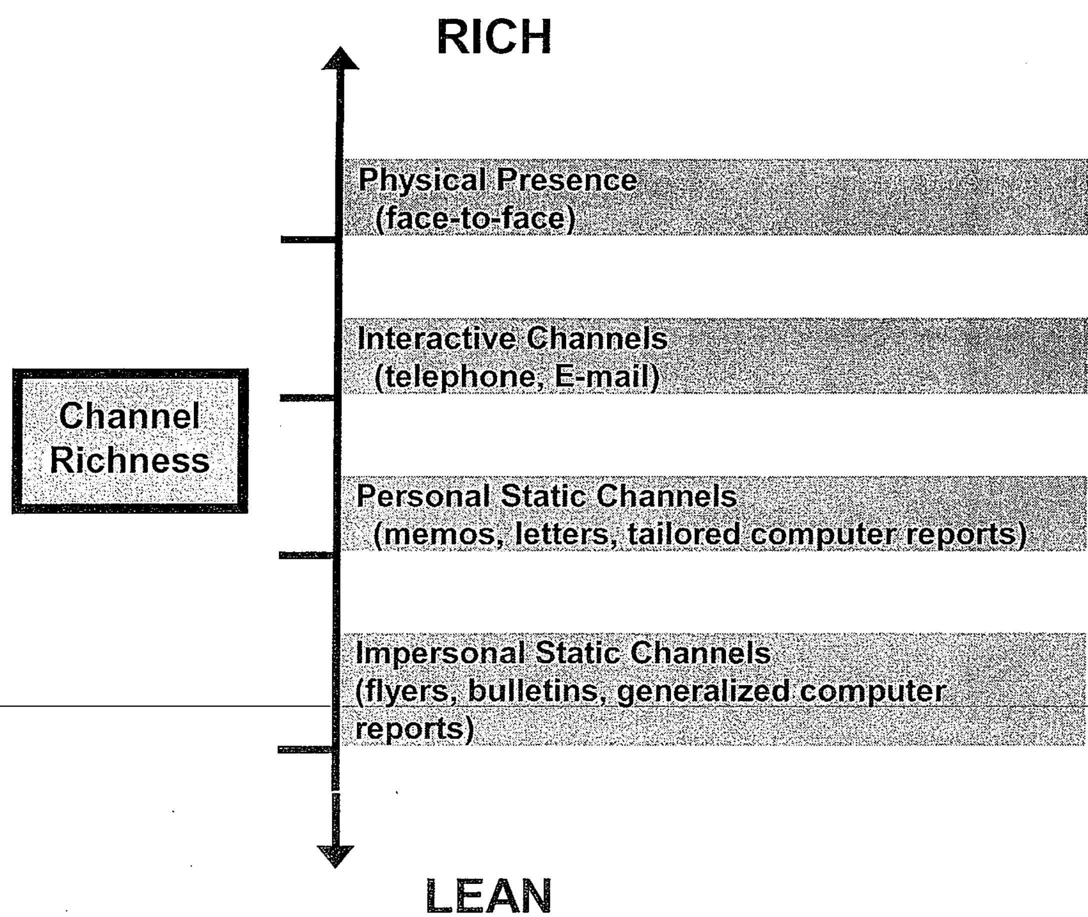
☑ Team members generally need very detailed information from each other, so they can make well-informed decisions on their project tasks. Weekly informational updates are often effective.

☑ Clients and user groups should be regularly apprised of project progress and issues.

☑ Support groups and external vendors need to understand how their roles and responsibilities influence the project.

When in doubt, ask your project community members what kind of information they need and how they want to receive the information.

# *Communication Channels*



# *Communication Effectiveness*

| Channel Richness | ROUTINE | NON-ROUTINE |
|---|---|---|
| RICH | **Communication Failure**<br>Data glut. Rich channel used for routine messages. Excess cues cause confusion and surplus meaning. | **Effective Communication**<br>Communication success because rich media match non-routine messages. |
| LEAN | **Effective Communication**<br>Communication success because channels low in richness match routine messages. | **Communication Failure**<br>Data starvation. Lean channels used for non-routine messages. Too few cues to capture message complexity. |

## NOTES:

# *The Communication Plan*

| Project Name: | |
|---|---|
| Project Manager: | Date Prepared: |

| **Who** (Project Community Members) | **What** (Types of Information) | **When** (Frequency Needed) | **How** (Communication Method) |
|---|---|---|---|
| 1. Project Sponsor | | | |
| 2. Project Users | | | |
| 3. Project Manager | | | |
| 4. Team Members | | | |
| 5. Department Manager | | | |
| 6. | | | |
| 7. | | | |

## Guidelines

Do you really need to meet?

The following outline is a suggested approach for conducting a project planning meeting:

☑ Before the Meeting:

- Communicate agenda and objectives
- Assign reading
  - Project definition document
  - WBS to level 1
- Assign pre-work
  - Review project definition and goals
  - Define role
  - List or develop level 2 tasks (optional)

☑ Planning Meeting Agenda

- Positioning the project
  - Review goals and objectives
  - Gain consensus on scope: inclusions and exclusions
  - Discuss alternate strategies
  - Define constraints and risks
  - Discuss assumptions
  - Deal with other related topics such as change control
- Planning the project
  - Explain level 1 WBS
  - Agree on level 2 tasks
  - Subgroups: develop level 3 tasks, task owners, deliverables
  - Gain consensus on level 3 tasks
  - Determine task sequence
  - Estimate task timing
  - Establish next steps
  - Produce schedule (if time allows)
  - Generate contingency plans (if time allows)

(NOTE: Keep an open issues list.)

# *Establish Project Structure*
## *(Overview)*

- **The Project Team**
  - Confirm the project manager
  - Select team members

- **Planning**
  - Decide who will be involved
  - Decide how and when to plan

- **Communication**
  - Identify stakeholders
  - Plan frequency and methods for communication with all parties
  - Set meeting and status reporting structure

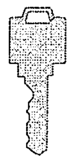
    (NOTE: Make these decisions with the project team.)

- **Project Notebook**
  - Decide on content and format
  - Decide who will maintain the notebook

    (NOTE: Make these decisions with the project team.)

- **Post-Project Review**
  - Agree to hold post-project review
  - Select questions to address.

    (NOTE: Make these decisions with the project team during project planning.)



# *Establish Project Structure Key Points*

1. Cross-functional teams
2. Project Structure Diagram
3. Communication Plan

# The Planning Phase

Once the Initiation Phase is complete, it is time to begin planning your project. The planning phase consists of steps three - eight.

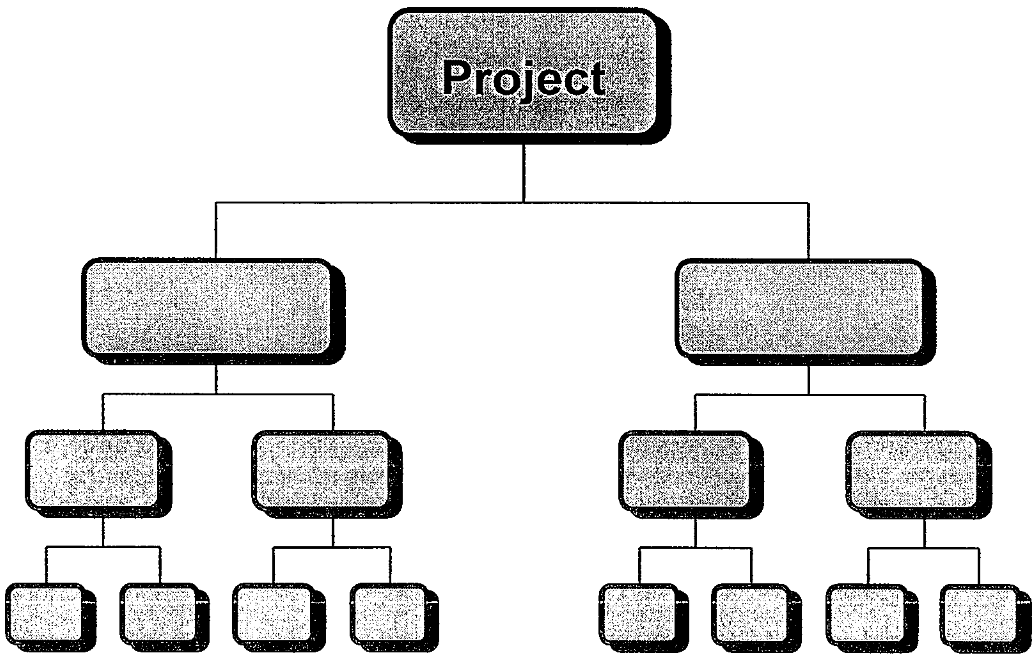
Project Plan Development and Overall Change Control are (along with Project Plan Execution) generally referred to as Project Integration Management. Each has inputs, tools and outputs.

***Project Plan Development***

| Inputs | Tools & Techniques | Outputs |
|---|---|---|
| Outputs from other planning efforts | Project Planning methodology (forms, templates, etc.) | Project Plan |
| Historical Information | Stakeholder skills and knowledge | Supporting Detail |
| Organizational Policies | Project management information systems | |
| Constraints | | |
| Assumptions | | |

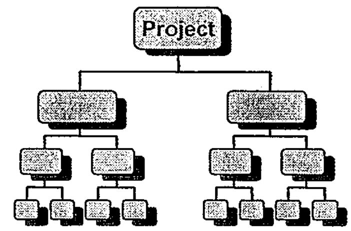
look at project definition sheet
Work break-down structure

# Generate Tasks




## STEP 3

**NOTES:**




# *Project Management Process*

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

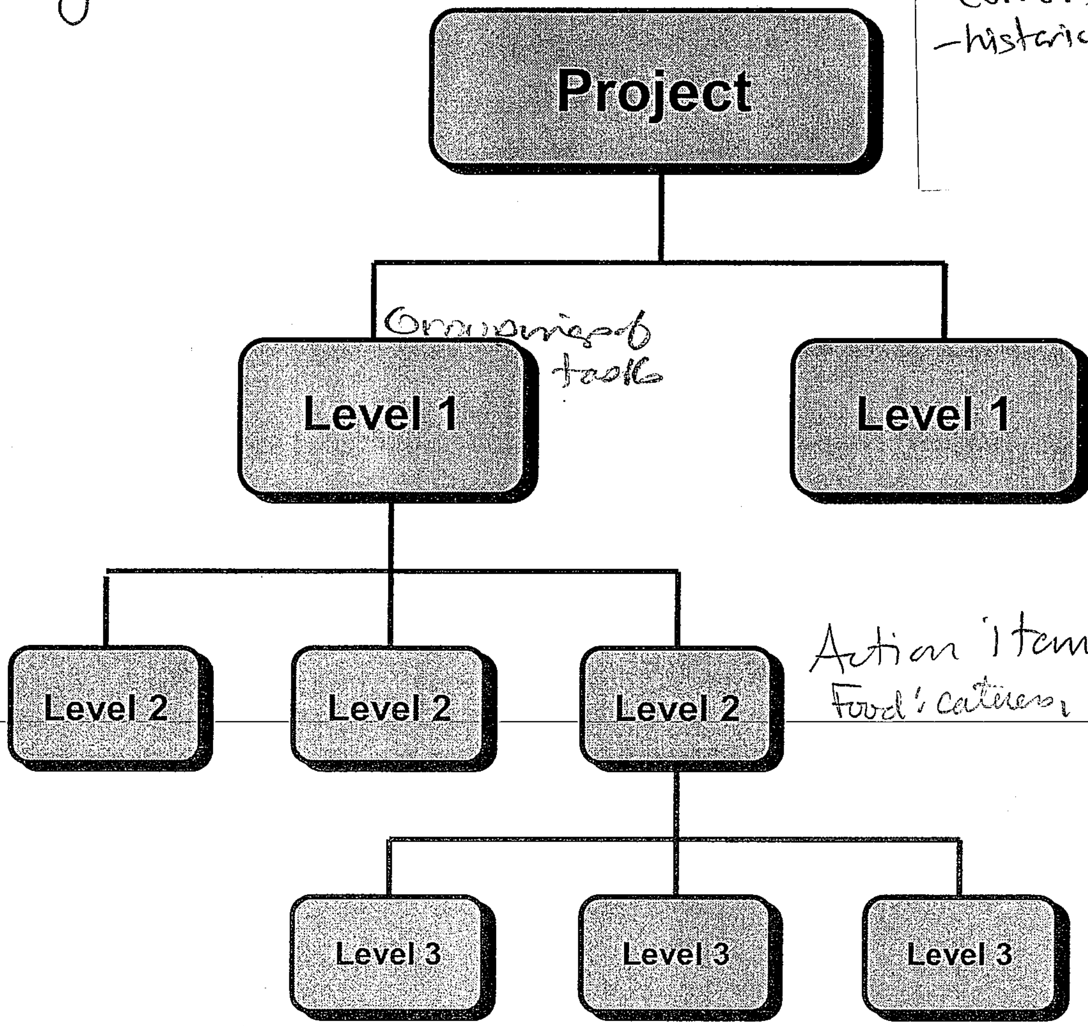
Break into subtasks so you don't overwhelm people 

# *Work Breakdown Structure Tree Chart*

- Identify sections of a manual
- How many?

Party

- content
- current research
- historic li




Grouping of tasks

Food, supplies, drink

Action items
Food: caterers, item lists, tasks

# *Step 3: Generate Tasks*

**Process**

- **Gather input from project team:**
  - **Questionnaires**
  - **Interviews**
  - **Group sessions**
- **Restate and reconfirm project definition**
- **Break project into major work elements**
- **Break major work elements into detailed tasks**
- **Identify a task owner and deliverable**
- **Write task descriptions**

## Description

A work breakdown structure (WBS) is a hierarchical list or diagram representing all the tasks which must be completed in order to complete the project.

The work breakdown structure becomes the foundation from which all baseline plans are built. If the WBS is faulty, all planning from this point forward will also be faulty.

***Ask yourself, "What needs to be done to deliver what the sponsor wants?"***

## Process

⇨ Use the appropriate Requirements Analysis or Needs Analysis tools for you're your discipline.

⇨ Gather input from the project team by using questionnaires, interviews and group sessions.

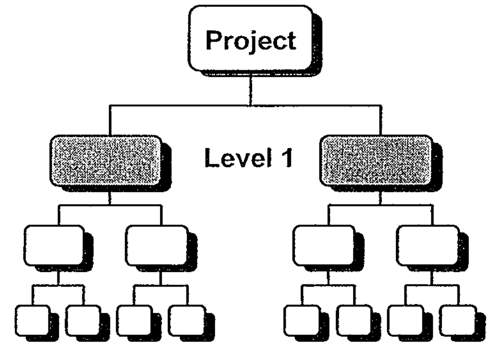
⇨ Restate the project definition and confirm that it is correct.

⇨ Break the project into major elements of work (i.e. Level 1 categories).

⇨ Decompose each Level 1 work element into more detailed tasks (e.g., levels 2 and 3).

⇨ Identify a task owner and deliverable for each task at the lowest WBS level.

⇨ Write a task description for each task.




## Guidelines

☑ These categories can be used to construct Level 1 of a work breakdown structure:

- Deliverables
- Components of the product
- Functions
- Organizational units
- Geographical areas
- Cost accounts
- Time phases
- Tasks

☑ The lowest level of the work breakdown structure should consist of tasks decomposed until you feel certain that nothing major has been omitted.

☑ It is not necessary to break all work to the same level of detail.

- If this work effort has been done many times and is routine, it may not require many levels of breakdown.
- Work that is less familiar or more complex may require more levels of breakdown.

**Level of Detail**

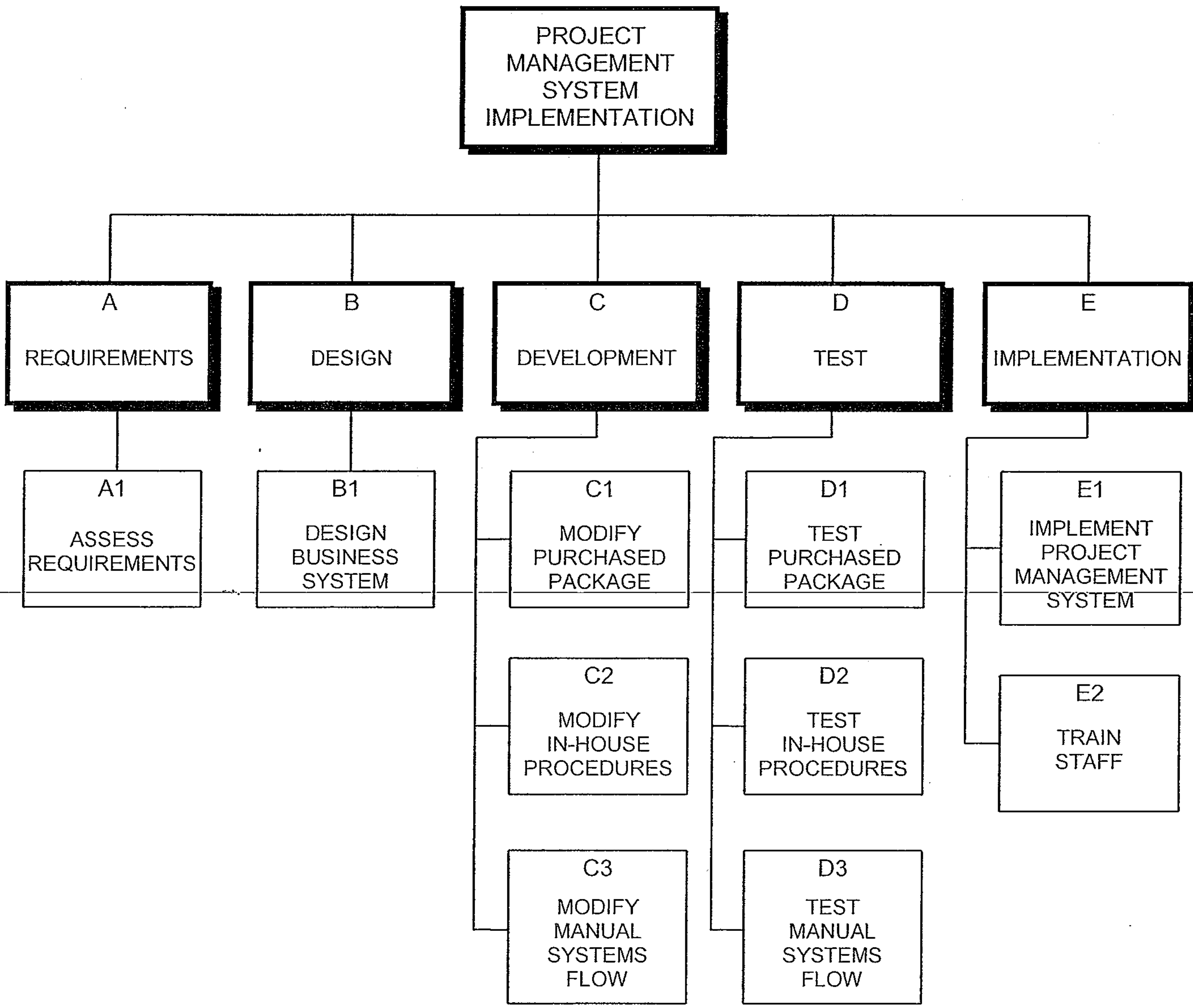
- **Action verb**
- **Single ownership**
- **Deliverable**
- **Frequent checkpoints**
- **Effort estimates**

☑ Break down work efforts until you (or the person responsible for the area) can:

- Describe the task using an action verb
- Assign single task ownership
- Describe a single deliverable
- Define appropriate and frequent project checkpoints (task start and end points)
- Reasonably assign effort estimates to them.

***An effort estimate is the actual amount of effort that is needed to accomplish the assignment. An effort estimate is not duration or calendar time.*** **An industry recommendation suggests that you continue to break down the work for the next planning horizon, until it will take 40 effort hours or less to accomplish. This is called the "Forty-hour Rule."**

# *Simplified Work Breakdown Structure Tree Chart*



# *Project Management System Implementation Task List*

| Task ID | Work Breakdown Structure | Task Owner | Deliverable |
|---|---|---|---|
| **A** | **REQUIREMENTS** | | |
| A1 | Assess Requirements | Joan R. | Requirements Document |
| **B** | **DESIGN** | | |
| B1 | Design Business System | Bob S. | System Design Document |
| **C** | **DEVELOPMENT** | | |
| C1 | Modify Purchased Package | Guy R. | Reprogrammed Package |
| C2 | Modify In-House Procedures | Marie S. | Procedures Manual |
| C3 | Modify Manual Systems Flow | Bob S. | Flowcharts |
| **D** | **TEST** | | |
| D1 | Test Purchased Package | Guy R. | Tested Package |
| D2 | Test In-House Procedures | Marie S. | Tested User Standards/Procedures |
| D3 | Test Manual Systems Flow | Bob S. | Tested Operational Procedures |
| **E** | **IMPLEMENTATION** | | |
| E1 | Implement Project Management System | Joan R. | “Live” System |
| E2 | Train Staff | Marie S. | Trained Staff |

# Task Description Worksheet

| | |
|---|---|
| Project Name: *P M System Implementation* | |
| Project Manager: *Joan Ryan* | Date Prepared: *3/1/95* |

| | |
|---|---|
| Task Name: *Assess Requirements* | |
| Task Owner: *J. Ryan* | Task ID Number: *A1* |

Task Description:

*Interview sponsors to determine system requirements in detail.*
*Assess current project management practices, policies and procedures.*
*Prioritize features of the new program based on sponsor needs.*

Deliverable Description:

*The deliverable is a comprehensive requirements document which describes the assessment and findings.*

Performance Criteria (for the deliverable):

*Requirements document should list detailed system requirements and priorities for each sponsor group. Current project management practices, policies and procedures should be fully documented including users' assessment of what is working well and areas for improvement. Features of the new program should clearly correlate to assessment data, and should reflect sponsor needs. Each section of the document should contain a summary and the supporting detailed information. User groups must sign off on this document.*

Assumptions:

*Management of each of the user groups will provide knowledgeable resources to contribute to the assessment. These resources will be available at the outset of the project.*

# Task Description Worksheet

| Project Name: | |
|---|---|
| Project Manager: | Date Prepared: |

| Task Name: | |
|---|---|
| Task Owner: | Task ID Number: |
| Task Description: | |
| Deliverable Description: | |
| Performance Criteria (for the deliverable): | |
| Assumptions: | |

**GROUP PROJECT EXERCISE**

**Work Breakdown Structure**

1. **Brainstorm 3–5 Level 1 elements**
2. **Brainstorm 4-6 bottom-level tasks**
   - **Action verb**
   - **20–25 tasks**
3. **Check for task completeness as a group.**
4. **For bottom-level tasks list:**
   - **Task ID**
   - **Task owner**
   - **Deliverable**

# Group Project Exercise

Work with your team to create a work breakdown structure for your project.

Task ID & Name

Task Owner

**FORMAT FOR Post-its ™ (Bottom-Level)**

## Exercise Instructions:

1. Identify three to five Level 1 work elements required to complete the project. Write these on 3 x 5 Post-its ™.

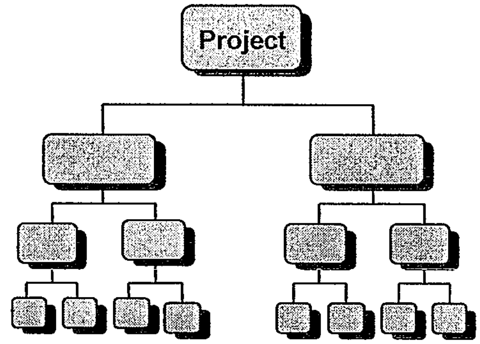
2. Identify four to six bottom-level tasks for each upper-level work element and write these in *Task ID and Name* box on Post-its ™.

   ⇨ Begin each with an action verb.
   ⇨ Your goal is to create a total of 20-25 bottom level tasks for use in the remaining planning process. (NOTE: It is not critical that you identify every task required for the class exercise.)

3. Post your Post-its ™ on the chart paper on the wall and walk through as a group to be sure you haven't missed any bottom-level elements.

4. List your bottom-level tasks on the Task Worksheet
   ⇨ For each bottom-level task:

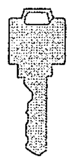
   - Assign a task ID
   - Determine a task owner
   - Describe at least one deliverable




# Feedback

- This exercise demonstrates several things:

  - ✓ Other people may see different tasks than you do. However, you may both be correct.
  - ✓ Pooling ideas can develop a much more complete list of tasks.
  - ✓ Developing a work breakdown structure is not as difficult as you might have thought.
  - ✓ This exercise forces you to analyze what needs to be done to complete the project.



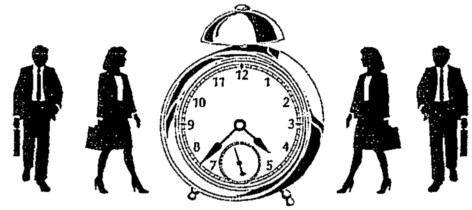
# *Work Breakdown Structure Key Points*

1. Remember the value
2. Use group process
3. Use method/standard task list

# Determine Roles & Responsibilities and Develop Estimates

## STEP 4

## NOTES:



# *Project Management Process*

| Phase | Step | Deliverable |
|---|---|---|
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| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
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| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

# *Step 4: Determine Roles & Responsibilities*

**Process**

- **List required skills**
- **Select appropriate team members**
- **Negotiate roles and responsibilities**
- **Gain commitment from departments and individuals involved**
- **Document on Responsibility Matrix**

## Description

Determining roles and responsibilities of all project participants is an important step in project planning. It requires careful selection of team members and negotiation of specific roles each will play on the project.

## Process

⇨ List required skills

⇨ Select appropriate team members

⇨ Negotiate roles and responsibilities

⇨ Gain commitment from individuals and departments involved

⇨ Document on responsibility matrix

# The Skills Inventory

It is important to assign the person with the correct skill mix to each task. Required project skills may include competencies such as strong verbal or written communication, graphic design, and software development. Below is a sample Skills Inventory of people available to work on the P. M. System Implementation project team.

| | |
|---|---|
| **Project Name:** *P M System Implementation* | |
| **Project Manager:** *Joan Ryan* | **Date Prepared:** *3/3/95* |

**REQUIRED PROJECT SKILLS**

| | NAME | PROGRAMMING | SYSTEMS DEVELOPMENT | ANALYTICAL SKILLS | TECHNICAL WRITING | TRAINING DESIGN AND PRESENTATION | QUALITY ASSURANCE | STRONG VERBAL COMMUNICATION |
|---|---|---|---|---|---|---|---|---|
| PROJECT TEAM MEMBERS | *Joan R.* | | | X | X | | | X |
| | *Seth K.* | | | | | | X | |
| | *Guy R.* | X | X | | | | X | |
| | *Bob S.* | X | | X | | | X | |
| | *Jean M.* | X | X | | | | | |
| | *Marie S.* | | | X | X | X | | |
| | | | | | | | | |
| | | | | | | | | |

# *The Skills Inventory Matrix*

You can use this form to list the skills that are required for your project teams.

| Project Name: | |
|---|---|
| Project Manager: | Date Prepared: |

Rating
1
2
3

REQUIRED PROJECT SKILLS

PROJECT TEAM MEMBERS

| NAME | Boat expert | Biology | Safety | Public relations | Writing | Verbal | Design | Organization | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 | 2 | 3 | | 3 | |
| | 2 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | |
| | 2 | 2 | 3 | 1 | 3 | 2 | 1 | 3 | |
| | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Then list the names of prospective team members and evaluate them.

## NOTES:

Biology
Safety
Methods
Public relations
Organization
Writing skills
Verbal communication skills
Design (web / document)
Research (boat expert)

# Task List With Responsibility Matrix

| Project Name: *Project Management System* | Prepared by: *J. Ryan* | Page 1 of 1 |
|---|---|---|

| Project Manager: *J. Ryan* |
|---|

LEGEND:
P=Prime
S=Support

| Task ID | Work Breakdown Structure | RESPONSIBILITY MATRIX<br>Task Owner | Joan R. | Bob S. | Guy R. | Marie S. | Jean M. | Seth K. |
|---|---|---|---|---|---|---|---|---|
| A1 | Assess Requirements | Joan R. | P | S | S | S | S | S |
| B1 | Design Business System | Bob S. | S | P | S | S | | S |
| C1 | Modify Purchased Package | Guy R. | | | P | | S | |
| C2 | Modify In-House Procedures | Marie S. | S | S | | P | | S |
| C3 | Modify Manual Systems Flow | Bob S. | | P | | S | S | |
| D1 | Test Purchased Package | Guy R. | S | | P | | S | S |
| D2 | Test In-House Procedures | Marie S. | S | | | P | | S |
| D3 | Test Manual Systems Flow | Bob S. | S | P | | | | S |
| E1 | Implement Project Management System | Joan R. | P | S | S | S | S | S |
| E2 | Train Staff | Marie S. | | | | P | | |

## What's wrong?

# *Responsibility Matrix*

*(Hubble Telescope Project)*

| ORGANIZATION (WHO) / PROJECT STRUCTURE BREAKDOWN (WHAT) | PROJECT MANAGEMENT OFFICE | | | ENGINEERING DEPARTMENT | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ENGINEERING SERVICES SECTION | | | MECHANICAL ENGINEERING SECTION | | | OPTICS | |
| | Project Engineer FSS | Project Engineer Film | Subcontract Administration | Drafting | Model Shop | Data Control | Structure | Shutter | Transport | Lens Design | Shop |
| Transport | | | S | S | S | | | | P | | |
| Structure | | S | | S | S | | P | | | | S |
| Lens | | | | S | | | | | | | |
| Shutter | | | S | S | | | | P | | P | S |
| View-Finder | S | | | S | S | | S | | | | |

Quality control?

# Guidelines

- ☑ In all designated areas of responsibility, an actual commitment of personnel should be made at this time. A promise to accomplish an assignment is always nice to hear, but is worthless if the staff is not available to perform the work. Each commitment should spell out exactly who will be performing what duties.

- ☑ Often, even though one person or department is primarily accountable, other groups may support their efforts. These groups must spell out their commitments as well.

- ☑ If you know who will actually be involved and each person's qualifications, estimates will be far more accurate.

- ☑ The lower the detail level, the more accurate your resource assignments will be.

- ☑ Consider adding roles beyond prime and support, such as:

  A = Approval required
  R = Reviewer
  N = Notify of significant changes

  Always provide a legend so that anyone viewing the chart will know what abbreviations stand for.

☑ Although more than one person may be assigned to a task, only one person should have primary responsibility for it.

☑ Allocate responsibility in the most logical *and* practical way. The person with the most experience or skill, or the greatest vested interest should be primarily responsible.

☑ As project manager, you may assume primary responsibility for some assignments but not for all. If someone else is better qualified or has a vested interest in a certain job, he or she should be responsible for it.

☑ Criteria for validating the Responsibility Matrix:

- Every task must have one person holding prime responsibility - the owner.
- Every task can only have one owner, and not more than one.
- Assign tasks to the people who have the skills, time, and desire to complete them.
- Do not assign people to a task for political reasons if they cannot contribute.

GROUP PROJECT EXERCISE

**Task Assignments:**

1. **Write name in column headings**
2. **Indicate prime (P) and support (S)**

# Group Project Exercise

Expand your Task Worksheets to include assignments.

## Exercise Instructions:

1. Write the names of your team members in the column headings on the Responsibility Matrix Worksheet.

2. Indicate who has prime (P) and support (S) responsibility for each task. (NOTE: Prime = Task Owner.)

# *Developing Estimates* (timelines for tasks)

**Once the project has been staffed, the project team can formulate estimates for each project task.**

Effort estimate -
- How many tasks
- Time 15mins x4 - 60

**How long will it take?**

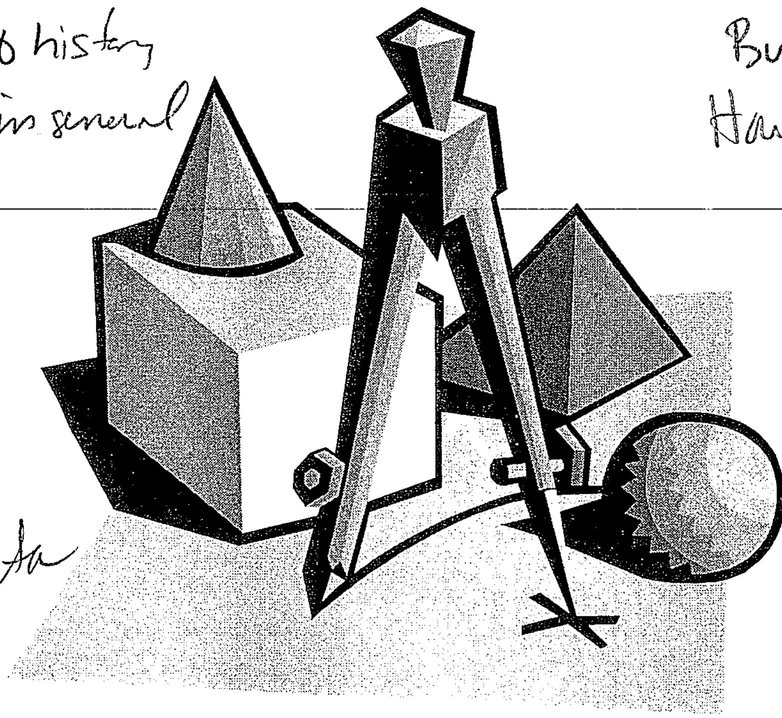
**How many people do you need?**

**What skills do they need?**

vs.
Duration estimate - 3 hrs
Buffer pts.
How long is a Foot ball game

Timeline
- think about history
- estimates in general

Need frame of reference for timelines
(previous experience)
There's already data to help w/ estimates
Ball park figure
Build in cushion room.



large project time management

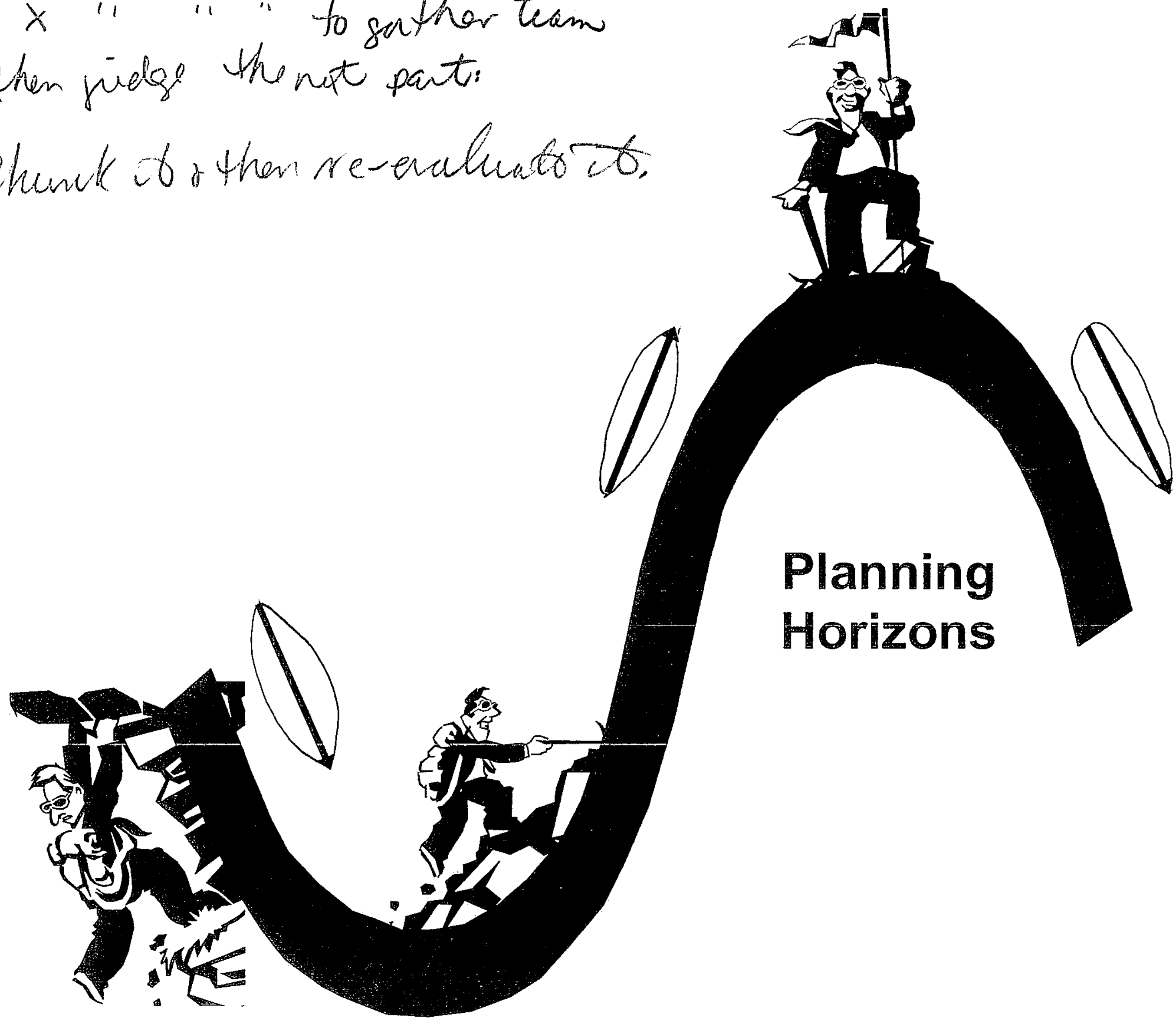
# Rolling Wave Approach

X amount of time to gather resources

X " " " to gather team

then judge the next part.

Chunk it & then re-evaluate it.



# Rolling Wave Approach to Project Management

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Please answer these questions: How often have you been asked for estimates of the duration and the cost of a project and have given answers before you really fully understood the scope of the effort? How often have you been correct? Although you were assured that these estimates were only to be ballpark figures, how often were they set in concrete, never to change?

This article discusses how this scenario develops, why this approach seldom works, and what can be done to structure a more realistic alternative. To address this issue, consider this analogy:

Imagine that you are an expert mountain climber standing at the bottom of an imposing mountain which you had never seen before. It is your job to climb this mountain and to reach the bottom on the other side. The person who is funding your expedition comes up to you and asks, "How long will it take you to get to the other side of the mountain and how much money do you need?"

Your thought processes are, "How do I know how long it is going to take to get to the other side or how much it will cost? Remember, I have never seen this particular mountain before."

Would an "I don't know" answer be satisfactory to your sponsor? Probably not. You were hired because of your expertise in mountain climbing and therefore you are expected to come forth with some reasonable answers. On the other hand, if you shoot from the hip, you know the accuracy of your guess at best will be
weak, and sooner or later you will have to confront your error. You seem to be caught in a lose-lose position. Is there no alternative?

Consider the Rolling Wave, or the phased approach, as a method which will both satisfy your sponsor and add a sense of integrity and credibility to your commitments. The Rolling Wave approach to project management suggests that the project planning effort rolls out detailed plans for the foreseeable future, and as the project evolves, periodically reevaluates the completion dates and dollars.

Let's re-examine the mountain climber analogy. At the beginning of the climb, you are standing at the bottom of the mountain with minimal knowledge of what is confronting you. But with your mountain climbing background and experience combined with historic data you have gathered from other people who have tried to climb this mountain, you approximate the time and resources required. Note the term is *approximate,* not estimate. This approximation should be presented so as to provide you all the flexibility possible. For example: it will take 6-9 weeks to climb the mountain, will require 10-12 people, and cost \$50,000 ± 10%.

Simultaneously, provide the sponsor with a detailed plan presenting everything required to prepare the party to start moving up the mountain, considerations such as: determining the necessary equipment, pinpointing the right people, acquiring and studying all the information about this particular mountain, and plotting a route of travel. This is called scheduling through the first Planning Horizon. A Planning Horizon is described as planning out as far as you can see. This target may be stated as the number of days, or the next phase of the project, or until the next milestone or deliverable is reached.

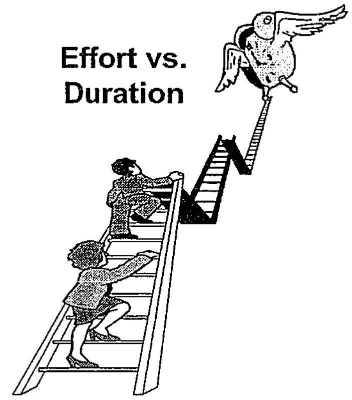
Thus far, you have provided your sponsor with 1 ) an approximation of the requirements of time and resources to finish the total effort, and 2) a detailed schedule for the first Planning Horizon.

Now the benefits of Rolling Wave come into effect. You track to the detailed plan that was established for the first Planning Horizon. At the end of each phase, many unknowns have been resolved and many decisions have been made. In our mountain climbing analogy, once the equipment and people required to make the climb are selected and the route is mapped out, then the planning for the next phase begins. This step, which is to acquire the resources and prepare for the start of the climb, becomes relatively easy. Furthermore, the approximation of time and resources at this stage can be refined with a higher level of accuracy and a greater confidence factor. At each subsequent re-evaluation, the projections of the final deadline and dollars become more realistic. There will be a point in time when enough information is available and the scope is well enough defined that no further re-evaluations are necessary.

Summary
Although this approach may be logical to those in project management, how do we sell it to our management and clients? First, let's consider the premise that the old way has not worked well. It has not been realistic to formulate a series of time, manpower, and budget commitments on Day 1, and then to set them in concrete. Regardless of whether estimates have been requested or mandated baselines have been announced, the Rolling Wave approach provides you with a practical methodology to evaluate and re-evaluate the validity of your commitments and a means to support refinement of those commitments.

# NOTES:

Effort vs. Duration



# Develop Estimates

## Description

The deliverable for the second part of Step 3 is a complete set of task estimates. An estimate is a prediction of the time required to complete a task. Two types of estimates are required:

- ➔ An *effort estimate* reflects the amount of personal or billable time an individual is planning to devote to task completion.
- ➔ A *duration estimate* reflects the length of time between a task's start and finish.

***Activity Duration Estimating***

| **Input** | **Tools** | **Output** |
|---|---|---|
| Activity Lists | Expert Judgement | Activity Duration Lists |
| Constraints | Analogous estimating* | Basis of estimates |
| Assumptions | Simulation** | Activity list updates |
| Resource requirements | | |
| Resource capabilities | | |
| Historical information | | |

*Analogous estimating is also called top down estimating. It means using the actual duration of a previous, similar activity as the basis for estimating the duration of a future activity.
**Simulation involves calculating multiple durations with different sets of assumptions.

| Process |
|---|
| • Clarify task definitions<br>• Collect data from similar projects<br>• Develop effort estimates<br>– Individual effort<br>– Total effort<br>• Determine the nature of each task<br>– Resource driven<br>– Duration driven<br>• Develop duration estimates |

# Process

⇨ Be sure each task has been defined as clearly as possible, including its deliverable and performance criteria.

⇨ Collect data from similar previous projects. Select relevant data to develop estimates.

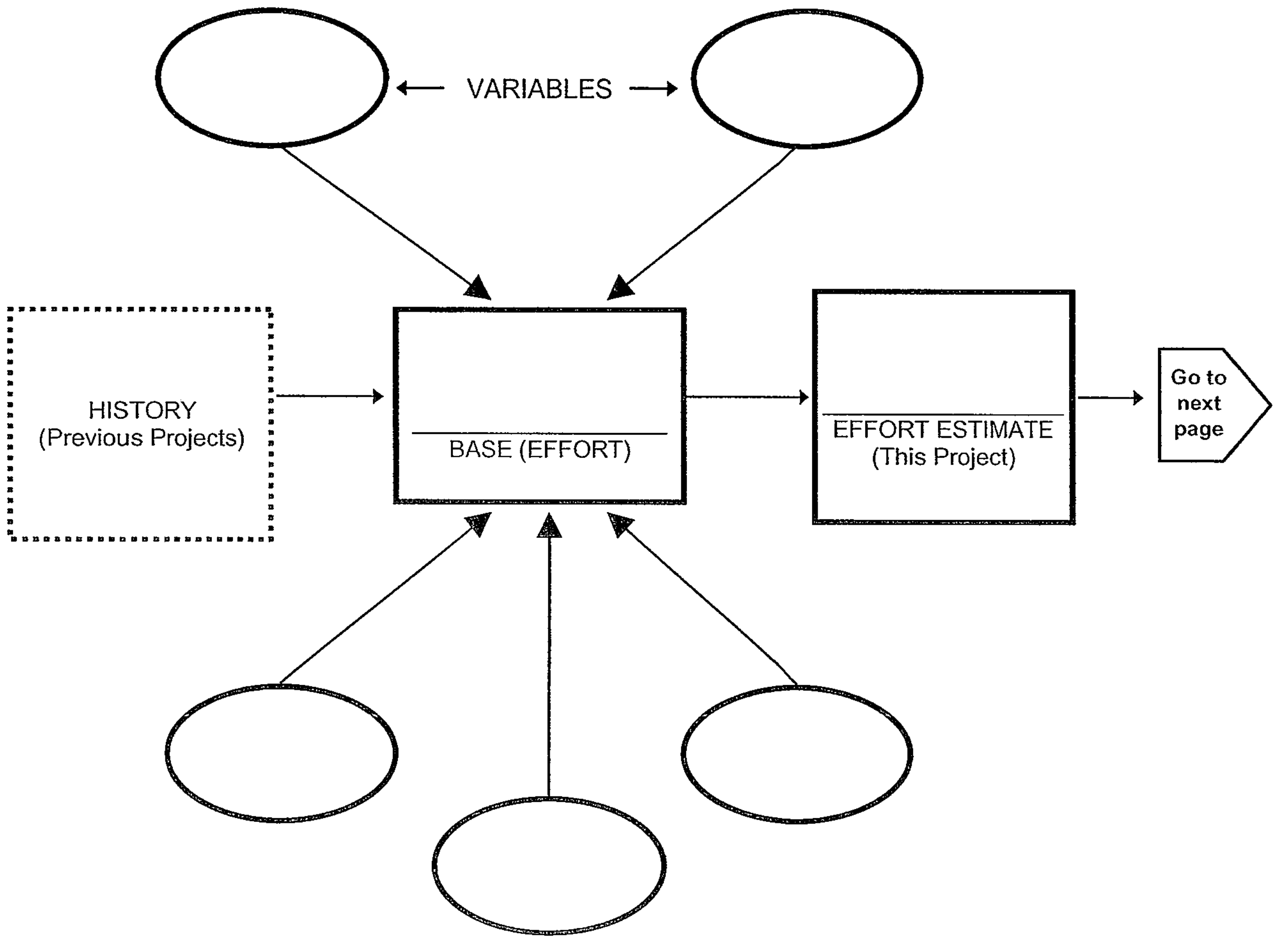
⇨ Develop effort estimates for each task, including:

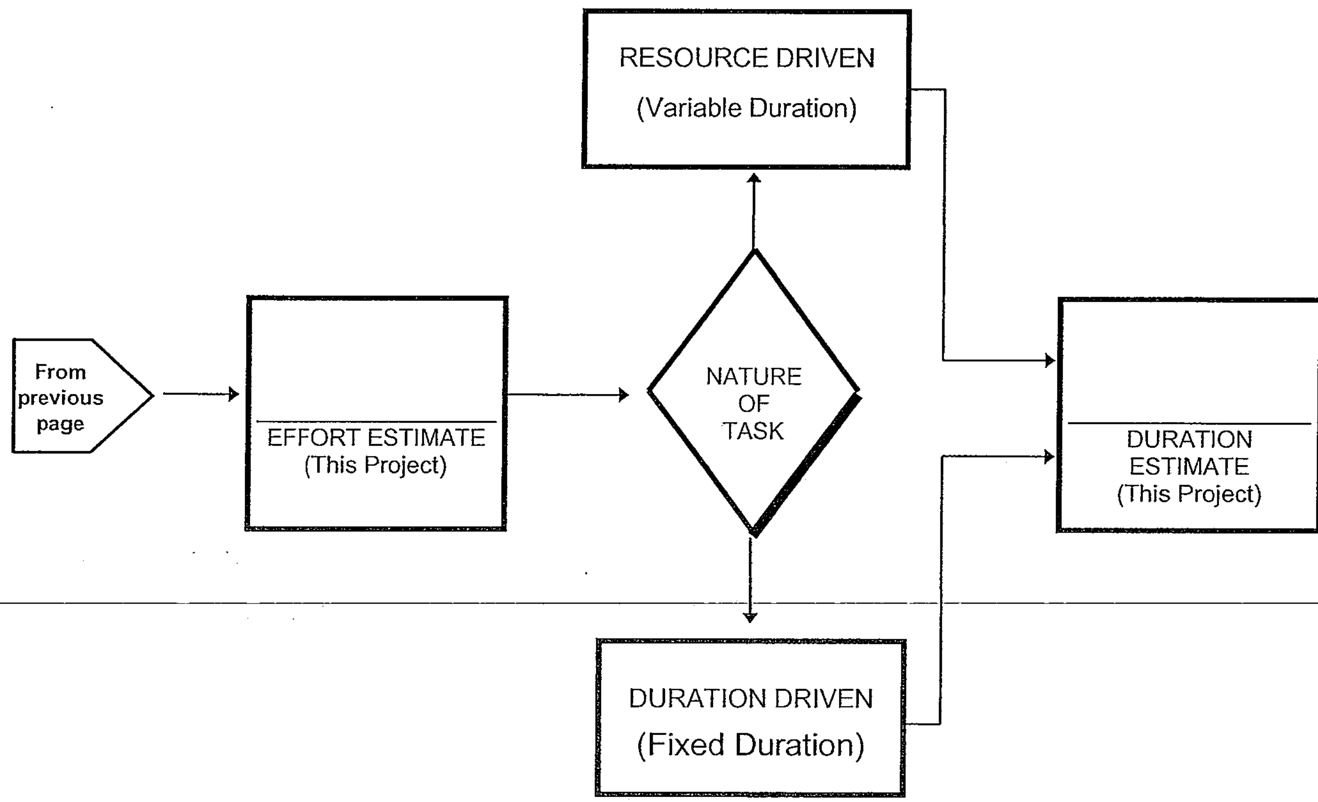
- → Individual effort: The effort each person will contribute to the task
- → Total effort: The effort the team as a whole will contribute (sum of the individual effort estimates).

⇨ Determine the nature of each task:

- → Resource driven tasks: duration is based on the amount of effort and the number of resources
- → Duration driven tasks: duration is not influenced by adding resources.

⇨ Develop duration estimates for each task.


VARIABLES
HISTORY
(Previous Projects)
BASE (EFFORT)
EFFORT ESTIMATE
(This Project)
Go to
next
page


RESOURCE DRIVEN
(Variable Duration)
From previous page
EFFORT ESTIMATE
(This Project)
NATURE OF TASK
DURATION ESTIMATE
(This Project)
DURATION DRIVEN
(Fixed Duration)

# Guidelines (Overall)

☑ Compare project tasks to tasks on previous similar projects

☑ Develop standards that can be applied to the work

# Guidelines for Effort Estimates

☑ These variables (and others) may impact effort estimates:

- Product issues such as complexity and level of innovation
- People issues such as expertise and learning curve
- Project specific issues such as location and knowledge of the project sponsor

For example, a less experienced team member may require more effort to complete a task than a more experienced person.

# Guidelines for Duration Estimates

☑ Duration estimates for **resource driven tasks** are based on the amount of effort and the number of resources. The more resources assigned to the task, the sooner the task finishes. The duration of a resource driven task is based on:

- The amount of effort each person will contribute
- The availability of each resource
- How people will work together

Duration estimates for **duration driven tasks** stay the same no matter how many resources are assigned to the task. For example, it will take two working days to drive equipment from City A to City B, no matter how many people are riding in the truck. These variables may impact the duration of a duration driven task:

- Shipping time
- Processing time
- Cycle time
- Review time
- Approval time
- Delivery lead time
- Non-working time

# Task List With Estimates

| **Project Name:** *Project Management System* | **Prepared by:** *J. Ryan* | **Page** 1 **of** 1 |
|---|---|---|
| **Project Manager:** *J. Ryan* | | |

**LEGEND:**

P=Prime
S=Support
Effort Estimates

**RESPONSIBILITY MATRIX**

| Task ID | Work Breakdown Structure | Task Owner | Joan R. | Bob S. | Guy R. | Marie S. | Jean M. | Seth K. | Total Effort Est | Duration |
|---|---|---|---|---|---|---|---|---|---|---|
| A1 | Assess Requirements | Joan R. | P .50 | S .10 | S .10 | S .10 | S .10 | S .10 | 1.0 | 1.0 |
| B1 | Design Business System | Bob S. | S .75 | P 1.50 | S .75 | S .75 | | S 1.25 | 5.00 | 2.50 |
| C1 | Modify Purchased Package | Guy R. | | | P 2.00 | | S 2.00 | | 4.00 | 2.00 |
| C2 | Modify In-House Procedures | Marie S. | S .25 | S .50 | | P 1.00 | | S .50 | 2.25 | 1.50 |
| C3 | Modify Manual Systems Flow | Bob S. | | P 1.00 | | S .70 | S .30 | | 2.00 | 4.00 |
| D1 | Test Purchased Package | Guy R. | S .25 | | P 1.00 | | S .75 | S .25 | 2.25 | 1.50 |
| D2 | Test In-House Procedures | Marie S. | S 1.00 | | | P 1.00 | | S 1.00 | 3.00 | 1.00 |
| D3 | Test Manual Systems Flow | Bob S. | S .50 | P 1.00 | | | | S 1.00 | 2.50 | 1.00 |
| E1 | Implement Project Management System | Joan R. | P .50 | S .50 | S .50 | S .50 | S .50 | S .50 | 3.00 | 1.50 |
| E2 | Train Staff | Marie S. | | | | P .50 | | | .50 | .50 |

| GROUP PROJECT EXERCISE |
|---|
| **Develop Estimates** |
| **1. Develop estimates**<br>• **Individual effort**<br>• **Total effort**<br>• **Duration**<br>**2. Add Duration to Post-its ™** |

# Group Project Exercise

Expand your Task Description Worksheets to include task estimates, and add Duration to Post-its ™.

| Task ID & Name |
|---|
| **Task Duration** |

**FORMAT FOR Post-its ™**

## Exercise Instructions:

1. Develop estimates:

   ⇨ *Individual effort:* Determine the effort in weeks each person will contribute to each task.
   ⇨ *Total effort:* Sum the individual effort estimates for each task. Write this total in the *Total Effort Est(imate)* column.
   ⇨ *Duration:* Estimate the duration of each task and write this estimate in the *Duration* column.

   - Your duration estimates should be at least as long as the largest individual effort estimate for a task.
   - For this exercise, use whole weeks when you estimate duration.

2. Add Duration to Post-its ™ (Bottom-Level).

   (NOTE: Keep in mind that the accuracy of your estimates for this exercise may be reduced because of the level of detail and/or lack of team experience.)

# Review of Day 1

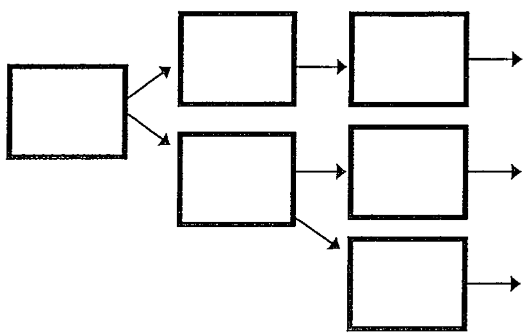
You should now be able to:

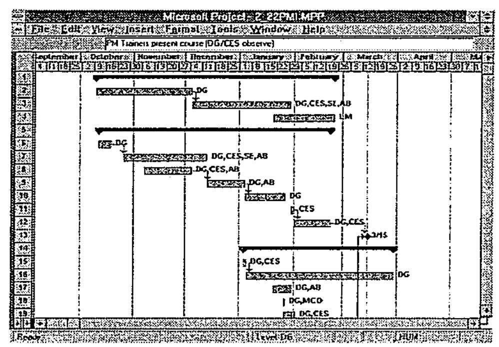
- ☒ Write a measurable objectives statement to define a project
- ☒ Assess skill requirements needed for the project
- ☒ Develop team operating agreements
- ☒ Generate a WBS (work breakdown structure)
- ☒ Assign/distribute task ownership
- ☒ Develop effort and duration estimates for the project

# *Roles & Estimating Key Points*

1. **Assess skills needed/gap**
2. **Estimating guidelines/methods**
3. **Factors between effort & duration**

# *Define Task Interdependencies and Develop Schedule*

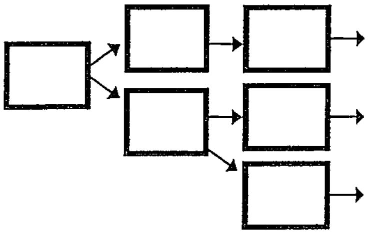


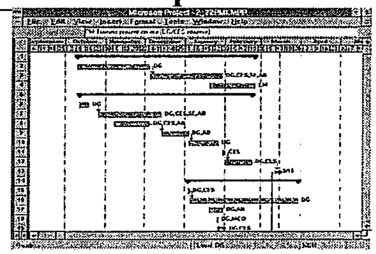


1. Interdependencies
(concurrently)

## STEP 5

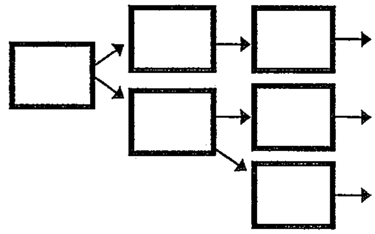
## NOTES:





# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |



# *Step 5:* *Identify Task Interdependencies and Critical Path*

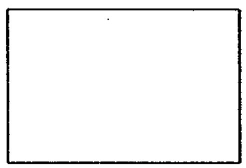
*( Part I )*

## Description

The first part of Step 5 involves determining the logical order in which tasks are to be performed. The interdependencies can be portrayed in a graphical format known as the project network or PERT Chart.*

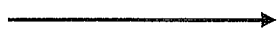
### *Post-it™ Approach*

**Symbols:**



**Task:** Implies Work Effort and Deliverable

**Dependency:**

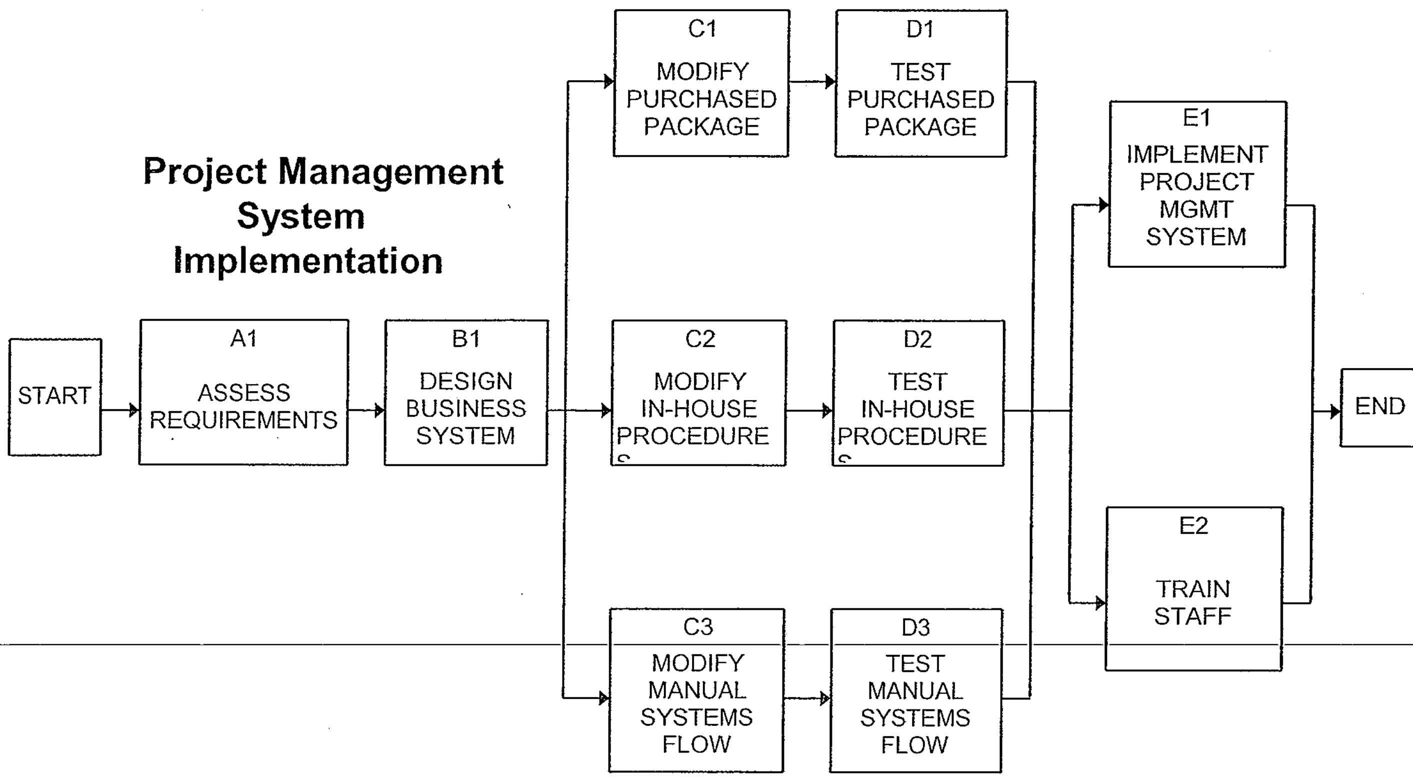


Shows task relationships

** PERT Chart = Performance and Evaluation Review Technique Chart*

## Process

# *Option 1: Post-it™ Approach*




1. Identify starting tasks. Move them to the left side of a flipchart page.

2. Identify each successor task's immediate predecessor(s) by asking what task or tasks produce the deliverable(s) needed to begin.

   - Place successor tasks to the right of their predecessors.

3. Identify which tasks could take place concurrently.

4. Connect predecessor tasks to successor tasks with arrows in one direction only: Left ➔ Right.

# *Option 2: Task List Approach*

| Task ID | Work Breakdown Structure | Task Owner | Deliverable | Immediate Predecessor |
|---|---|---|---|---|
| A | **REQUIREMENTS** | | | |
| A1 | Assess Requirements | Joan R. | Requirements Document | |
| B | **DESIGN** | | | |
| B1 | Design Business System | Bob S. | System Design Document | |
| C | **DEVELOPMENT** | | | |
| C1 | Modify Purchased Package | Guy R. | Reprogrammed Package | |
| C2 | Modify In-House Procedures | Marie S. | Procedures Manual | |
| C3 | Modify Manual Systems Flow | Bob S. | Flowcharts | |
| D | **TEST** | | | |
| D1 | Test Purchased Package | Guy R. | Tested Package | |
| D2 | Test In-House Procedures | Marie S. | Tested User Standards/Procedures | |
| D3 | Test Manual Systems Flow | Bob S. | Tested Operational Procedures | |
| E | **IMPLEMENTATION** | | | |
| E1 | Implement Project Management System | Joan R. | "Live" System | |
| E2 | Train Staff | Marie S. | Trained Staff | |

# Option 2: Task List Approach

## Process

1. Identify starting tasks.

   Put a hyphen (—) in the Immediate Predecessor Column for all starting tasks, since they have no predecessor.

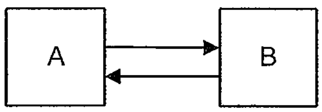
2. Identify each task's immediate predecessor(s) by asking what tasks produce the deliverable(s) needed to begin.

   List each task's predecessor(s) in the Immediate Predecessor Column.

## Typical Dependency Errors

things to be careful with

**Loop:**



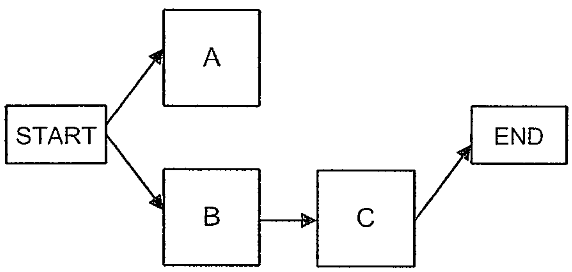

**Loop:** **A circular dependency relationship.** For instance, making Task A dependent on Task B *and* Task B dependent on Task A would create a loop.

*Solution:* *Decide which task really comes first or repeat the same series of tasks as many times as you think they will occur.*

e.g. systems testing. Keep improving things

So determine the # of times a task will be revisited & revised.

**Dangler:**




**Dangler:** **A task with no successors.**

*Solution:* *Make the dangler task a predecessor of some other task, connect it to the end, or set a fixed completion date.*

(NOTE: If there is no deliverable, don't perform the task!)

make sure it's not forgotten.

Try to integrate dangler into another task.

# Dependency Relationships

- Finish-to-start: Predecessor task must be 100% complete before the successor(s) can begin.
  Example: Binders must be assembled before the pilot can be run.

- Start-to-start: The "from" activity must start before the "to" activity can start.
  Example: Testing must begin before procedures can begin to be drafted. (As in the case of a partial dependency)

- Finish-to-finish: The "from" activity must finish before the "to" activity can finish.
  Example: The pilot must be completed before the recommended changes can be fully noted.

- Start to Finish: The "from" activity must start before the "to" activity can finish.
  Example: This is unusual outside systems development.
  A1 took 2 weeks, B1 = ½ week. Have to end at same time, so B1 is lagged.

- Lags: The amount of time between when one task starts (or finishes) and the next task can start (or finish).

  - Finnish to Start: The minimum amount of time that must pass between the finish of one activity and the start of its successor(s). The default finish-to-start lag is zero. All lags are calculated when a project has its schedule computed. In most cases, Finish-to-Start lags are not used with other lag types.

There are three additional Lag relationships. Here they are if you want to include them.

Start to Start Lag: The minimum amount of time that must pass between the start of one activity and the start of its successor(s). This may be expressed in terms of duration or percentage. [

Finish to Finish Lag: The minimum amount of time that must pass between the finish of one activity and the finish of its successor(s). All lags are calculated when a project has its schedule computed. Finish-to Finish lags are often used with Start-to-Start lags.

Start to Finish Lags: The amount of time that must pass between the start of one activity and the finish of its successor(s). Again, a very unusual relationship.

Lags are directly related to dependency.

Tracking: "dangler" - out there on it's own

| GROUP PROJECT EXERCISE |
|---|
| **Project Network**<br>1. Transfer starting tasks to beginning of flipchart<br>2. Place successive tasks to the right of their dependent tasks<br>3. Use arrows to indicate task dependencies |

# Group Project Exercise

Create a project network using Post-It ™ notes.

| Task ID & Name<br><br>Task Duration |
|---|

**FORMAT FOR Post-its ™ (Bottom-Level)**

## Exercise Instructions:

Choose a facilitator to arrange bottom-level task Post-It ™ notes.

1. Transfer Post-It ™ notes for starting tasks to the left side of the blank flipchart paper.

2. Place successive tasks to the right of tasks they depend on.

3. Connect tasks with arrows to indicate dependencies.

## NOTES:

## Questions Answered by Critical Path Analysis

After developing estimates and defining task interdependencies, enough information is available to answer important questions, such as:

- What is the duration of the entire project?
- When will tasks take place?
- How much scheduling flexibility do we have?
- What's the impact of a missed deadline (task delay)?
- How can we meet the mandated due date?

Critical path analysis provides the answers to these and many other questions.

The critical path is the longest series of tasks in the project network. It is important to identify the critical path because a delay in any task on the critical path could delay the entire project.

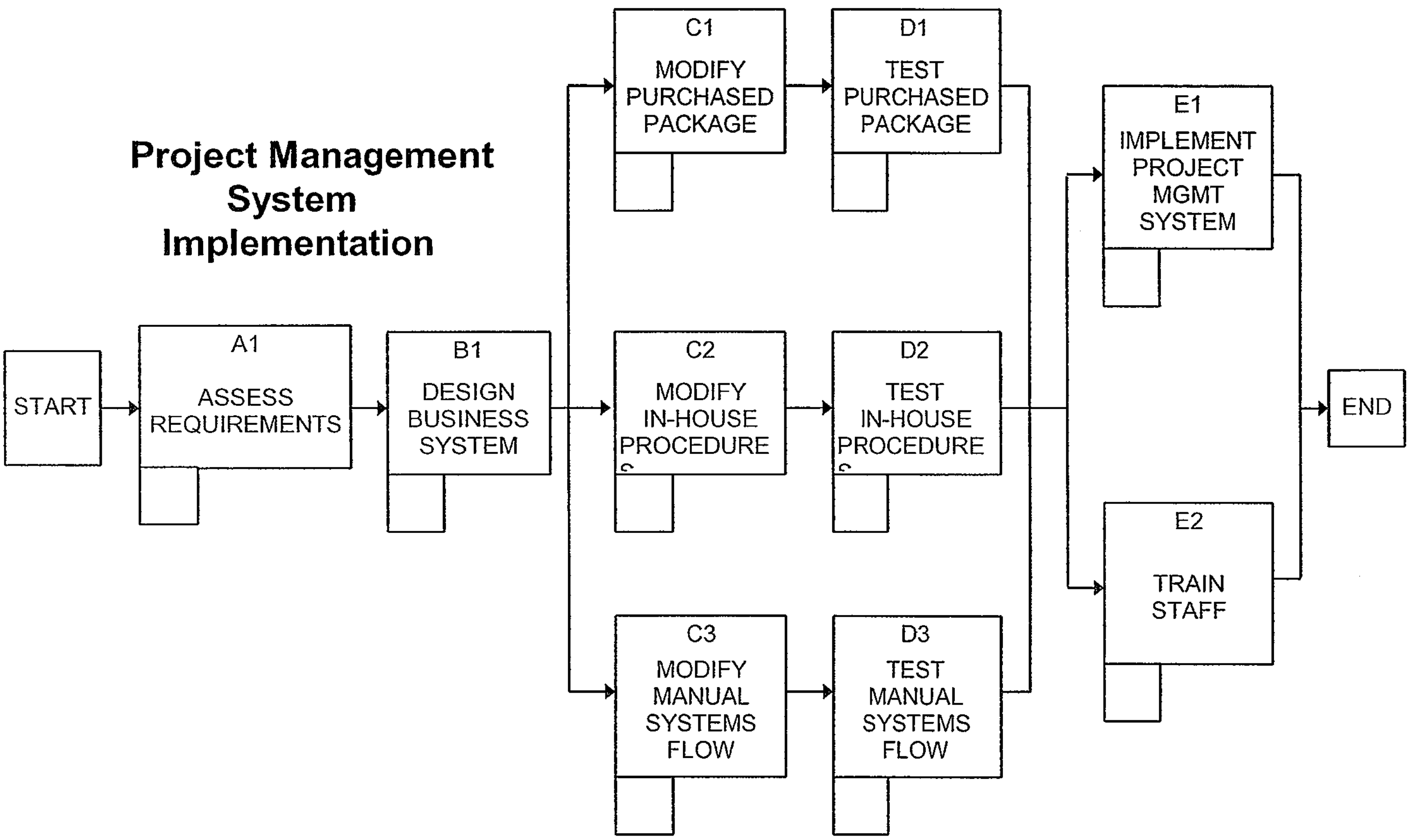
Early start & finish (E)
Late Start & finish (L)

# Analyze Critical Path

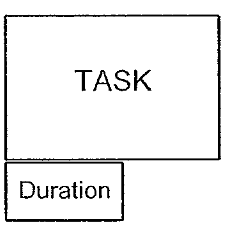
| Project Name: *Project Management System* | Prepared by: *J. Ryan* | Page 1 of 1 |
|---|---|---|
| Project Manager: *J. Ryan* | | |

| Task ID | Work Breakdown Structure | Duration |
|---|---|---|
| A1 | Assess Requirements | 1.0 |
| B1 | Design Business System | 2.5 |
| C1 | Modify Purchased Package | 2.0 |
| C2 | Modify In-House Procedures | 1.5 |
| C3 | Modify Manual Systems Flow | 4.0 |
| D1 | Test Purchased Package | 1.5 |
| D2 | Test In-House Procedures | 1.0 |
| D3 | Test Manual Systems Flow | 1.0 |
| E1 | Implement Project Management System | 1.5 |
| E2 | Train Staff | .5 |

# Analyze Critical Path



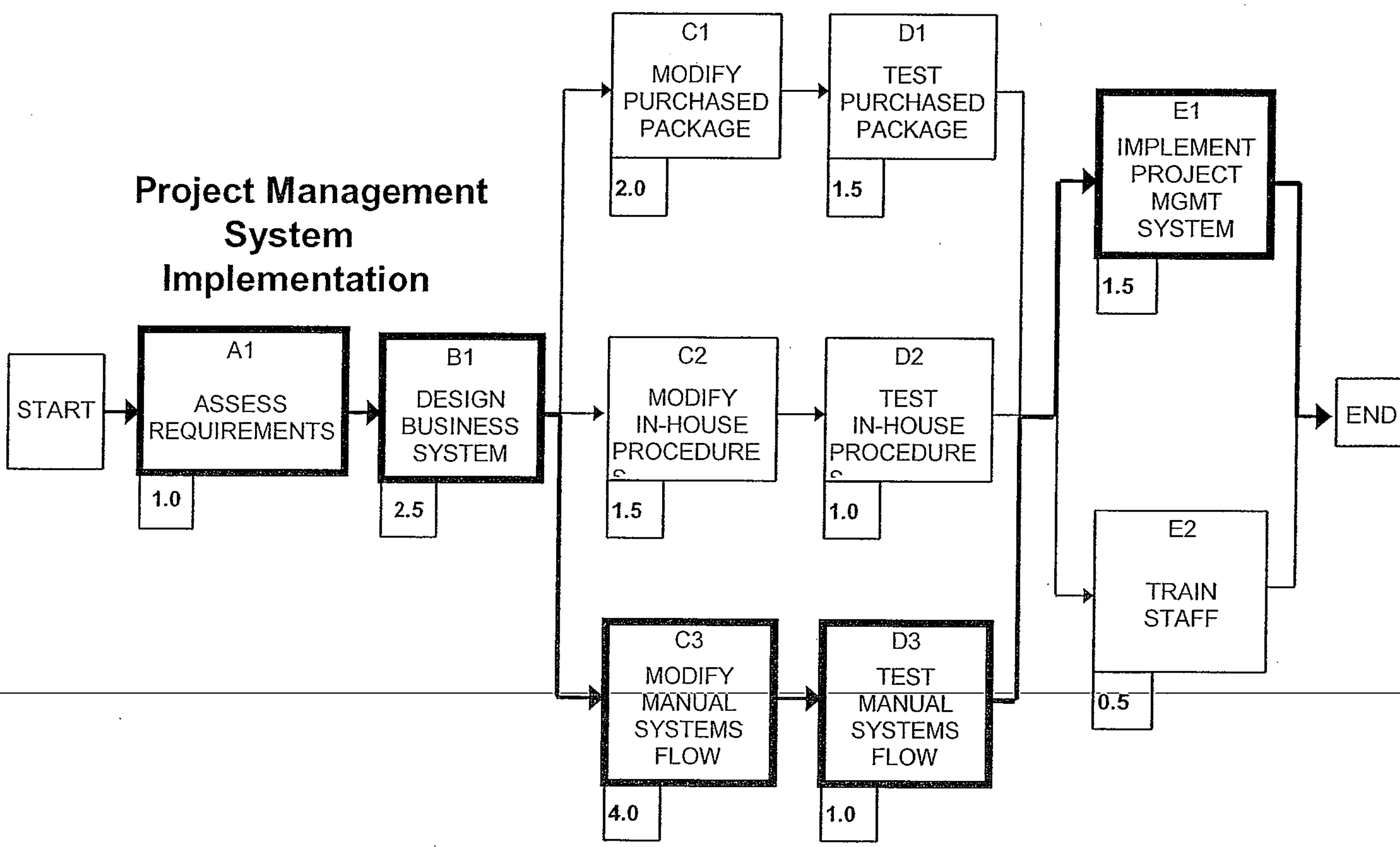

**LEGEND:**




$T_E =$

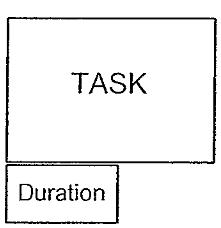
# Analyze Critical Path

## *Network With Critical Path*




$T_E$ = 10 weeks

**LEGEND:**




$T_E$ = **Completion Time: Time of the longest (critical) path**

# Critical Path Compression

Mandated due dates often require shortening project durations. What techniques could you use to responsibly compress a project's critical path?

- 
- 
- 

| E.S. | E.F. |
| --- | --- |
| Task ID and Name | |
| Duration/Effort | Float/Slack |
| L.S. | L.F. |

# *Critical Path Compression*

These techniques can be used to shorten the critical path (without spending money):

- Reallocate the resources from paths with float to the critical path
- Break tasks into subtasks that can be done in parallel
- Overlap tasks by using partial dependencies
- Reconsider the exactness of the dependencies, and possibly resequence
- Remove obstacles

These compression techniques may also be used, but will impact budget and/or scope (so negotiate with your project sponsor first):

- **$/O** Place the affected departments on overtime
- **$/O** Add shifts
- **$/O** Subcontract jobs
- **$/O** Increase facilities
- **$/O** Reduce scope

# Critical Path Terminology

You may see these terms in the project management literature:

ES = Early Start (The earliest a task can start)

EF = Early Finish (The earliest a task can finish)

LS = Late Start (The latest a task can start)

LF = Late Finish (The latest a task can finish)

Float = The amount of time a task can be delayed before it impacts the project end date. Also known as *slack.*

$T_E$ = Estimate to project completion (duration of the critical path)

$T_e$ = Duration estimate for each task

# Group Project Exercise

Expand your network to include:

- Early Start, Early Finish
- Late Start, Late Finish
- Float
- Critical Path

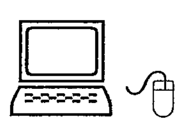
## Exercise Instructions:

1. Post each task's **duration** estimate on your network.
2. Do a **forward pass** to determine the **Early Start** and **Early Finish** for each task.
3. Do a **backward pass** to determine the **Late Finish** and **Late Start** for each task.
4. Calculate **Float** for each task by subtracting Early Finish from Late Finish.
5. Identify and mark the **critical path** (tasks with no Float).

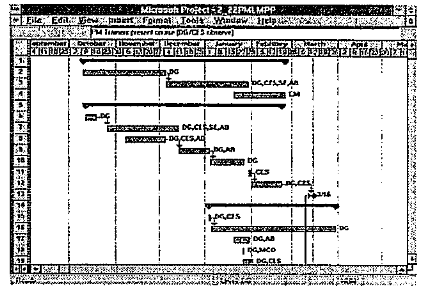
*[Note: If needed, use critical path compression techniques to ensure that your project meets the 52-week requirement.]*

# Congratulations!

At this point in your actual project, you would be ready to input your schedule information into Microsoft Project.



While we will mention software as it relates to specific concepts in this course, Microsoft Project functions and capabilities are covered in a separate lab.



# *Step 5: Develop Schedule*

*( Part II )*

## Description

A schedule portrays the order in which tasks are planned on a timescale (calendar chart), also known as a Gantt Chart.

## Process

⇨ Draw tasks path by path onto a Gantt Chart

⇨ Indicate clearly with triangles where tasks start and end

⇨ Add float and late finish dates at the end of non-critical paths

⇨ Indicate interdependencies by connecting the end of the predecessor task to the start of the successor task with a vertical line.

This manual uses these symbols:

| | | | |
|---|---|---|---|
| △ | Start | —— | Task |
| \| | Dependency | \\\\\\\\\\\\\\\\ | Float |
| ▽ | Finish | ◆ | Milestone |

Example: △——▽ \\\\\\\\\\\\\\\\\\\\ ▽ Task with float

ES EF LF

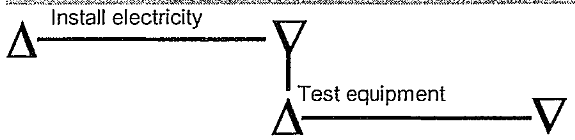
△——▽ Dependency tasks

⇨ Mark the end of the project with a milestone. Add other milestones to the schedule where appropriate. (NOTE: Milestones typically signify completion of some aspect of the project. On a Gantt Chart, a milestone has zero duration.)

# Guidelines: Dependency Relationships

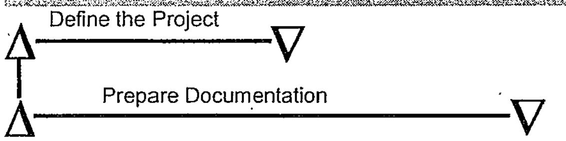
There are basically three types of dependency relationships:

**Finish-to-Start**



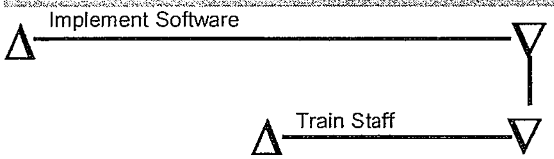

**1. Finish-to-Start (FS):** The predecessor task(s) must be 100% complete before the successor(s) can begin.
*Example: The electricity must be installed before the equipment is tested.*

**Start-to-Start**




**2. Start-to-Start (SS):** Two tasks can start at the same time.
*Example: Documentation could (and should) start at the beginning of* Define the Project.

**Finish-to-Finish**




**3. Finish-to-Finish (FF):** Two tasks could and should finish at the same time.
*Example: Training and software implementation should be complete at the same time.*

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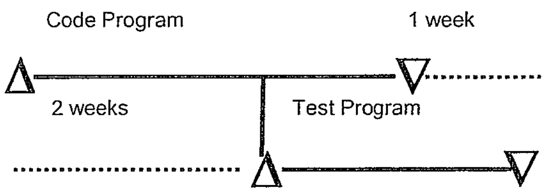
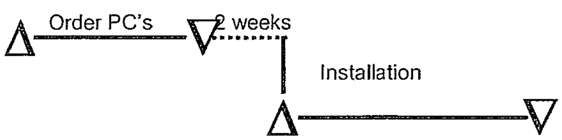
## Overlapping / Partial Dependencies




## Finish-to-Start with Lag:



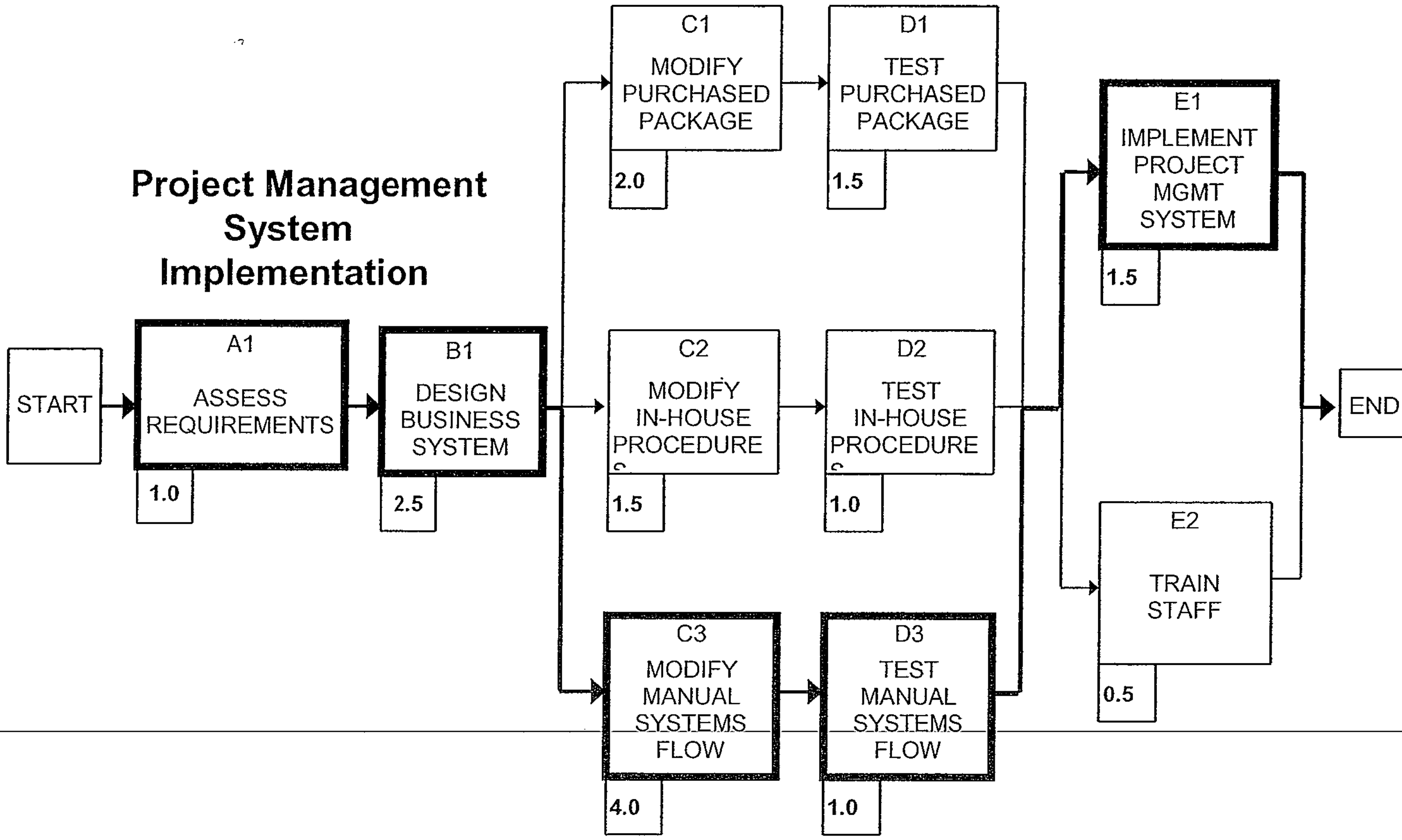

**Lags** may be used to shorten the critical path: they are considered forced wait time.
*Two tasks could start or end at almost the same time with a lag.*

**Overlapping / Partial Dependencies**
*Example: Code and test are related tasks. After a lag of 2 weeks, testing can begin. The completion of testing will lag behind the finish of coding. Testing will continue another week after completion of coding.*

**Finish-to-Start with Lag**
*Example: We must wait for delivery of our order before we can unload materials.*

## NOTES:

# Develop a Gantt Chart based on network with durations.

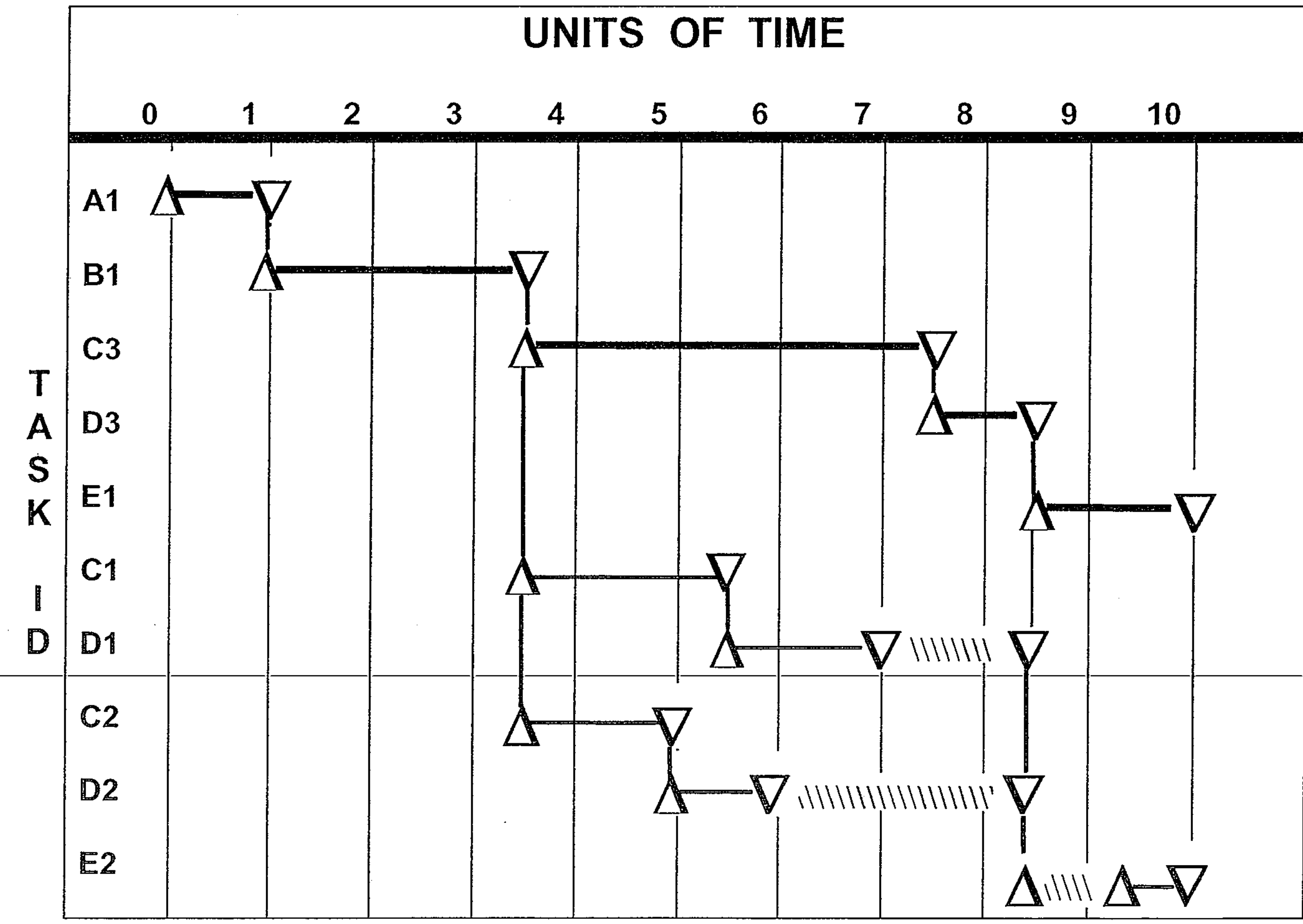



$T_E$ = 10 weeks

**UNITS OF TIME**

| TASK ID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

***Please do not turn the page.***


UNITS OF TIME
0
1
2
3
4
5
6
7
8
9
10
T A S K I D
A1
B1
C3
D3
E1
C1
D1
C2
D2
E2

# Group Project Exercise

Draw a Gantt Chart for your project on the Gantt Chart pages of your Project Planning Worksheets.

## Exercise Instructions:

1. Indicate **early start**, **early finish** and **duration** for each task. Draw tasks **path by path,** with each segment of the **critical path on top** and concurrent non-critical paths beneath.
2. Add **float** and **late finish** dates at the end of the non-critical paths
3. Show task **dependencies** with vertical lines.
4. Highlight the **critical path**.

*[Note: Each person on the team should draw his or her own Gantt Chart. This is not a team exercise, but don't hesitate to use each other for support.]*

# Task List

| Project Name: | Prepared by: | Page of |
|---|---|---|
| *Project Management System* | *J. Ryan* | 1 1 |

| Project Manager: |
|---|
| *J. Ryan* |

| Task ID | Work Breakdown Structure | Predecessor | Duration |
|---|---|---|---|
| A1 | Assess Requirements | — | 1.0 |
| B1 | Design Business System | A1 | 2.5 |
| C1 | Modify Purchased Package | B1 | 2.0 |
| C2 | Modify In-House Procedures | B1 | 1.5 |
| C3 | Modify Manual Systems Flow | B1 | 4.0 |
| D1 | Test Purchased Package | C1 | 1.5 |
| D2 | Test In-House Procedures | C2 | 1.0 |
| D3 | Test Manual Systems Flow | C3 | 1.0 |
| E1 | Implement Project Management System | D1, D2, D3 | 1.5 |
| E2 | Train Staff | D1, D2, D3 | .5 |

# *Partial Dependencies*

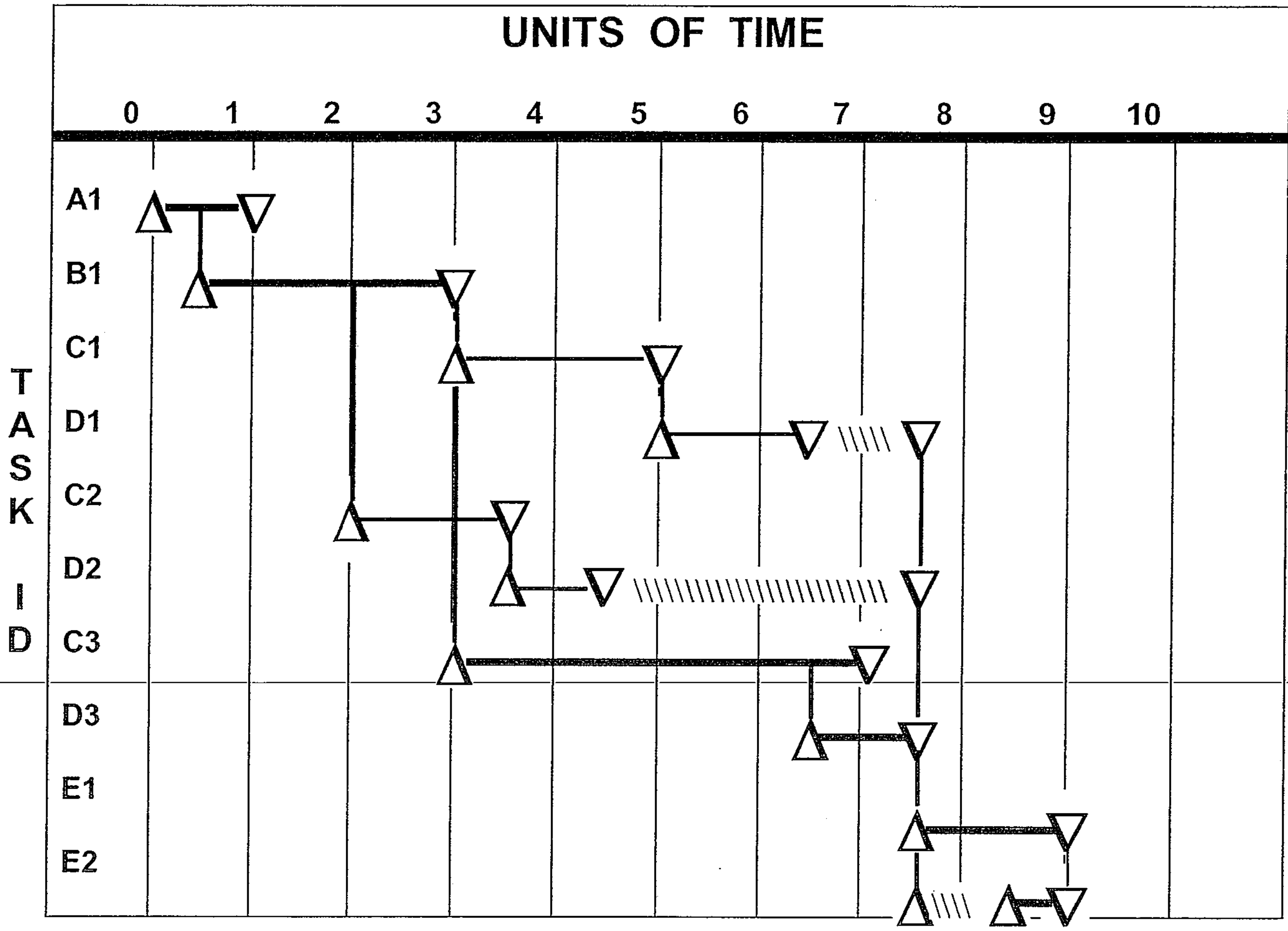
It may not be necessary to complete each task before the next task begins. Try redrawing the Gantt Chart to show partial dependencies using the task list on the opposite page.

| TASK ID | UNITS OF TIME 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | | | | | | | | | | | |
| B1 | | | | | | | | | | | |
| C1 | | | | | | | | | | | |
| D1 | | | | | | | | | | | |
| C2 | | | | | | | | | | | |
| D2 | | | | | | | | | | | |
| C3 | | | | | | | | | | | |
| D3 | | | | | | | | | | | |
| E1 | | | | | | | | | | | |
| E2 | | | | | | | | | | | |

## Assignment:

Redraw the Gantt Chart to show:

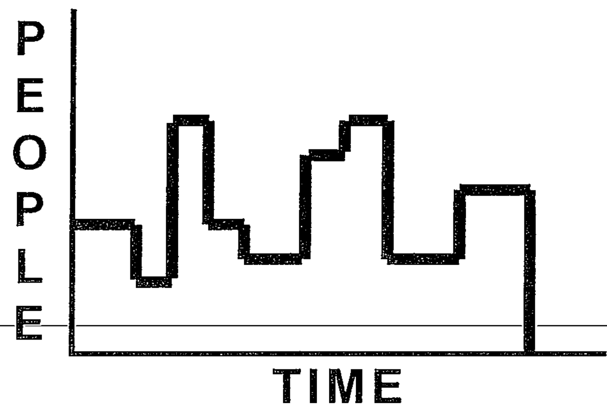
- Task A1 as the starting task, as depicted on the previous page.
- Task B1 having a start-to-start relationship with Task A1, with a 1/2 week lag.
- Task C2 having a start-to-start relationship with Task B1, with a 1-1/2 week lag.
- Task D3 beginning 1/2 week before Task C3 ends.


UNITS OF TIME
0
1
2
3
4
5
6
7
8
9
10
TASK ID
A1
B1
C1
D1
C2
D2
C3
D3
E1
E2

# *Task Sequence & Critical Path Key Points*

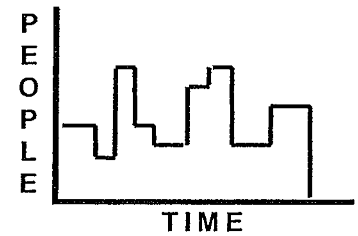
1. Model work flow with network diagrams
2. Critical path drives project duration
3. Know compression options
4. Know schedule inputs

# Perform Resource Loading and Leveling




## STEP 6

# NOTES:

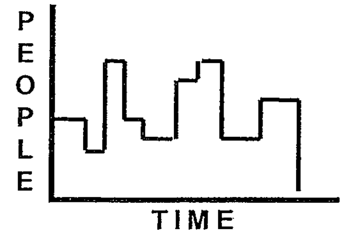



# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

## NOTES:

# Step 6: Perform Resource Loading and




## Description

All resource assignments and schedules are meaningless if individual resources or resource pools have committed more time to the project than they are available.

The Resource Loading and Leveling process determines the scheduling of a resource or a pool of resources to simultaneous tasks or projects. If resources are over committed, it is the responsibility of the project manager (with the department manager) to reschedule tasks, to reprioritize work, or to negotiate for additional time, resources, or downsizing of scope.

## Process

⇨ Use one of these three options to generate resource loading information:

1. Individual assignments posted on the schedule
2. Individual assignments and rough estimates posted on the schedule
3. Calculated individual commitments posted on the schedule.

⇨ Perform resource leveling if needed.

# *Option 1: Individual Assignments Posted on Schedule*

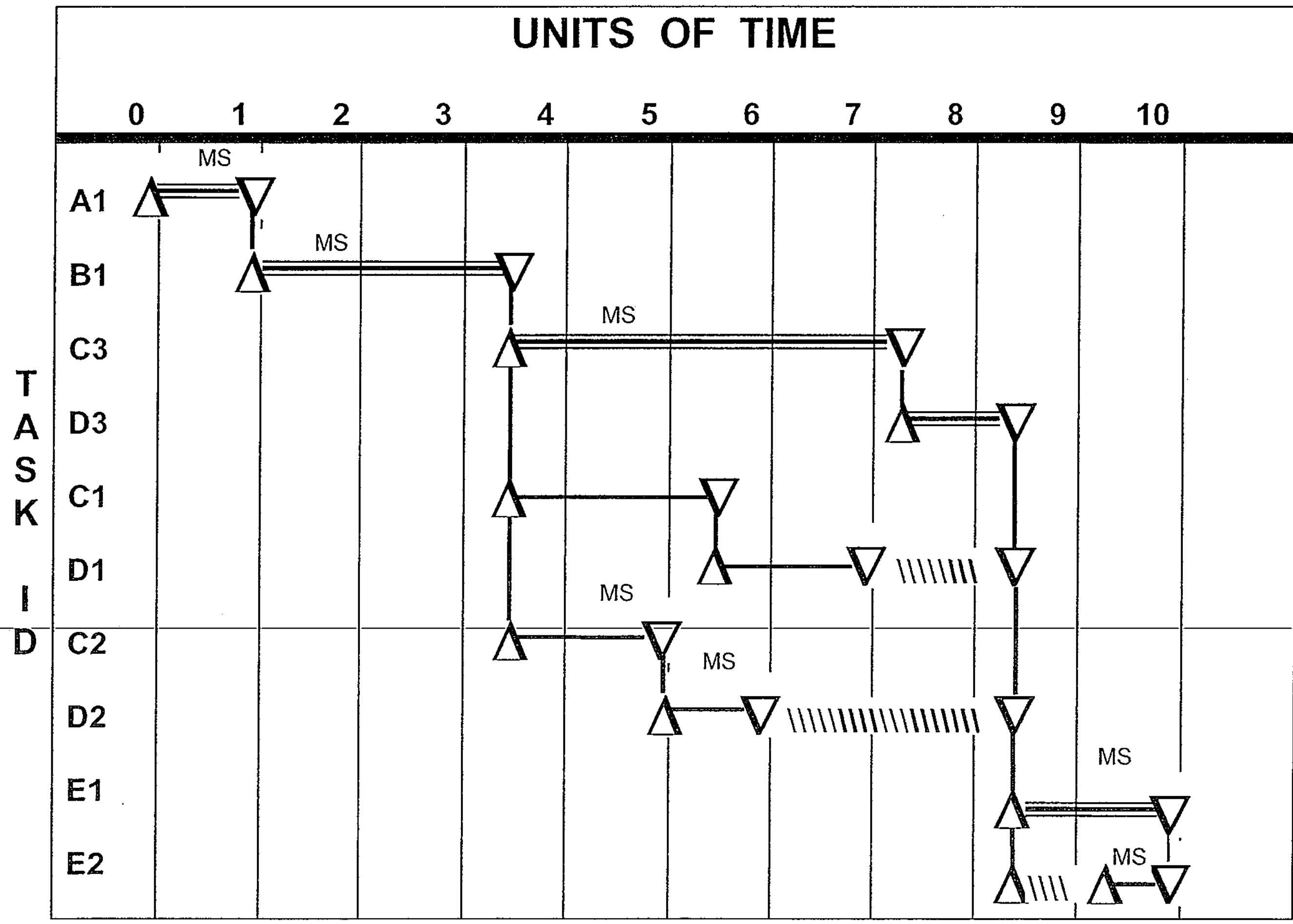
| Project Name: *Project Management System* | Prepared by: *J. Ryan* | Page 1 of 1 |
|---|---|---|

| Project Manager: *J. Ryan* |
|---|

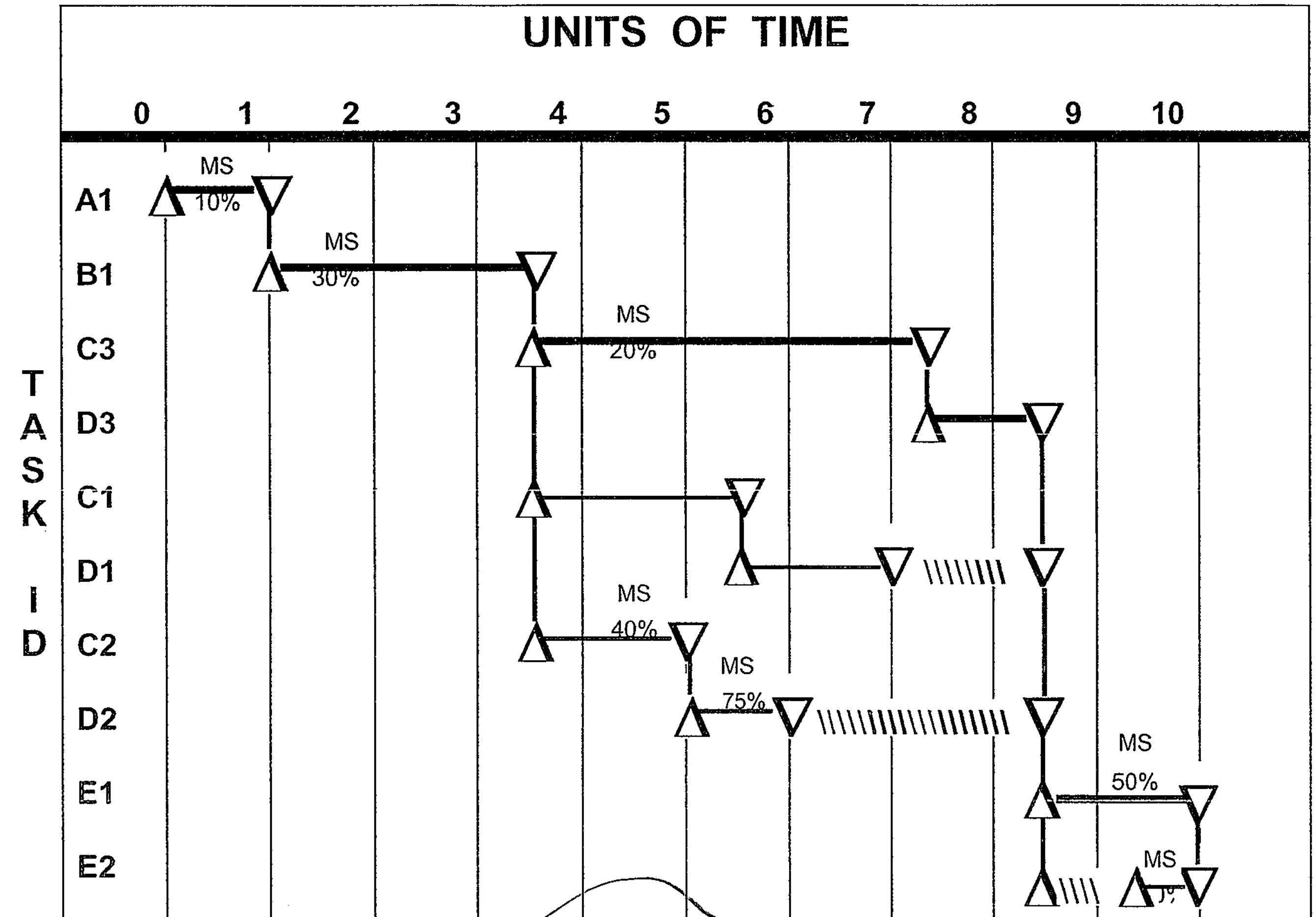
**LEGEND:**
P = Prime
S = Support

| Task ID | Work Breakdown Structure | Marie S. |
|---|---|---|
| A1 | Assess Requirements | S |
| B1 | Design Business System | S |
| C1 | Modify Purchased Package | |
| C2 | Modify In-House Procedures | P |
| C3 | Modify Manual Systems Flow | S |
| D1 | Test Purchased Package | |
| D2 | Test In-House Procedures | P |
| D3 | Test Manual Systems Flow | |
| E1 | Implement Project Management System | S |
| E2 | Train Staff | P |

# *Option 1: Individual Assignments Posted on Schedule*



# Option 2: Individual Assignments and Rough Estimates Posted on Schedule




| MS | 10% | 30% | 60% | 95% | 20% | 0 | 50% | 150% |
|---|---|---|---|---|---|---|---|---|

Issue of other projects & day to day

email/voice mail 1hr. out-of-day

12% of day

Be aware!

what is resource driven?

are there other locations help allocate during

- more resources
- more people
- re-assign
- give more time (if the amount on critical path)
- narrow scope
- prioritize

# *Option 3: Calculated Individual Commitments Posted on Schedule*

First, calculate individual commitments.

| Task ID | Work Breakdown Structure | Marie S. | Duration | Individual Commitment |
|---|---|---|---|---|
| A1 | Assess Requirements | S / 0.10 | 1.00 | .10 |
| B1 | Design Business System | S / 0.75 | 2.50 | .30 |
| C1 | Modify Purchased Package | | 2.00 | |
| C2 | Modify In-House Procedures | P / 1.00 | 1.50 | |
| C3 | Modify Manual Systems Flow | S / 0.70 | 4.00 | |
| D1 | Test Purchased Package | | 1.50 | |
| D2 | Test In-House Procedures | P / 1.00 | 1.00 | |
| D3 | Test Manual Systems Flow | | 1.00 | |
| E1 | Implement Project Management System | S / 0.50 | 1.50 | |
| E2 | Train Staff | P / 0.50 | 0.50 | |

Individual Effort Estimate ÷ Duration = Individual Commitment

**LEGEND:**

P = Prime
S = Support
Individual Effort Estimate

# Option 3: Calculated Individual Commitments Posted on Schedule

First, calculate individual commitments.

| Task ID | Work Breakdown Structure | Marie S. | Duration | Individual Comment |
|---|---|---|---|---|
| A1 | Assess Requirements | S / 0.10 | 1.00 | 0.10 |
| B1 | Design Business System | S / 0.75 | 2.50 | 0.30 |
| C1 | Modify Purchased Package | | 2.00 | |
| C2 | Modify In-House Procedures | P / 1.00 | 1.50 | 0.67 |
| C3 | Modify Manual Systems Flow | S / 0.70 | 4.00 | 0.18 |
| D1 | Test Purchased Package | | 1.50 | |
| D2 | Test In-House Procedures | P / 1.00 | 1.00 | 1.00 |
| D3 | Test Manual Systems Flow | | 1.00 | |
| E1 | Implement Project Management System | S / 0.50 | 1.50 | 0.33 |
| E2 | Train Staff | P / 0.50 | 0.50 | 1.00 |

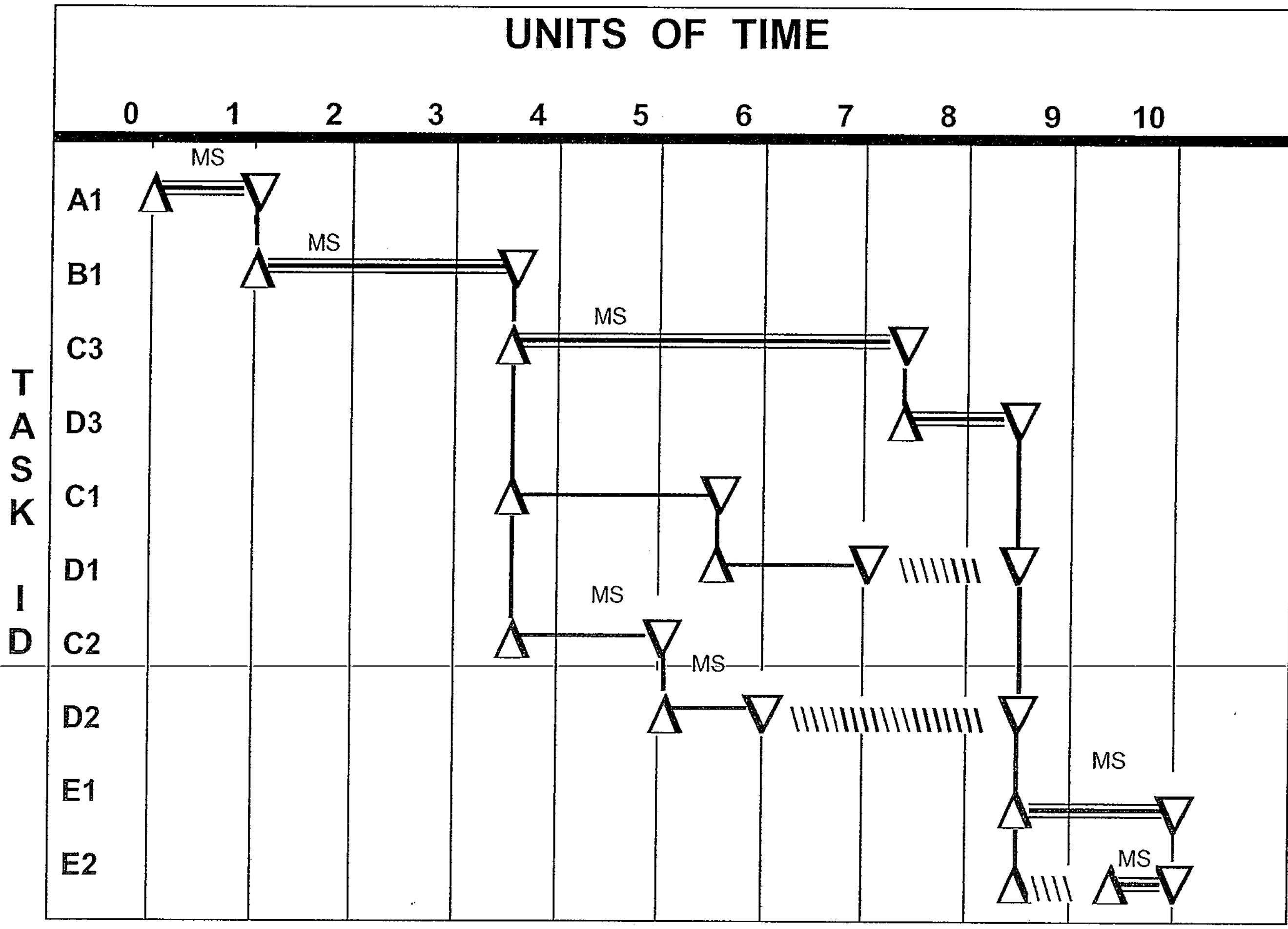
Individual Effort Estimate ÷ Duration = Individual Commitment

**LEGEND:**

P = Prime
S = Support
Individual Effort Estimate

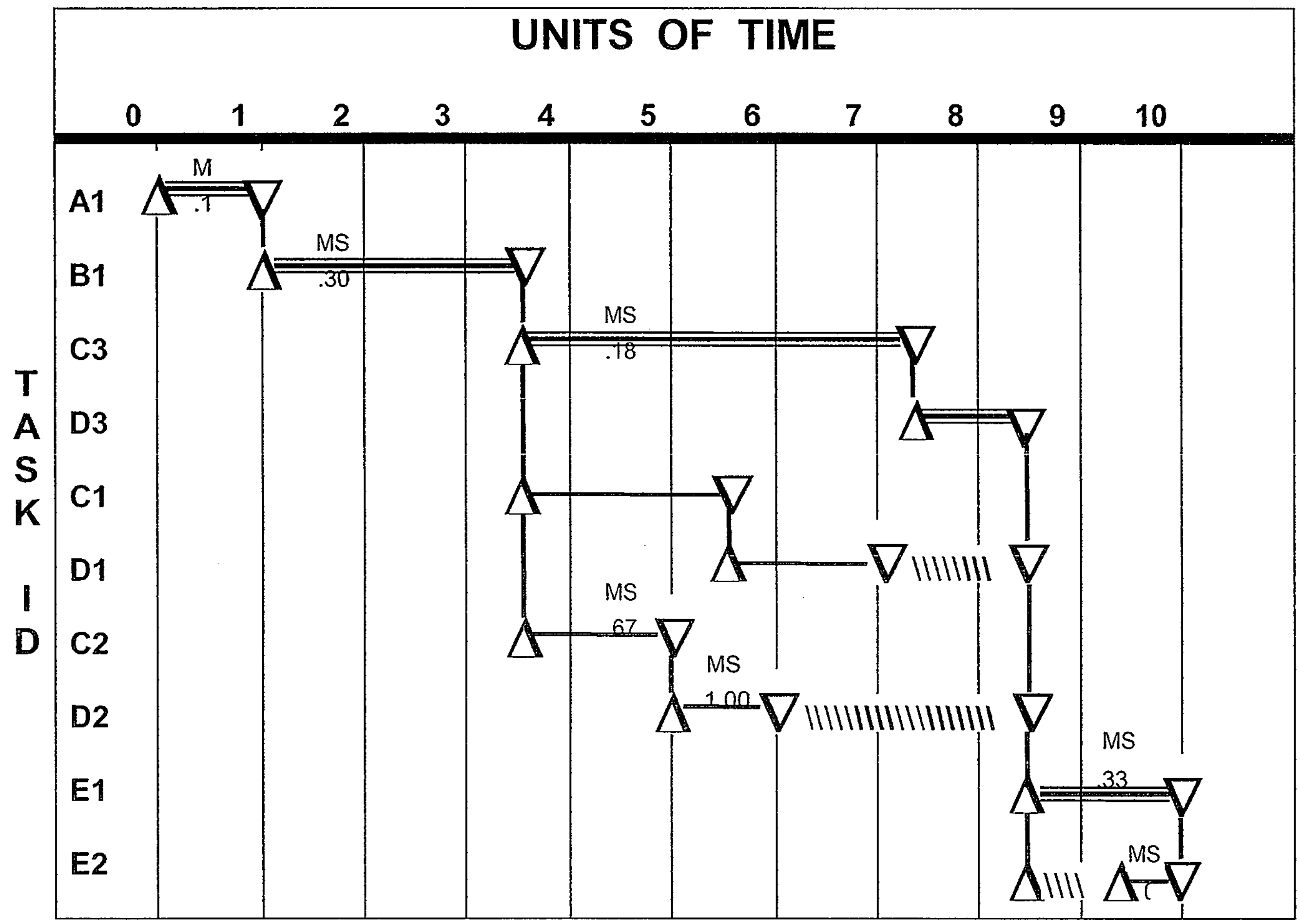
# Option 3: Calculated Individual Commitments Posted on Schedule

Next, post commitments on the schedule and total them for each unit of time.




| MS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|

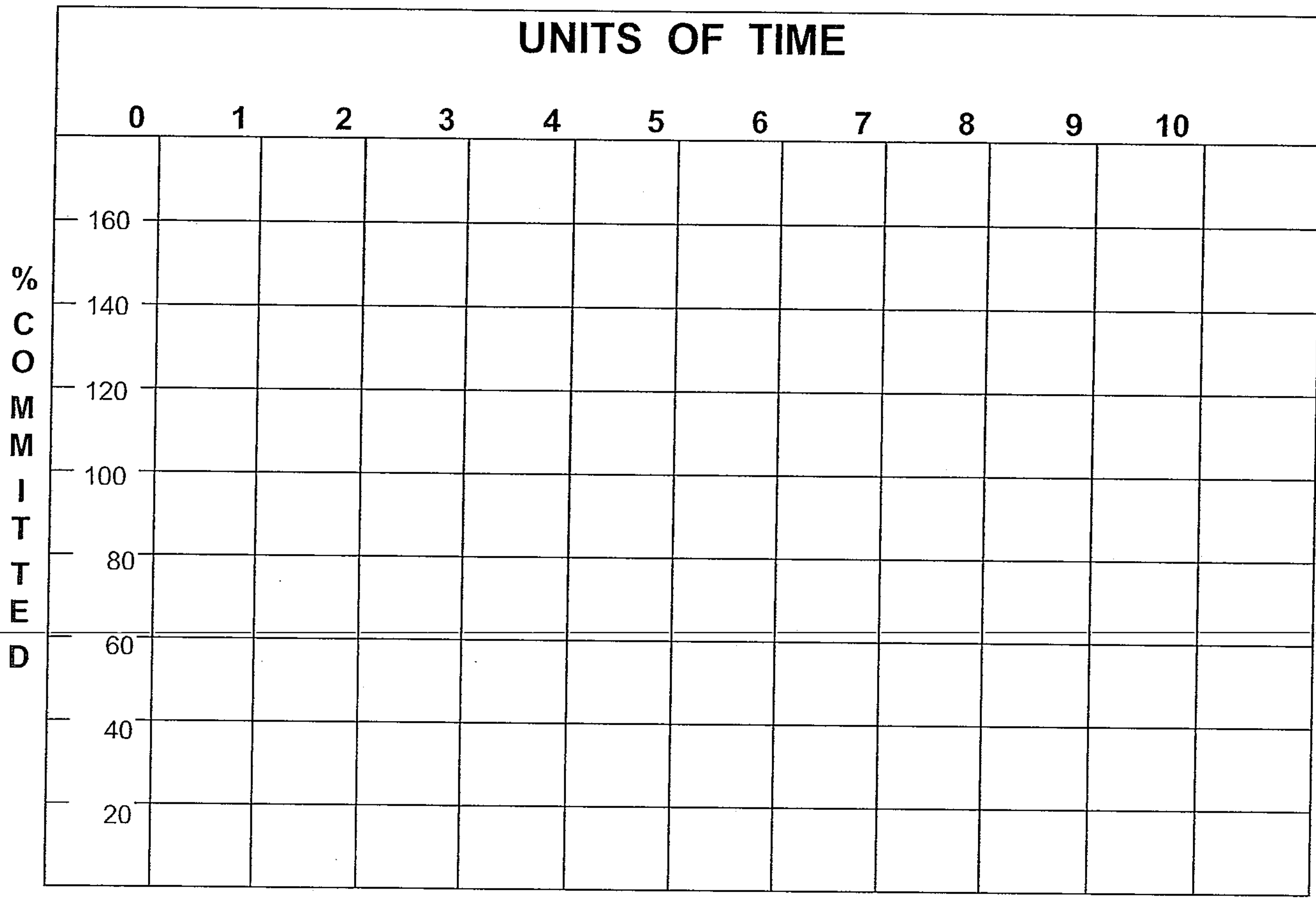
# *Option 3: Calculated Individual Commitments Posted on Schedule*



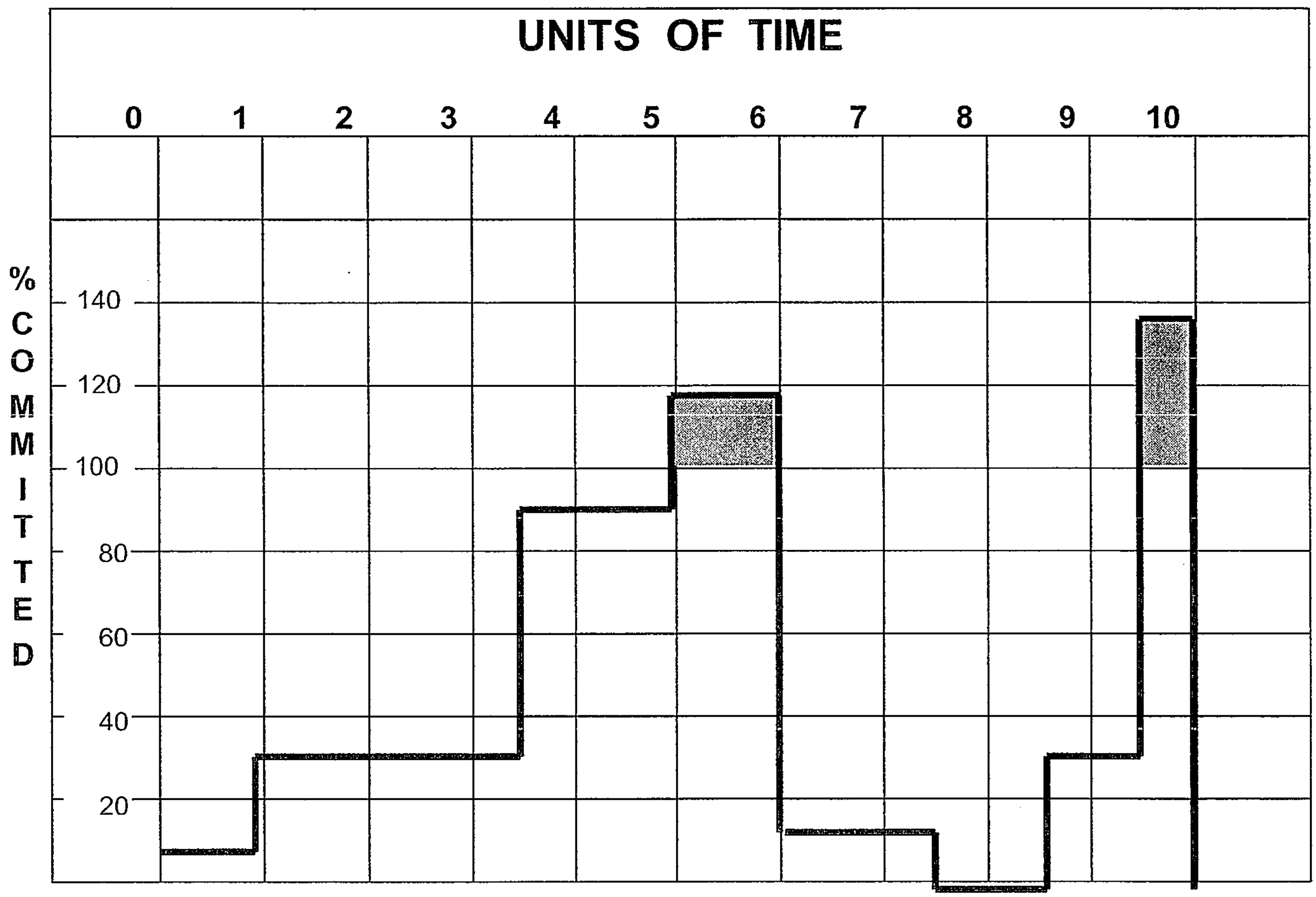

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MS | .10 | .30 | .85 | 1.18 | .18 | | .33 | 1.33 | |

# *Resource Histogram*

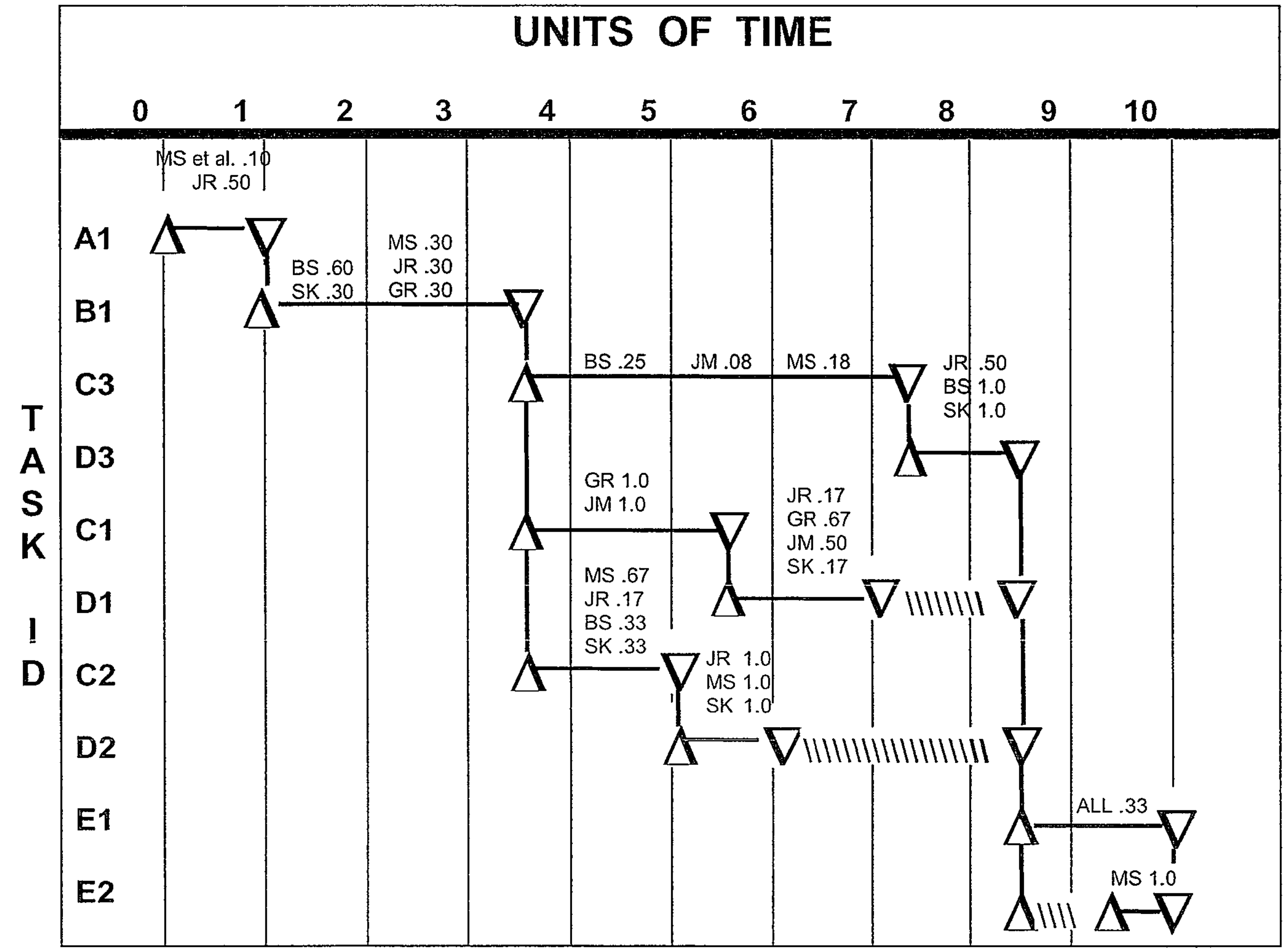
Finally, draw a resource histogram to represent the data in a more readable way.



## *Resource Histogram for Marie S.*



# NOTES:




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| JR | .50 | .30 | .17 | 1.00 | 1.17 | .17 | - - - | .50 | .33 | .33 | |
| BS | .10 | .60 | .58 | .25 | .25 | .25 | .25 | 1.00 | .33 | .33 | |
| GR | .10 | .30 | 1.00 | 1.00 | .67 | .67 | - - - | - - - | .33 | .33 | |
| **MS** | **.10** | **.30** | **.85** | **1.18** | **1.18** | **.18** | **.18** | **- - -** | **.33** | **1.33** | |
| JM | .10 | - - - | 1.08 | 1.08 | .58 | .58 | .08 | - - - | .33 | .33 | |
| SK | .10 | .50 | .33 | 1.00 | 1.17 | .17 | - - - | 1.00 | .33 | .33 | |
| Total | 1.00 | 2.0 | 4.01 | 5.51 | 5.02 | 2.02 | .51 | 2.50 | 1.98 | 2.98 | |

## How would you resolve resource overloads or gaps?

- ❑
- ❑
- ❑
- ❑
- ❑
- ❑
- ❑
- ❑

# How to Apply Resource Leveling (Smoothing)

These techniques can be used to level resource commitments:

⇔ Move the task (within its available float) to start and end at a time where overloads no longer occur.

⇔ Extend the duration of the task (within its available float) to decrease individual commitment.

⇔ Reassign work to current resources who have the correct skills and who are underloaded.

⇔ Frontload or backload effort non-linearly on the task.

These leveling techniques may change original project objectives (scope, schedule, cost):

**$/⊙** Schedule overtime (casual or paid)

**$/⊙** Add new resources

**$/⊙** Reduce scope

**$/⊙** Push out the project end date

**MS Project will graphically display resource information for you.**

**NOTE: Be careful not to use "Autoleveling" feature, unless your project is not time constrained. MS Project levels resource overloads by pushing out task durations and the project end date.**


# Guidelines: Resource Leveling and Smoothing

☑ The histogram portrays the effort of the people who will be working on the project in a time scaled format. Use the histogram to indentify overloads or gaps.

☑ Use resource leveling to smooth the peaks and valleys in the allocation of people's time to the project.

☑ You can use resource leveling to optimize an entire department's work efforts. If you consolidated all the resource histograms for all projects within a department, you should get a smooth-line model. If not, it would indicate that more people are being scheduled than are actually working in the department, or that some staff members are not being fully utilized.

# Group Project Exercise

Use resource loading techniques to determine your own allocation to your team's project and use resource leveling to resolve overloads and gaps.

## Exercise Instructions:

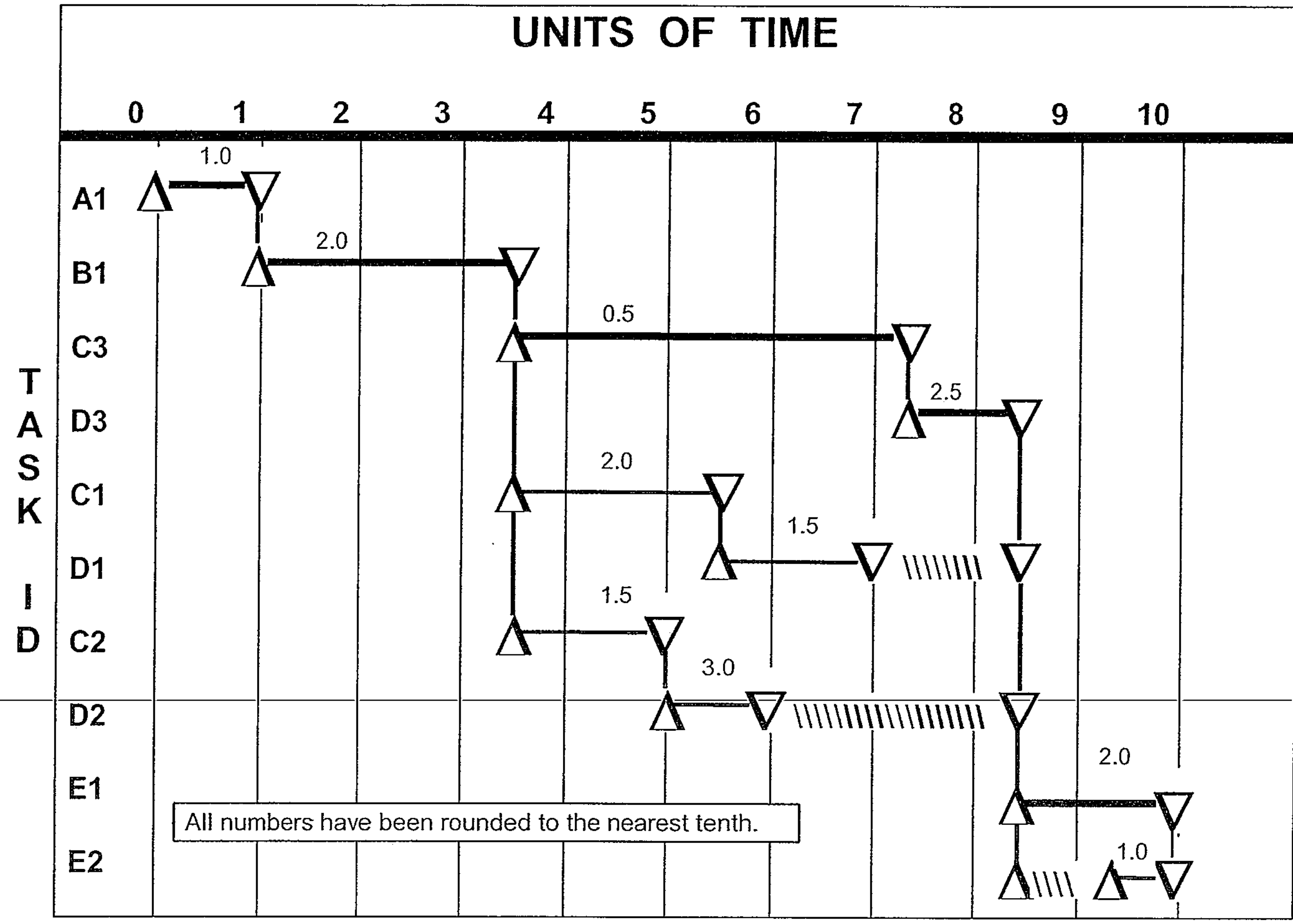
1. Calculate your **Individual Commitment** by dividing your effort estimate for each task by the task's duration estimate. (Use the information on your Task Worksheets).
2. Write your **Individual Commitment** above each task on your Gantt Chart (Project Planning Worksheets, pp. 5-6).
3. **Total your commitments** for each week of the project at the bottom of your Gantt Chart
4. Draw a **histogram** representing your total allocation over the life of the project on the Resource Histogram (p.7) of your Project Planning Worksheets.
5. With your team, devise **solutions** to resolve resource overloads or gaps. Assume that you can commit 100% of your time (and not one minute more) to the project.

# Composite Resource Loading

| Project Name: Project Management System | Prepared by: J. Ryan | Page 1 of 1 |
|---|---|---|
| Project Manager: J. Ryan | | |

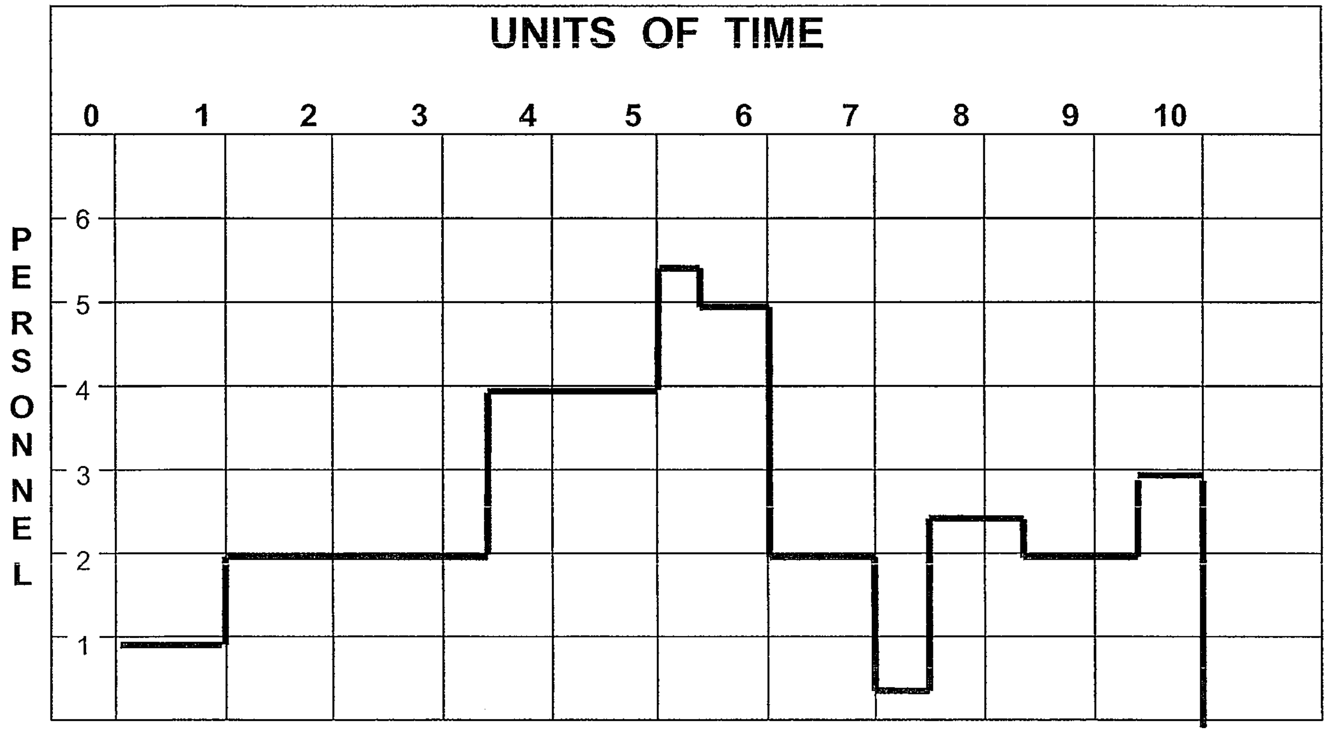
| Task ID | Work Breakdown Structure | Total Effort | Duration | Team Commitment |
|---|---|---|---|---|
| A1 | Assess Requirements | 1.00 | 1.00 | 1.00 |
| B1 | Design Business System | 5.00 | 2.50 | 2.00 |
| C1 | Modify Purchased Package | 4.00 | 2.00 | 2.00 |
| C2 | Modify In-House Procedures | 2.25 | 1.50 | 1.50 |
| C3 | Modify Manual Systems Flow | 2.00 | 4.00 | 0.50 |
| D1 | Test Purchased Package | 2.25 | 1.50 | 1.50 |
| D2 | Test In-House Procedures | 3.00 | 1.00 | 3.00 |
| D3 | Test Manual Systems Flow | 2.50 | 1.00 | 2.50 |
| E1 | Implement Project Management System | 3.00 | 1.50 | 2.00 |
| E2 | Train Staff | 0.50 | 0.50 | 1.00 |

Total Effort Estimate ÷ Duration = Team Commitment




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 1.0 | 2.0 | 4.0 | 5.0 | 5.0 | 2.0 | 0.5 | 2.5 | 2.0 | 3.0 | |

# *Total Resource Histogram*



# Project Team Member Agreement Form

Project Name: Project Manager:

Team Member: Department Manager:

| ID | Project Tasks | Scheduled Start | Scheduled Finish | Effort Required |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Performance Expectations:**

- Timely completion of project tasks to quality specified
- Attendance at all project team meetings
- Weekly written status reports turned in to project manager on time
- Notification to project manager of any potential unresolved problems that could endanger project task completion
- Commit to and respect team operating agreements (attached).

**Project manager agrees to provide team member:**

- Aggregate project status reports on a timely basis
- Agenda for all project team meetings before each meeting
- Ongoing performance feedback
- Documented performance feedback to functional manager on a quarterly basis.

**Department manager agrees to provide to team member:**

- Adequate time to satisfactorily complete project task assignments
- Consideration of project manager's performance feedback when evaluating team member's overall performance.

Project Team Member: ______________________ Date: __________

Project Manager: ______________________ Date: __________

Department Manager: ______________________ Date: __________

| ID | Project Tasks | Scheduled Start | Scheduled Finish | Effort Required |
|---|---|---|---|---|
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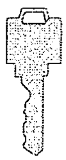
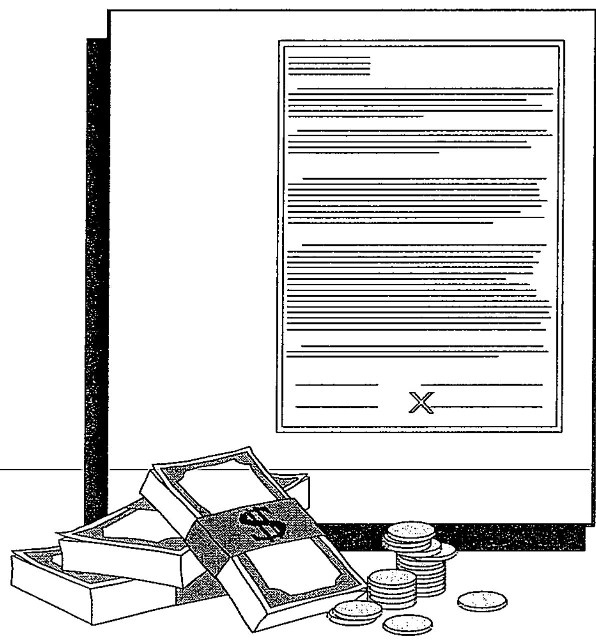


# *Resource Loading & Leveling Key Points*

1. Use resource loading to find problems
2. Use leveling options to solve them
3. Personal Time Management Tool

## NOTES:

# Generate Project Budget



## STEP 7

# Budgeting Process

| Inputs | Tools | Outputs |
|---|---|---|
| Cost estimates | Cost estimating tools and techniques | Cost baseline |
| Work breakdown structure | Historical data | |
| Project schedule | Input for purchasing | |

# Cost Control

starting pt.

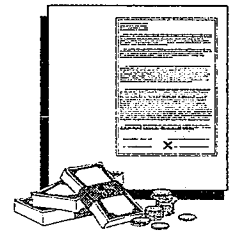
Keep track

| Inputs | Tools | Output |
|---|---|---|
| Cost baseline | Cost change control process | Revised cost estimates |
| Performance reports | Performance measurement | Budget updates |
| Change requests | Additional planning | Corrective action |
| Cost management plan | Tools such as Planview | Estimate at completion |
| Historical data | | Lessons learned |

why budget was impacted

Should be in place

NOTES:



# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

# *Step 7: Develop Project Budget*

**Process**

- Determine expense categories
- Build a periodic spreadsheet
- Formulate a cumulative spreadsheet
- Build a line or bar graph

## Description

The project budget spells out costs for labor, equipment, supplies, and other relevant expense categories over the duration of the project. Spreadsheet and cost graphs are helpful for tracking and reporting.

## Process

⇨ Determine expense categories relevant to your project.

⇨ Build a basic periodic spreadsheet by drawing information from:

- ➔ Resource loading charts
- ➔ The project schedule
- ➔ Detailed task descriptions

⇨ Use the periodic spreadsheet to formulate a cumulative spreadsheet.

⇨ Build a line or bar graph based on periodic and/or cumulative costs.

## Guidelines

☑ Resource loading charts help the project manager determine the labor budget. Multiply the charge out rate for each area of responsibility or job grade by the number of resources allocated per unit of time. Add these together to generate the total labor budget.

☑ For planning, use the schedule to spread every category of expense over the duration of the project. Include only those categories for which you will be held accountable.

☑ For tracking, the plans are cumulative period-to-date so that if you go over budget one month, you have the opportunity to bring the project back into budget the next month.

## What expense categories are important to track for your projects?

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

## *Typical Expense Categories*

- $ Labor
- $ Supplies and Materials
- $ Equipment
- $ Travel
- $ Legal
- $ Software
- $ Consultants and Contractors
- $ Overhead
- $ Training
- $ Marketing and Advertising

## NOTES:

# *Loading Options*

**Units of Time**

**Option 1: Even Loading**

| | 0–1 | 1–2 | 2–3 | 3–4 |
|---|---|---|---|---|
| ENGNG | 1250 | 1250 | 1250 | 1250 |
| DRFTNG | 500 | 500 | 500 | 500 |
| Task | | | | |

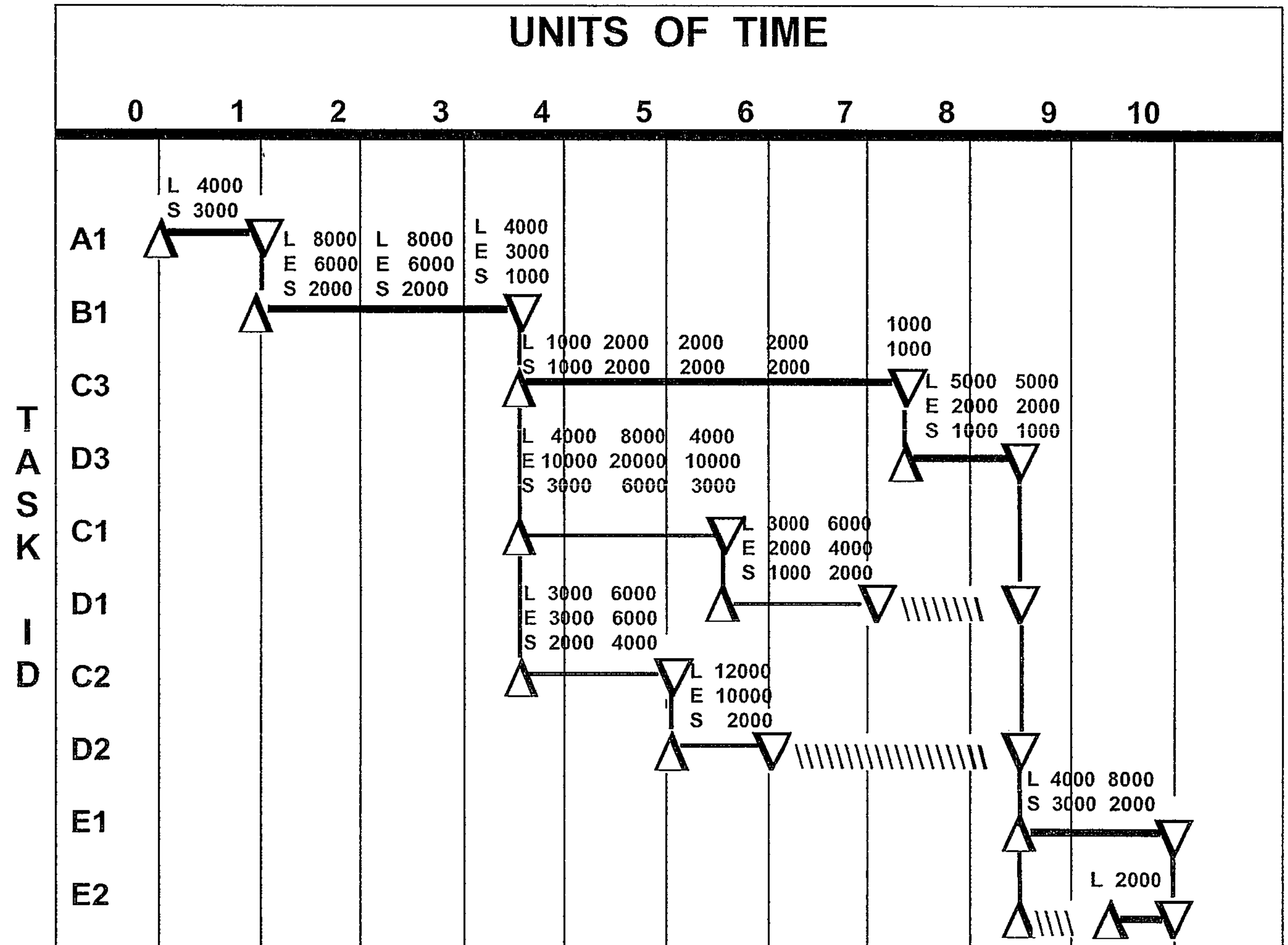
**Option 2: Front/Back Loading**

| | 0–1 | 1–2 | 2–3 | 3–4 |
|---|---|---|---|---|
| ENGNG | 3000 | 1500 | 500 | ----- |
| DRFTNG | ---- | 250 | 750 | 1000 |
| Task | | | | |

**Option 3: Fixed Loading**

| | 0–1 | 1–2 | 2–3 | 3–4 |
|---|---|---|---|---|
| ENGNG | 2000 | 1000 | ----- | 2000 |
| DRFTNG | ---- | ----- | 1500 | 500 |
| Task | | | | |

# *Cumulative Cost Chart*




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LABOR (L) | $4,000 | $8,000 | $8,000 | $12,000 | $16,000 | $21,000 | $8,000 | $6,000 | $9,000 | $10,000 |
| EQUIPMENT (E) | 0 | 6,000 | 6,000 | 16,000 | 26,000 | 22,000 | 4,000 | 2,000 | 2,000 | 0 |
| SUPPLIES (S) | 3,000 | 2,000 | 2,000 | 7,000 | 12,000 | 8,000 | 4,000 | 2,000 | 2,000 | 2,000 |
| PERIOD TOTAL | $7,000 | $16,000 | $16,000 | $35,000 | $54,000 | $51,000 | $16,000 | $10,000 | $13,000 | $12,000 |
| CUMULATIVE TOTAL | $7,000 | $23,000 | $39,000 | $74,000 | $128,000 | $179,000 | $195,000 | $205,000 | $218,000 | $230,000 |

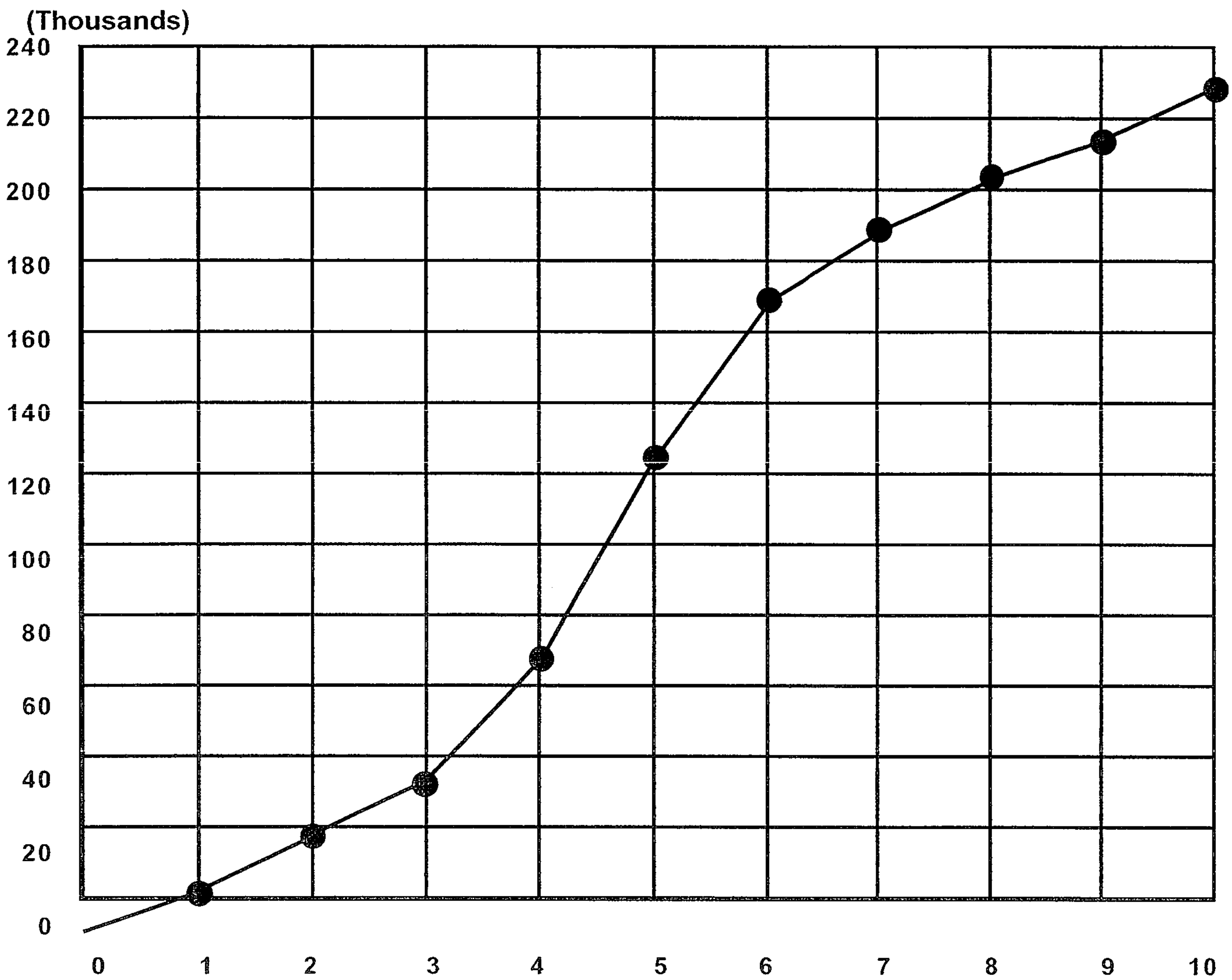
# *Cumulative Cost Tracking Spreadsheet*

P = Plan
A = Actual

TOTAL BUDGET $230K

| COST CATEGORIES | | PERIOD TO DATE BY PERIOD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| LABOR | P | $4,000 | $12,000 | $20,000 | $32,000 | $48,000 | $69,000 | $77,000 | $83,000 | $92,000 | $102,000 |
| | A | | | | | | | | | | |
| EQUIPMENT | P | 0 | 6,000 | 12,000 | 28,000 | 54,000 | 76,000 | 80,000 | 82,000 | 84,000 | 84,000 |
| | A | | | | | | | | | | |
| SUPPLIES | P | 3,000 | 5,000 | 7,000 | 14,000 | 26,000 | 34,000 | 28,000 | 40,000 | 42,000 | 44,000 |
| | A | | | | | | | | | | |
| TOTAL | | $7,000 | $23,000 | $39,000 | $74,000 | $128,000 | $179,000 | $185,000 | $205,000 | $218,000 | $230,000 |

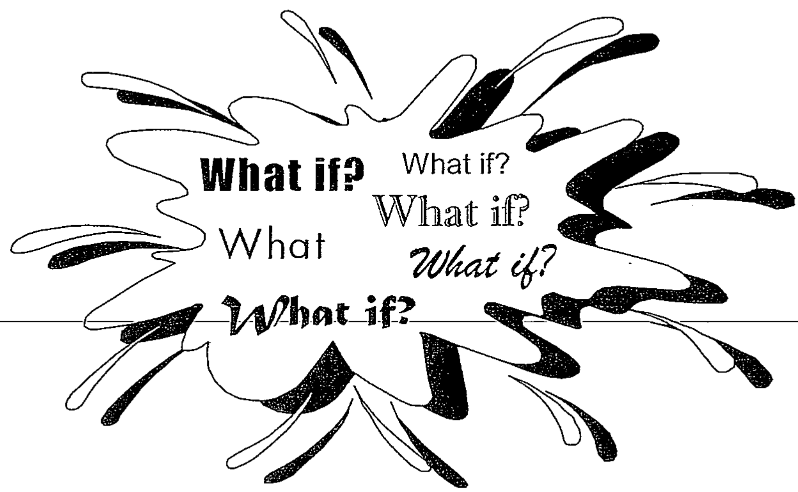
## *Cumulative Cost Line Graph*



# Project Budget Key Points

1. Is budget a success criteria?
2. If so, have budget authority

# Develop Risk Management Plan




## STEP 8

# *Project Risk Management*

***Project risk management consists of:***

- **Risk Identification**
  - Product description
  - Historical information

- **Risk Quantification**
  - Risk tolerance
  - Sources of risks
  - Potential cost of risk events

- **Risk Response Development**
  - Opportunities to respond to risks
  - Opportunities to ignore (accept) risks

- **Risk Response Control**
  - The risk management plan
  - Actual risk events
  - Newly identified risks
  - Trigger points

## NOTES:

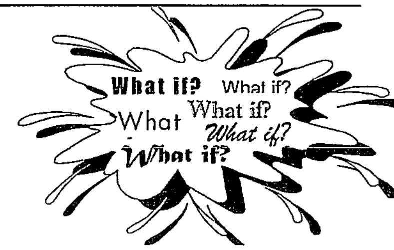
1. Gauge risks - probability
   High or Low
2. Gauge impact of risk to the project
   High or low
   (will change it) (won't change it)

Then decide if you need a risk management plan or not.

What are the risks?

Probability of risks?

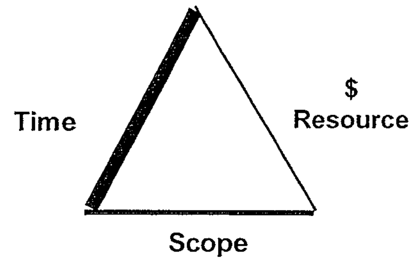
Impact?




# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

# *Step 8: Develop Risk Management Plan*




## Description

A risk management plan enables the project manager to reduce the impact of unplanned events which could threaten the success of the project. Developing a risk management plan involves identifying risks, rating their probability and impact, then creating preventive and contingency plans for the most important risks.

## Process

⇨ Review the project plan with the project team to identify risks that could negatively impact the project in these areas:

- ➔ Schedule: Events that could cause delays to the schedule
- ➔ Scope: Events which threaten successful completion of the project's end product
- ➔ Budget: Factors which may increase costs beyond the project's budget limits
- ➔ Resources: Factors that may threaten worker availability for the project.

⇨ Evaluate the importance of each risk event by asking these two questions:

- ➔ What is the probability that this risk will occur? (high, medium, or low)
- ➔ What would be the impact if this risk should occur? (high, medium, or low)

(NOTE: Consider evaluating impact to schedule, scope, and budget separately.)

⇨ For risks with high probability and impact rankings, develop a risk management plan that will include:

- ➔ A risk task owner to monitor each risk event
- ➔ Preventive plans (to prevent the risk from occurring or to reduce the impact if it occurs)
- ➔ Contingency plans (to be implemented if the risk occurs)
- ➔ A trigger point for each contingency plan that specifies the circumstances that would trigger the plan into action.

# Risk Management Worksheet

| Project Name: | |
|---|---|
| Project Manager: | Date Prepared: |

High Risk Situation:

Probable Cause(s):

| PROBABILITY<br>Hi=3; Med=2; Lo=1<br>Score = | IMPACT<br>Hi=6; Med=4; Lo=2<br>Score = |
|---|---|

PROBABILITY

| | | |
|---|---|---|
| 3 | High Probability<br>Low Impact<br><br>(Dealer's Choice) | High Probability<br>High Impact<br><br>(Prepare Contingency Plan) |
| 2 | | |
| 1 | Low Probability<br>Low Impact<br><br>(Forget it) | Low Probability<br>High Impact<br><br>(Prepare Contingency Plan) |

0 1 2 3 4 5 6

IMPACT

Preventive Plan(s) **

Contingency Plan(s) *

Trigger Point(s)

* The Contingency Plan responds to the Risk Situation.

** The Preventive Plan responds to the Probable Cause(s).

## Guidelines for Analyzing Risks

Consider risks which would impact each of these areas:

☑ Schedule:

- Tasks on critical path
- Tasks which have several predecessors
- Tasks that have minimal float
- Optimistically estimated tasks
- Tasks reliant on external dependencies, such as vendor shipments
- Major milestones
- Unforeseen tasks

☑ Resources:

- Tasks with only one person assigned
- Tasks with many people assigned
- Tasks using scarce resources
- Underskilled or unqualified people
- Illness/Turnover

☑ Budget:

- Uncertainty of corporate budgeting
- Shifts in corporate budget priorities
- Uncertain resource costs

☑ Scope:

- Uncertainty of new product development
- Dynamics of customer requirements
- Availability of tools and/or techniques

Consider sources of risk such as political or regulatory environments to ensure that your risk analysis is complete.

Compare contingency plan. For those tasks w/ high prob/high impact

# Guidelines - General

☑ Revise the schedule by:

- Negotiating deadlines of high risk tasks to accommodate potential slippage
- Scheduling tasks later in the project which can be postponed or canceled if necessary
- Conservatively estimating duration's of tasks on critical path

☑ Revise resource plans by:

- Reassigning strong people to high risk tasks and critical path tasks
- Assigning a person, if only minimally, as a back-up to any tasks where the loss of a team member would be damaging

☑ Revise budget by:

- Using contingency funds
- Renegotiating contracts
- Renegotiating requirements and/or deliverables
- Investigating other sources of funding

☑ Make and document plans including:

- Preventive actions that will be taken to reduce or remove risk
- Contingent actions that can be implemented should a problem occur
- The circumstances that would trigger each contingency plan into action

# Group Project Exercise

Assess risks and devise contingency plans for your group project.

## Exercise Instructions:

1. Using the Risk Management Worksheet on the next page, define major risks to your group project. (*Identify at least five risks.)*
2. Assess the probability and impact of each high risk situation. Decide which of the risks you've listed poses the greatest threat to your project.
3. Define the probable cause of your greatest risk.
4. Devise preventive actions and contingency plans for your greatest risk.
5. Define circumstances that would trigger the contingency plans into action.
6. Be prepared to share one of your risk analyses with the rest of the class.

# Risk Management Worksheet

| Project Name: | |
|---|---|
| Project Manager: | Date Prepared: |

**High Risk Situation:**

Creation of docum. methods for manual

**Probable Cause(s):**

- Timing
- Delay contract
- Staff resources
- Available information
- Lack of skill
- Lack of communication
- maintain the place
- Bankruptcy

| PROBABILITY<br>Hi=3; Med=2; Lo=1<br>Score = | IMPACT<br>Hi=6; Med=4; Lo=2<br>Score = |
|---|---|

PROBABILITY

| | | |
|---|---|---|
| 3–2 | High Probability<br>Low Impact<br><br>(Dealer's Choice) | High Probability<br>High Impact<br><br>(Prepare Contingency Plan) |
| 2–1 | Low Probability<br>Low Impact<br><br>(Forget it) | Low Probability<br>High Impact<br><br>(Prepare Contingency Plan) |

0 1 2 3 4 5 6

IMPACT

**Preventive Plan(s) ****

- Contact on a regular schedule
- Provide staff
- Interim deliverables (if they don't deliver, will have a place to start)
- Investigate consultants references
- Handwalk our contract paperwork through the process.
- Specific instructions

**Contingency Plan(s) ***

- hire a graduate student similar
- have our staff (internal)
- new contract
- adapt methods from another agency
-

**Trigger Point(s)**

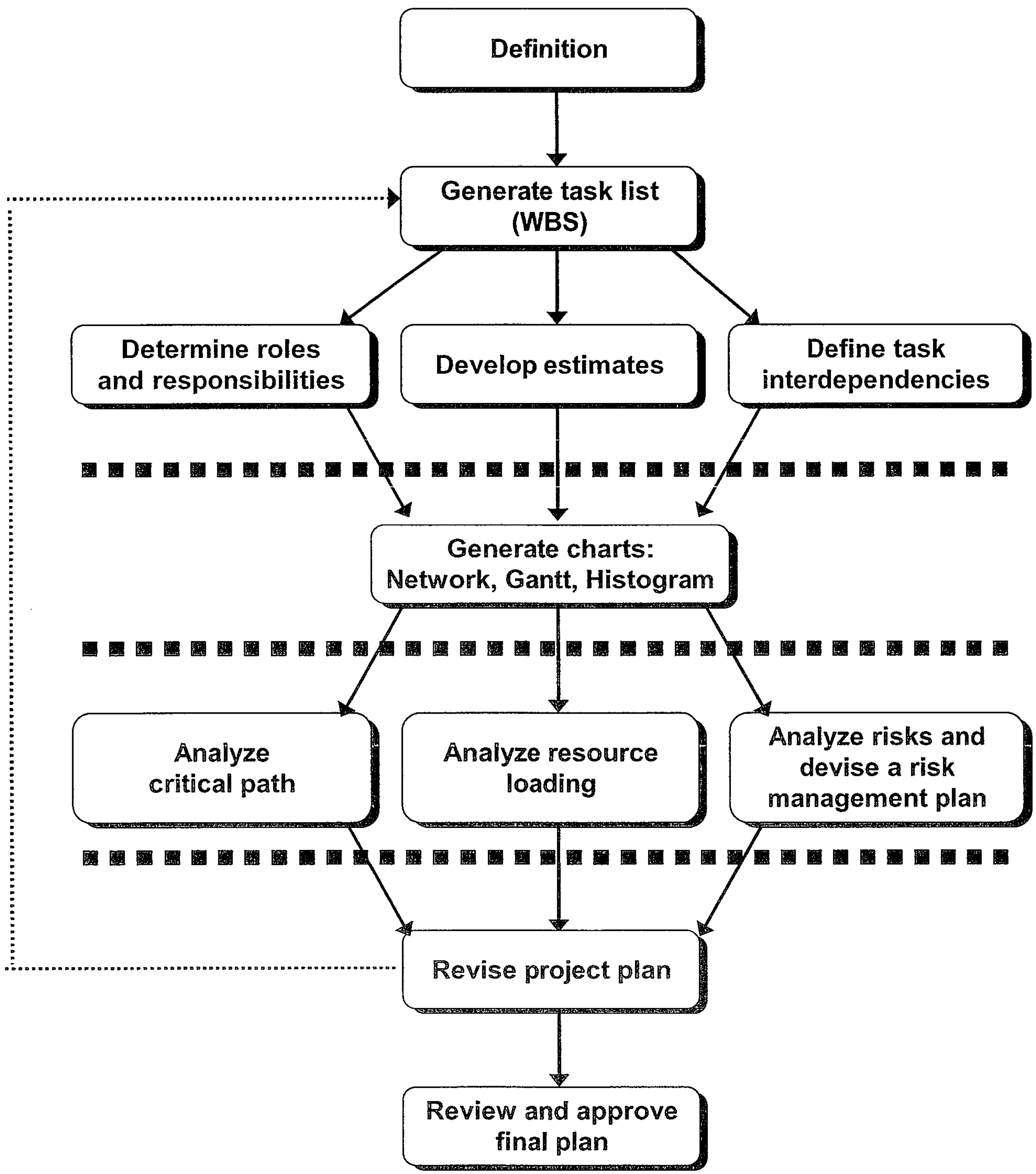
- Deadlines missed - interim deliverable
- loss of contact
- Bad reference comes up

* The Contingency Plan responds to the Risk Situation.

** The Preventive Plan responds to the Probable Cause(s).

## NOTES:

## *Planning Wrap-Up*



## Planning Wrap-Up

To wrap-up the planning phase for your project, consider these steps that are described on the following pages:

❶ Validate Plans

❷ Obtain Approvals

❸ Set the Baseline Plan

❹ Create a Project Notebook

# 1. Validate Plans

## *Planning Checklist*

| Project Name: | |
|---|---|
| Prepared By: | Date Prepared: |

New ❑ Revised ❑

| | YES | NO |
|---|---|---|
| Do tasks relate to objectives? | | |
| Have all tasks needed to accomplish objectives been included in the plan? | | |
| Have tasks been included for: | | |
| Preparation? | | |
| Walk through? | | |
| Revisions? | | |
| Is each task limited to 40-80 effort hours? | | |
| Are estimated effort estimates within boundaries of task duration? | | |
| Does each task have a deliverable? | | |
| Have delivery lead times been accounted for in the schedule? | | |
| Have completion criteria been established for each task? | | |
| Is one person responsible for each task? | | |
| Does every task have a person assigned? | | |
| Are a maximum of three tasks assigned per person per week? | | |
| Is task effectiveness rate 60% or greater? | | |
| Have tasks been reviewed with project team members? | | |

| | YES | NO |
|---|---|---|
| Do project team members agree on: | | |
| Task estimated effort? | | |
| Task planned start date? | | |
| Task planned completion date? | | |
| Will project team members receive a work schedule weekly? | | |
| Do project team members agree to record the following data weekly: | | |
| Actual effort? | | |
| Forecasted effort? | | |
| Actual start? | | |
| Actual completion? | | |
| Is overtime scheduled? | | |
| Does a network diagram exist? | | |
| Is a master plan to be maintained? Who will maintain it? | | |
| Is total plan duration limited to project phase of 6 months or reasonable horizon? | | |
| Has original or revised plan been approved by management? | | |
| Are the following types of plans prepared and complete? | | |
| Resource plan? | | |
| Budget plan? (optional) | | |
| Test plan? | | |
| Training plan? | | |
| Implementation plan? | | |

**OBTAIN APPROVALS**

- **Involve all parties**
- **Format plan professionally**
- **Set formal process**
- **Allow time**
- **Communicate!**

## 2. Obtain Approvals

Before the project can begin, what sign-offs or approvals do you need?

________________________________________________

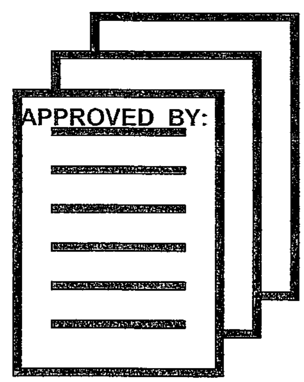
________________________________________________

________________________________________________

## Guidelines

There may be questions from the people who must approve the plan. There will be fewer questions if you:

- ☑ Involve all parties during the development of the plan
- ☑ Format the plan as clearly and professionally as possible
- ☑ Set up a formalized approval process
- ☑ Allow time for approval
- ☑ Communicate, communicate, communicate!



**SET THE BASELINE PLAN**

- **Valid when approved**
- **Not set in concrete**
- **Flexible management tool**
- **Basis for warning signals**
- **Can be negotiated**

# 3. Set the Baseline Plan

The approved plan as the baseline is a prerequisite to controlling a project.

## Guidelines

Remember that the baseline:

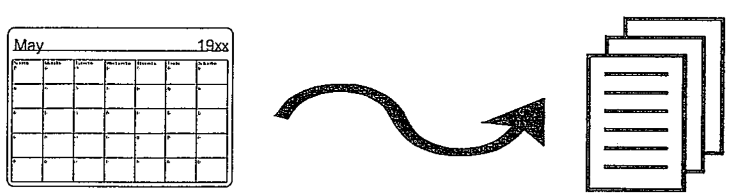
☑ Is valid at the moment it is approved

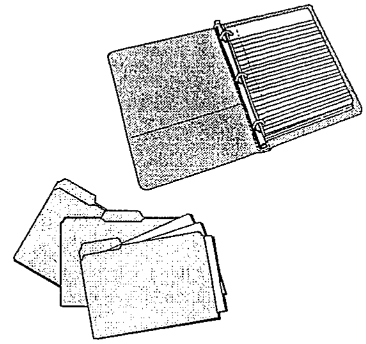
☑ Is not set in concrete

☑ Should be considered a flexible management tool

☑ Is the basis for warning signals

☑ Can be renegotiated with the proper documentation and professional presentation. Most projects have hidden reserves. Before negotiating tradeoffs, make sure that you have isolated the appropriate negotiable management reserve(s) for your project.





# 4. Create a Project Notebook

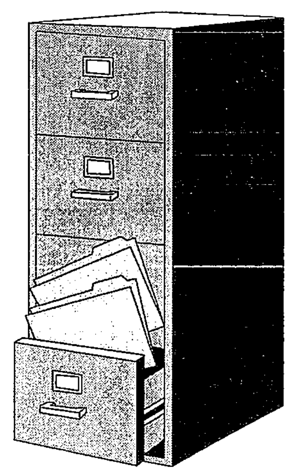
Project notebooks are valuable for project managers:

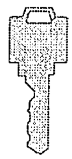
- *During the project* they are a source of current project information
- *After the project* they guide planning efforts for new similar projects

## Guidelines

The Project Notebook should contain:

- Project Definition Documentation
- Communication Plan
- Task Descriptions
- Estimates
- Assumptions
- Schedule
- Contingency Plans
- Status Reports
- Issues List
- Project Summary (at the end of the project)

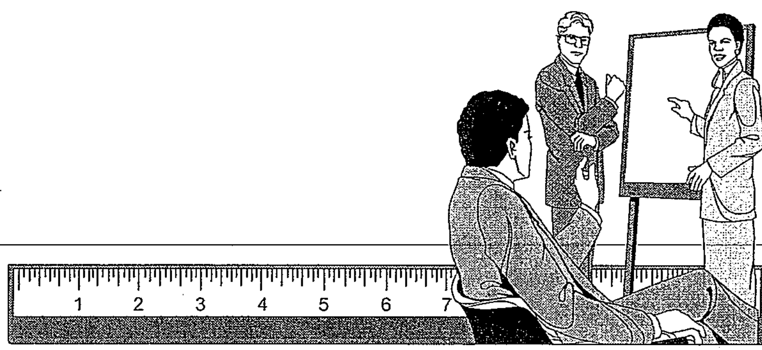




# *Risk Management Key Points*

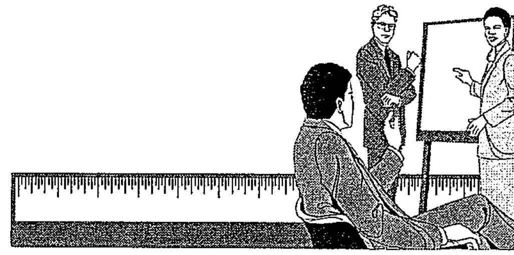
1. Identify, evaluate, and manage
2. Place risk management tasks in Plan
3. Review risks at milestones

# *Track and Manage the Project and Your Time*




## STEP 9

## NOTES:



# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| **INITIATION** | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| **PLANNING** | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
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| **CONTROL** | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| **CLOSE-OUT** | 10. Perform Post-Project Review | Project History Documentation |

Managing productivity of project

# Project Control

☒ Once the project plan is approved and work begins, focus shifts to tracking the project by utilizing best practices to manage the project and your time.

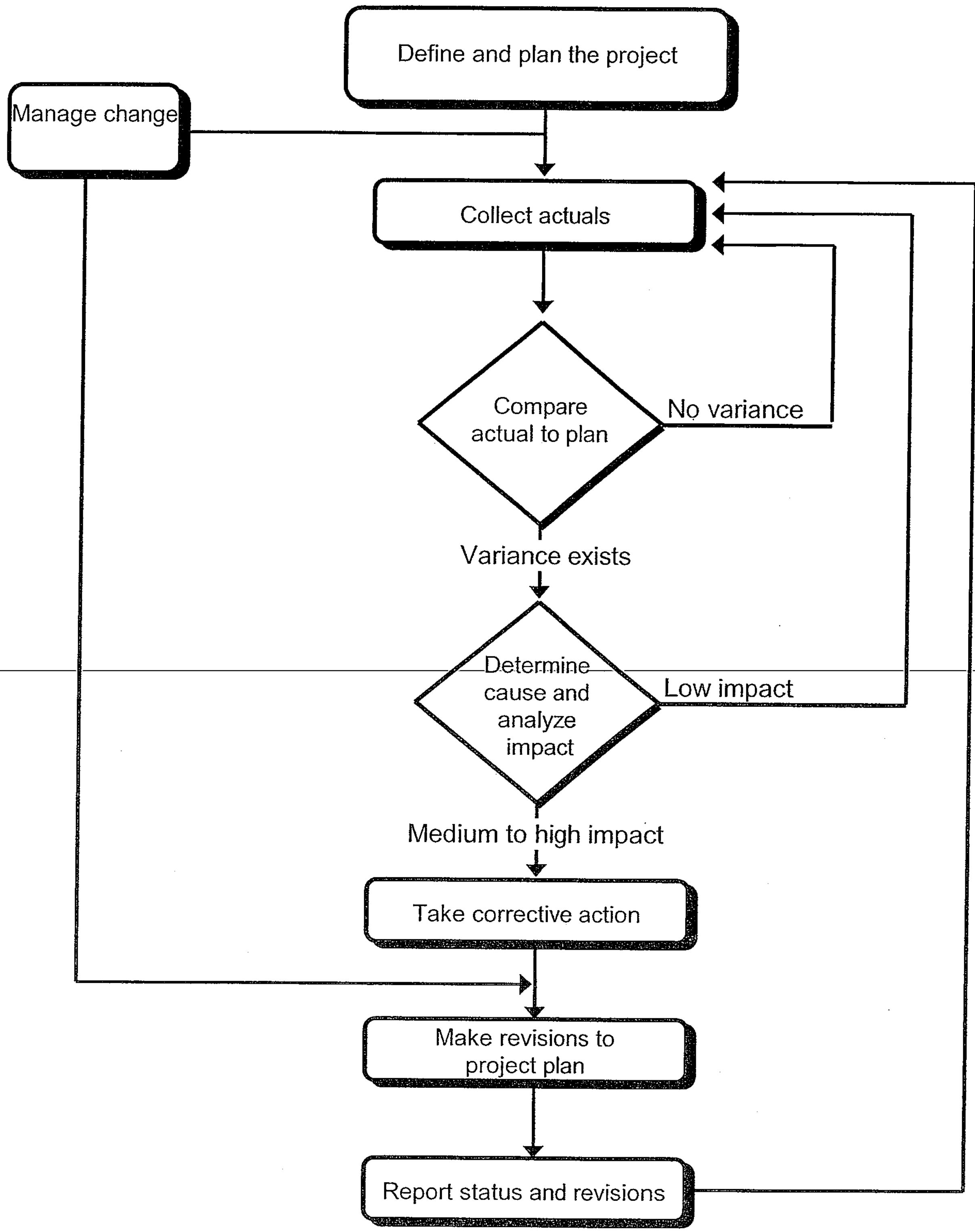
☒ Your job as project manager during this phase of the project is to control:

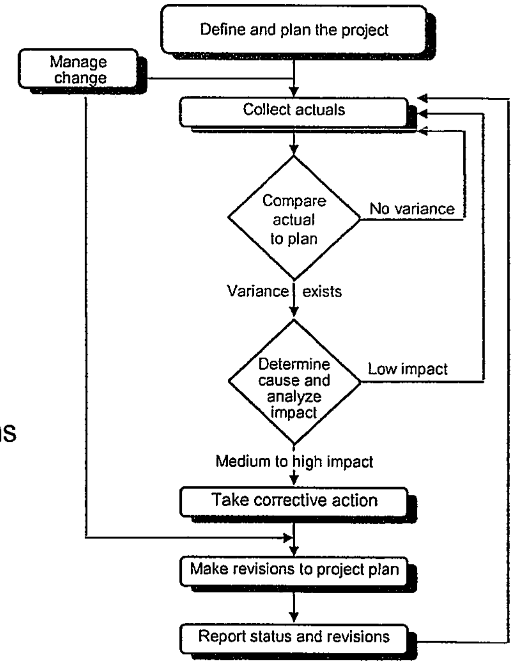
- Your Time
- Schedules
- Costs
- Deliverables
- Quality
- Resource allocation
- Materials and supplies
- Team morale
- Customer satisfaction

- Communication
- Status Reports

be sure to specify what you want from staff on a periodic basis

# *Project Control Process*






# *Step 9: Track and Manage the Project*

## Description

After definition and planning are complete, work begins and the project manager's job shifts to tracking and managing the project. This phase is often called project control, which requires taking steps to ensure that actual performance conforms to the plan. Basic tools for controlling a project include:

- ➔ The project definition which serves as a contract for measuring the success of the project, the end product and the product manager
- ➔ The project plan: schedule, resource plan, and budget
- ➔ Status reports which indicate work progress and problems

## Process

⇨ Define and plan the project: The project definition sets standards for project success. The project plan serves as a roadmap for the project team's efforts. Both the definition and the plan set expectations. Your job is to see that those expectations are met.

⇨ Collect actuals: First, decide what's important to track and boundaries within which control should be maintained. Then set up mechanisms for collecting actuals regarding schedule and costs, and for assessing quality of the work being done.

⇨ Compare actual to plan: Compare actual results to plan by asking a series of questions to reveal variances, and evaluating variances to determine whether or not they are within an acceptable range.

> "Small problems are difficult to see, but easy to fix. However, when you let these problems develop, they are easy to see but very difficult to fix."
>
> ~ Niccolo Macchiavelli, *Il Principe* (1530)

- Determine cause and analyze impact: When variances occur, look carefully to find what is causing them. Whatever the cause of the variance, analyze its impact on the project.

- Take corrective action: Decide upon a course of action based on the variance's cause and impact.

- Make revisions to project plan: Based on corrective actions and progress to date, make adjustments to the project schedule, staffing, and/or budget to ensure that the plan remains a viable roadmap for all project participants.

- Report status and revisions: Keep all parties informed of project status, revisions to the plan, problems and solutions. To establish a status reporting process, first analyze the information needs of people involved or interested in the project; then design and schedule reports to meet those needs.

- Manage change: During the project, it's important to evaluate the impact of scope changes before making decisions to implement them.

**Step 1: Identify Key Control Factors**

- **Decide what to measure**
  - **Performance**
  - **Cost**
  - **Schedule**
  - **Morale and Productivity**
- **Set boundaries for control**
- **Avoid pitfalls**
  - **Easy to see vs. important**
  - **Objective data vs. soft data**
  - **Activity vs. results**
  - **Collecting everything**

# Collect Actuals

To understand how the project is progressing:

1) Identify key control factors and boundaries for control
2) Set up mechanisms for collecting actuals

## Step 1. Identify key control factors and set boundaries for control.

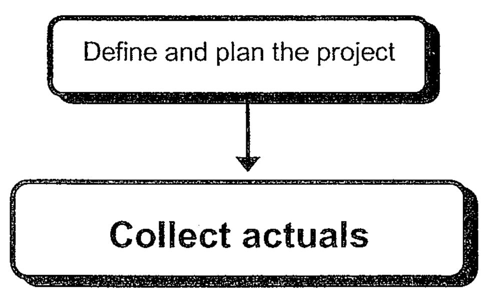
⇨ Decide specifically what to measure relative to:

- Performance: deliverables completed, quality standards met
- Cost: work hours charged, overtime, purchase orders, invoices
- Schedule: Completion dates and milestones met
- Staffing: work hours used, people participating
- Team morale and productivity.

⇨ Set boundaries within which control should be maintained. For instance, you may set budget boundaries at +10%.

⇨ Avoid these project control pitfalls:

- Monitoring data that's easy to gather rather than important
- Focusing only on objective measures at the expense of soft data
- Measuring activity rather than results
- Collecting everything



# Group Discussion:
## Identifying Key Control Factors

During a project, you won't have time to review everything that is going on within the project. So decide up front what control factors you will use to manage your project, regarding schedule, resources, and budget.

What control factors would be relevant for your projects?

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

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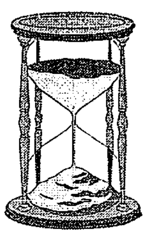
______________________________________________

______________________________________________

# Typical Control Factors

Typical control factors that are identified in projects are:

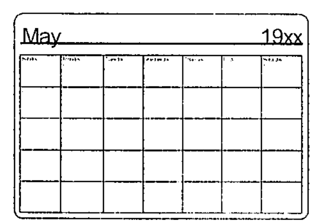
**Scheduling:**



- Critical path tasks not meeting deadline
- Tasks slipping their Late Start dates
- Tasks slipping their Late Finish dates (more important)
- High risk paths
- Tasks with multiple revised deadlines
- Additional scope requests which extend deadlines

**Staffing:**

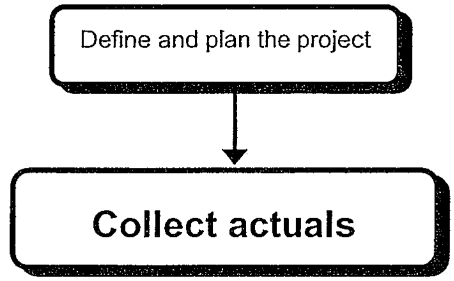
- More staff than planned being used
- Staff not available
- Staff being pulled off the project
- Staff with wrong skill set working on the project




**Budgeting:**

- Over budget by x% or $
- Under budget by x% or $
- Everything we have discussed above
- Changes in pricing due to inflation and other unplanned events.

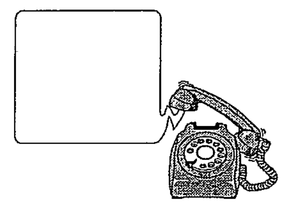
(NOTE: All of the above are based on the estimates being correct in the first place, which may not be the case.)



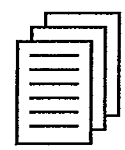

## Step 2. Set up mechanisms for collecting actuals.

⇨ Sources for actuals:

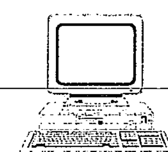
– Project manager interview: Project manager interviews every member of the project team to determine status.



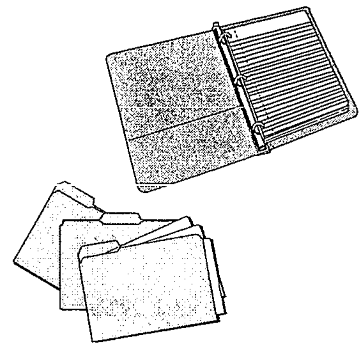
– Task owner: The person holding prime responsibility (the task owner) updates the project baselines for which he is accountable and submits the to the project manager.



– E-mail, personnel time reports, time logs, or automated job accounting systems.



– Status review meetings: Once a week the project team meets and review tasks begun and completed that week, in addition to tasks to be started and completed the next week.

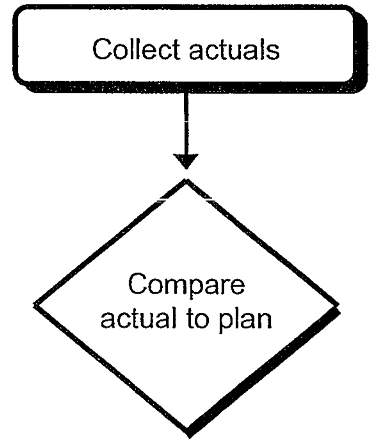


# Guidelines for data collection forms

- ☑ Make the form simple and easy for the person to fill out.
- ☑ Make sure all the information is going to be used.
- ☑ Make sure the people filling it out understand what it is going to be used for and why they have to fill it out.
- ☑ Make sure that people see the information they provide being used.
- ☑ Make sure there are consistent as of dates. Do not compare apples with oranges.
- ☑ Discuss the need for rectification. In other words, how hard do you want to work to verify that the actuals are correct.

# Actuals Capture Worksheet

| Project Name: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Task Owner: | | | | | | Report Date: | | |
| Task | Start | | Finish | | Effort | | Cost | |
| | Plan | Actual/Forecast | Plan | Actual/Forecast | Plan | Effort to Date/ Effort to Complete | Plan | Cost to Date/ Cost to Complete |
| | | | | | | | | |
| Unplanned Tasks: | | | | | | | | |
| Issues/Barriers: | | | | | | | | |




# Compare Actual to Plan

Compare actual to plan by:

1) Asking a series of questions to reveal variances
2) Evaluating variances to determine whether they are within an acceptable range.

## Step 1. Ask these questions:

⇨ Are you ahead or behind schedule?

⇨ Are you under or over budget?

⇨ Are you using the staff time you planned?

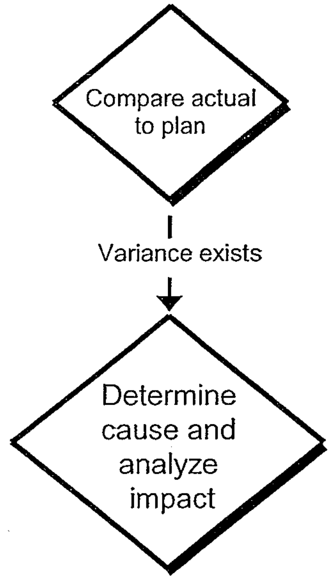
⇨ Given actual staffing levels, are you getting the results you would expect?

You should also look at morale and productivity of the project team.

## Step 2. Evaluate variances

⇨ If variance is within the acceptable range, no further action is required at this time.

⇨ If variance is outside the acceptable range, continue the process by determining the cause of the variance.




# Determine Cause and Analyze Impact

## Step 1. Determine cause:

When a significant variance occurs, look carefully to find what is causing it. Understanding what is causing a variance will help you assess whether the variance will have a short or long term impact on the project. Typical causes include:

- Poorly defined objectives
- An incomplete or ineffective plan
- Inadequate communication
- Poor estimates
- Changes of scope
- Inadequate skills
- People problems

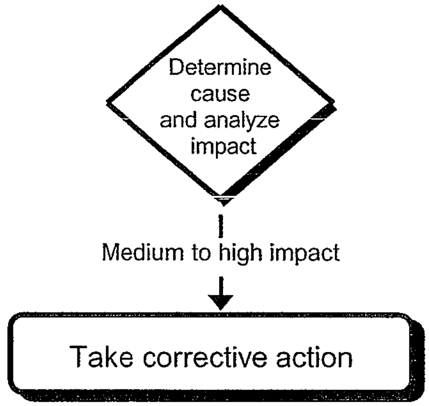
☑ **Guideline:** When you're looking for the cause of a variance, don't assume the first answer is the major cause. Assess several possibilities to be sure you really understand the problem and its cause.

## Step 2. Analyze impact:

Ask how the problem impacts:

- Project schedule
- Project budget
- Project team
- Product quality

Given the current situation and trends, forecast schedule, budget and quality at project completion. If impact is low, no further action is required at this time.




# Take Corrective Action

During the project, corrective actions may be required to ensure that actual performance conforms to the plan.

## ⇨ Process:

Depending on the significance of the variance and the impact, choose one of these options:

- ➔ Wait for more information
- ➔ Make minor revisions to the project plan staying within original parameters
- ➔ Negotiate trade-offs and replan using additional resources, dollars or time, a reduced version of the end product, or phasing of commitments over a longer period of time
- ➔ Implement the contingency plan.

## ☑ Guidelines:

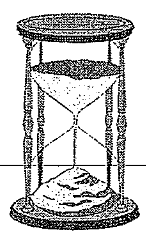
- Involve project team members in the problem solving process. A small group with knowledge and experience relevant to a problem can often devise a better solution than an individual working alone.
- Be creative and generate multiple corrective actions before you decide what to do. Assess the impact of each solution, then recommend or take action on the solution most appropriate for the project.
- Manage communication and expectations. Let those involved know what has changed and why.

# Suggestions for Taking Corrective Action

**If the project is over budget:**

- Look for ways to reduce costs of remaining work
- Reduce scope
- Negotiate for increased funding.

**If the project is behind schedule:**



- Reschedule tasks to shorten remaining work
- Use incentives for on time completion
- Add resources

(NOTE: Review critical path compression techniques in Module 5.)

# What If You Add Resources?

As Brooks describes in his book, *The Mythical Man Month*, every additional individual or department that becomes involved in the project significantly increases the number of interactions and may increase the time required.

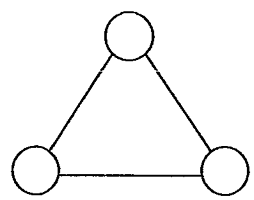
To determine the number of interactions in your current project, use the formula:

$$I = \frac{P(P-1)}{2}$$

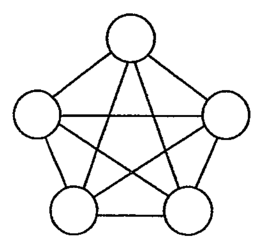
P = People
I = Interactions

Think **TWICE** before you add more people to a task. Here are some examples.

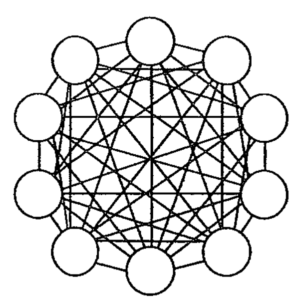
3 People (P)
3 Potential Interactions (I)



5 People
10 Potential Interactions



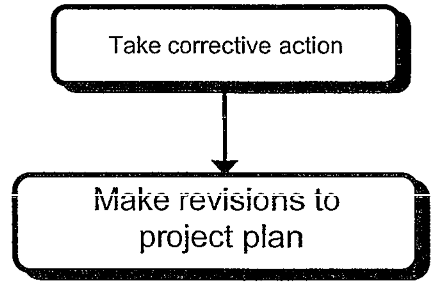
10 People
45 Potential Interactions



| | Time | $ | Scope |
|---|---|---|---|
| Constrain | | | |
| Optimize | | | |
| Accept | | | |

## ☑ Guidelines for Negotiating Trade-offs:

- Reconfirm project client's priorities
- Identify reserves
  - Time
  - Dollars or resources
  - Scope
- Assess impact of:
  - Making changes
  - Not making changes
- Present recommendations

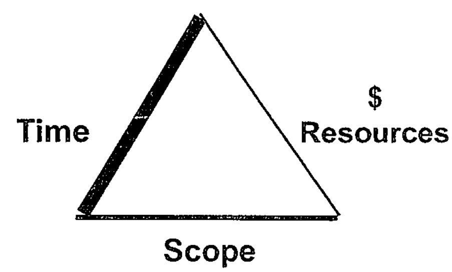


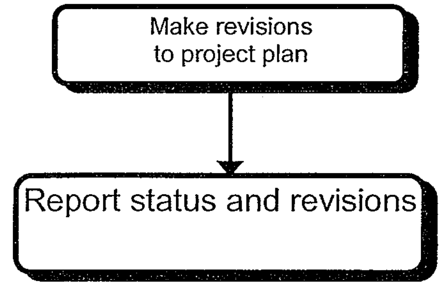

# Make Revisions to the Project Plan

Based on corrective actions and progress to date, make adjustments to the project plan to ensure that it remains a viable roadmap for all project participants.

## ☑ Guidelines:

- Define reserves in time, money or scope (deliverables).
- Allow changes to be made by authorized personnel only.
- Consider possible adverse effects of a plan change.
- Don't be afraid to change the plan when necessary.
- Study alternatives. Work within the constraints given. Ask for trade-offs only when absolutely necessary.
- Don't over react.
- Document the approved change.
- Track the change.






# Report Status and Revisions

To establish a status reporting process:

1) Analyze the information needs of people involved or interested in the project
2) Design and schedule reports and meetings to meet those needs

## Step 1. Analyze the information needs of people involved or interested in the project.

| | Top Management | Immediate Manager | Team Members |
|---|---|---|---|
| **Levels of Detail** | - Less detail<br>- More graphic<br>- Information tool | - Intermediate | - Greater detail<br>- Lists<br>- Action tool |
| **Timing** | - Less frequently (minimum monthly) | - Intermediate | - More frequently (minimum weekly) |
| **Content** | - Just the overview problem isolation and recommendations | - What they request to see | - Overview and sections which impact them |

**Step 2: Design and Schedule Reports**

**Contents:**
- **Schedule and budget status as of (date)**
- **Goals for next period**
- **Potential problems**
- **Recognition**

## Collect Actuals

To understand how the project is progressing:

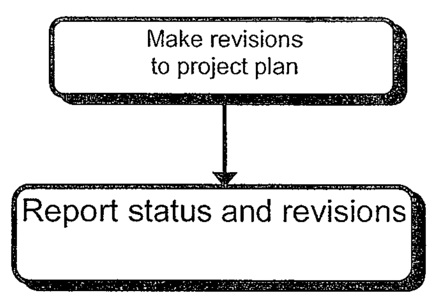
1) Identify key control factors and boundaries for control
2) Set up mechanisms for collecting actuals

### Step 2. Design and schedule reports and meetings.

⇨ What should a status report include?

- Status as of (date)
  - Schedule
    - Brief synopsis of achievements and milestones since last report
    - Graphics such as a milestone or Gantt chart
  - Budget
    - Line or bar graph
    - Explanation of variance
- Goals for next report period
  - Pending events, completions, milestones
  - Graphic showing a 30-60 day forward view
- Potential problems that
  - Threaten project completion
  - Are beyond the capability of the project manager
- Recognition for special achievements and demonstrated excellence

⇨ What else would you add for your environment?



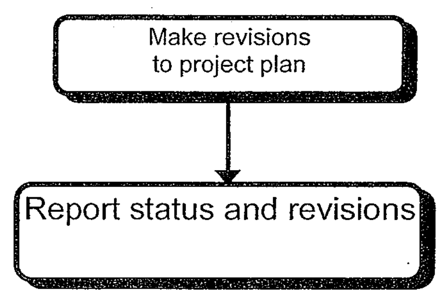
**Guidelines for Status Reports**

- Simple, easy to read
- Adapted to audience
- Flexible
- Concise
- Graphic
- Easy to update
- History

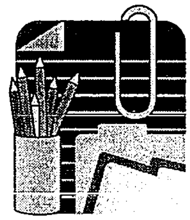
## ☑ Guidelines for Written Status Reports:

When you're creating status reports, follow these guidelines:

- Keep them simple and easy to read.
- Adapt them to the needs and interests of each audience.
- Be flexible. Adjust your status reports to suit the message and the image you want to communicate.
- Be concise to ensure that busy managers will read and understand them quickly.
- Use graphics whenever possible to help get the message across.
- Make them easy to update.
- ~~Keep copies of status reports to document project history.~~



# *Summary Status Report Format*



## Summary Status Report

**Purpose:** To enable the reader to see a project in its entirely, and to understand what has been accomplished since the last report.

### Four Areas To Address

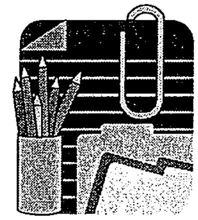
1. **Overview of the project.** Briefly describe the project and include a statement about its general status. Aim for a one- or two-paragraph overview.

2. **Progress.** Answer the questions, " What has been accomplished?" and, "What remains to be completed?" Writers often include sections with headings like "accomplishments," "work completed," and "work in progress." Depending on how much detail your reader needs, you may devote a paragraph or subsection with a heading, for each milestone/task. Provide target dates and completion dates.

3. **Problem - actual or anticipated.** Explain any problems you've encountered and their effect on the project. Include information about how you overcame any problems, how you plan to solve them, or how management can help you.

4. **Important miscellaneous information.** Any items that don't really fit into your other discussions can be presented here. Examples are: personnel changes, additional research performed, or acknowledgments of especially helpful colleagues.

# Summary Status Report Format



Date: July 3, 199X

To: Larry Myers

From: William Quigg

Subject: CBT Evaluation Study: Status as of June 30, 199X

**Overview**

We began a study of Computer-Based Training (CBT) packages in April of this year. This purpose of the study is to evaluate CBT packages that meet our technical and training requirements, and to cost-justify the purchase of a CBT system.

**Progress**

**The following milestones have been completed:**

| | | Target Date | Completion Date |
|---|---|---|---|
| 1.0 | Form Evaluation Team | 4/9X | 4/9X |
| 2.0 | Identify CBT Vendors | 5/9X | 5/9X |
| 3.0 | Create/Distribute Request for Proposal (RFP) | 6/9X | 6/9X |

**The following milestones are active or planned:**

| | | |
|---|---|---|
| 4.0 | Evaluate Vendor Responses to RFP | 6/9X |
| 5.0 | Have On-Site Demos by "Surviving" CBT Vendors | 7/9X |
| 6.0 | Prepare Final Report | 7/9X |

**Problems**

We experienced delays getting the RFP out of the three CBT vendors (Scienticon, Dakota System, and Varietel), because of disk errors on our work processing system. As a result, the RFP was sent out on June 17, instead of June 3. We contacted the vendors, and told them we needed their responses by July 7; all three said they could meet the deadline. This delay should not affect our target completion date for the project of July 31.

**Miscellaneous**

Jill Christenson of Office Systems was a great help in recovering our RFP from the computer disk.

## ☑ Guidelines for Project Review Meetings:

**Before the meeting:**

- Arrange convenient meeting place.
- Be specific in selecting attendees.
- Find out if all participants can attend.
- Give plenty of notice.
- State the agenda explicitly.
- Limit the number of agenda items: Decide what is most important to present.
- Budget your time carefully:
  - Cover the most important topics early
  - Insert schedule margin (buffer time) early in the meeting and at several other points in the agenda.
- Preview the agenda with your customer (boss) for feedback.
- Dry run your high risk speakers.

**Conducting Status Review Meetings**

**During the Meeting:**
- **Start on time**
- **Provide overview**
- **Nominate moderator and recorder**
- **Adhere to agenda and purpose**
- **Document action items**
- **Assign responsibility**
- **Manage time**

**After the meeting:**
- **Distribute minutes**

**During the meeting:**

- Start on time
- You should be the first speaker with an overview, or else give a short introduction to set the proper tone and alert the attendees to your objectives and major concerns.
- Nominate a moderator
- Assign a recorder
- Adhere to the agenda and the purpose of each agenda item
  - Planning
  - Communication
  - Problem solving
    - Identify problem
    - Brainstorm solutions
  - Deciding
    - Identify actions
    - Identify pros and cons
    - Discuss and evaluate
    - Select best course of action
- Document action items
- Assign responsibility for action items
- Finally, don't overrun your allotted time or lose control of your meeting.

**After the Meeting:**

- Distribute the minutes

# Meeting Agendas

Microsoft Word contains a special feature called Agenda Wizard that assists with meeting preparation and facilitates note taking. The Agenda Wizard is accessed from the "New ..." document option.

1 Style (Modern is suggested)

Agenda

## Project Review Meeting #1

2 & 3 Date/Time and Title/Location

05/01/9x
12:00 p.m. to 12:50 p.m.
Conference Room, 2nd Floor

Meeting called by:
Type of meeting:
Facilitator:
Note taker:
Timekeeper:

4 & 5 Agenda Headings and Names

Attendees:
Please read:
Please bring:

### Agenda topics

6 & 7 Agenda Topics/Person Responsible/ Minutes (wizard will calculate the end meeting time)

| | | |
|---|---|---|
| 12:00-12:05 p.m. | Meeting Overview | David |
| 12:05-12:30 p.m. | Status Updates | Discussion |
| 12:30-12:40 p.m. | Additional Topic | Sheri |
| 12:40-12:50 p.m. | Action Items & Summary | David/Discussion |

Observers:
Resource persons:
Special notes:

8 Form to record minutes

### Agenda Topics

Meeting Overview David

| | | |
|---|---|---|
| Discussion: | | |
| | | |
| Conclusions: | | |
| | | |
| Action items: | Person responsible: | Deadline: |
| | | |

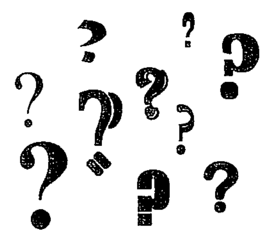
# Action Item List

| Project Name: | |
|---|---|
| Project Manager: | Meeting Date: |

| ACTION ITEM LIST | | Team Member: | |
|---|---|---|---|
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |
| ID Description of Action | | Who Requested Action? | Deliverable |
| Due To | Due Date | Completed Date | ✓ If For Next Meeting ____ |


## ☑ Guidelines for Project Review Meeting Agendas:

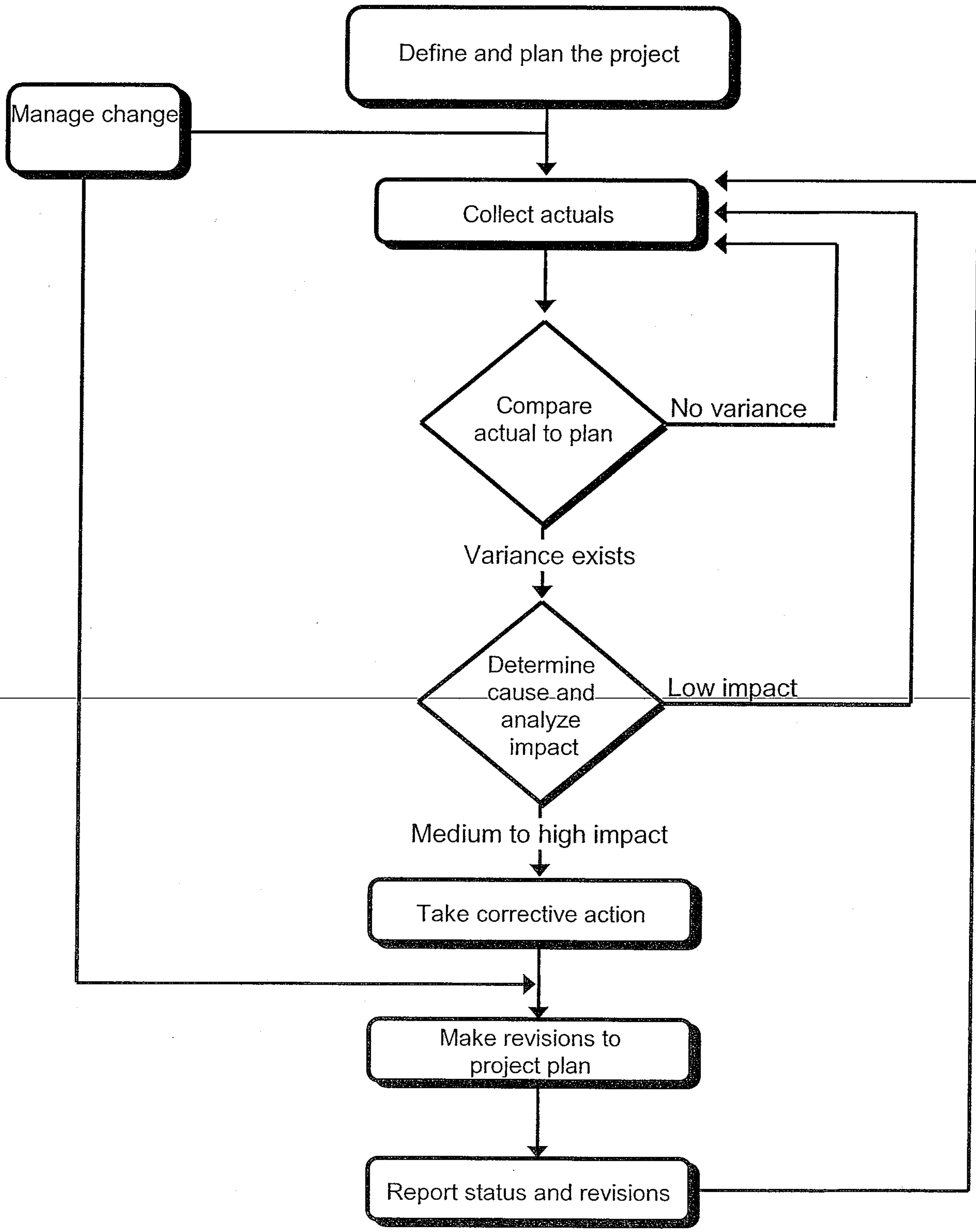
- Identify major accomplishments since last review
- Review schedule status (actual vs. plan)
- Detail financial status (actual vs. plan), including a clear explanation of variances which exceed boundaries
- Discuss major issues (problems) and action plans to mitigate, including request for specific help from your customer or boss, if appropriate
- Review action items committed to by participants
- Outline plans for next period



## ☑ Question Guidelines to Ask Your People at Project Review Meetings:

- Do you foresee any problems coming up in the future?
- Are you or your resources being threatened (people being pulled off projects)?
- Are you or your people working productively? If not, why?
- Are you planning ahead for key deliverables, documentation, etc.?
- Have you turned up a technology, procedure or product we might employ elsewhere?

# Project Control Process



# *Time Management*

## ☑ Best Practice #1: Manage Your Inbox!

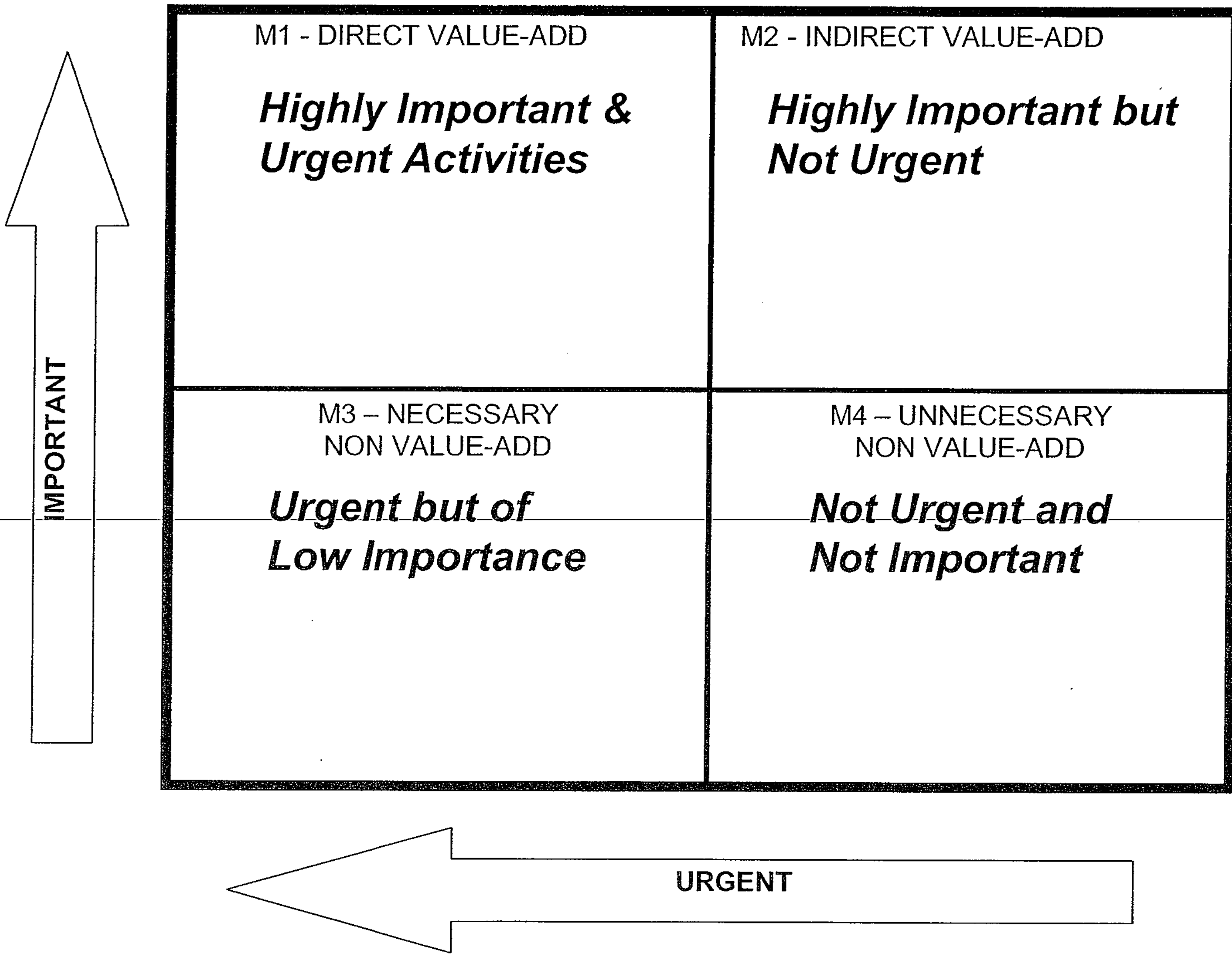
- Clear your Inbox everyday – don't use it as a catch-all folder for everything you need at work
- Read items once and adhere to the "4D" Formula – Do It, Delete It, Delegate It, or Date-Activate It
- Set up rules in your Inbox, that will automatically file, delete, highlight, forward or Prioritize incoming and outgoing messages
- Set up "Team Rules" – assist your colleagues by agreeing on acronyms to use in subject lines
- Create your own storage system for emails – just like with paper, create custom folders to store your important emails for reference and recall
- Convert your emails into tasks and appointments
- Schedule uninterrupted time each day to process email and answer voicemails – avoid beginning the day by opening email. Be proactive – not reactive
- Put a message in the subject line and end with the acronym <eom> end of message

## ☑ Best Practice #2: Manage Your Calendar!

- Make your calendar a One-Stop place to capture all fixed time commitments – don't have multiple calendars in multiple places. Personal and Professional commitments should be on one calendar
- Capture ONLY time sensitive details, such as appointments, meetings, scheduled phone calls – do not use your calendar as a To-Do list
- Schedule time on your calendar for important projects or tasks – if you need to work on something, dedicate time to it using your calendar
- Include travel time when going to out-of-office appointments
- Update and synchronize your calendar for the next day at the end of each day

## ☑ Best Practice #3: Manage Your Tasks!

- Use the Value-Add Matrix below to prioritize your tasks
- Match the quadrant to the "4D" Formula and list them below: *Do It, Delete It, Delegate It, or Date-Activate It*



## ☑ Best Practice #4: Manage Your Communications!

Your communications should focus on four key processes

- Communication
- Delegation
- Influencing
- Voicemail

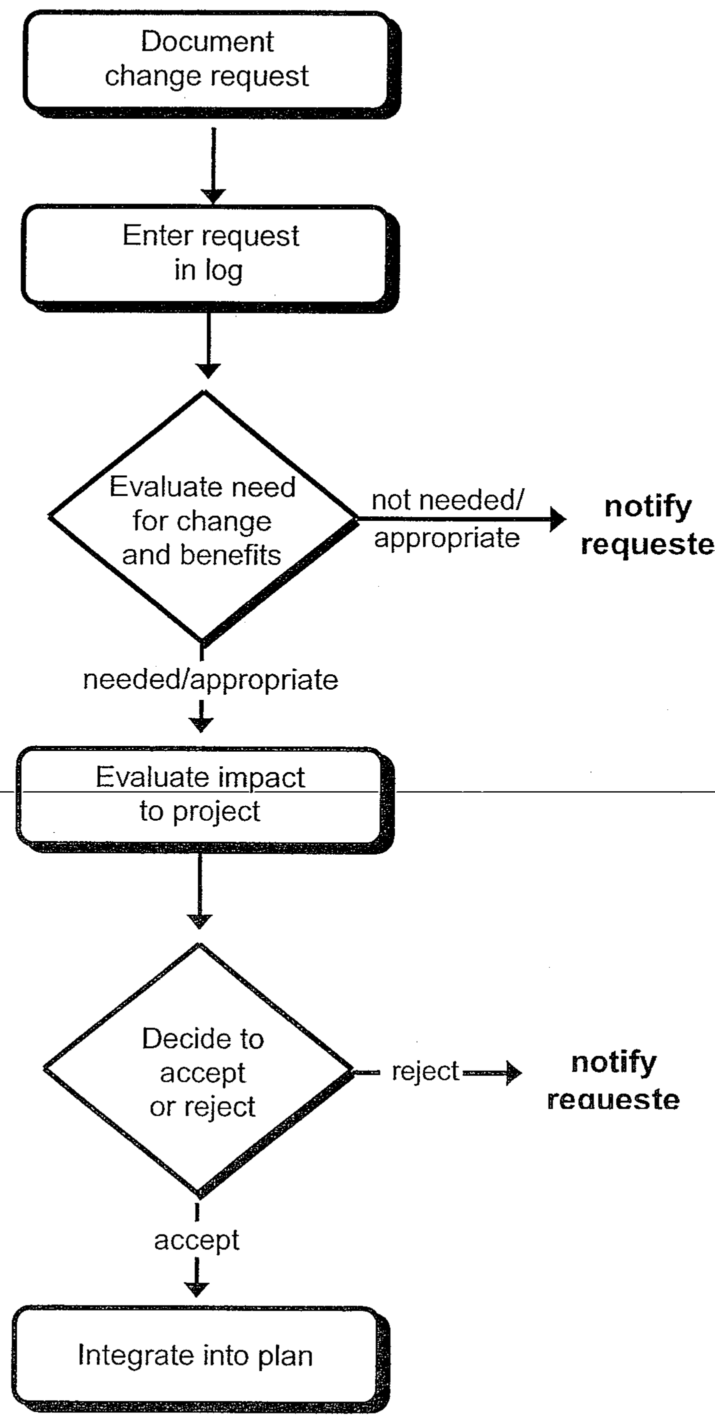
- Plan Ahead – try to have a written plan, regardless of who you are calling or meeting with

- Capture Information – have one place to write notes: remember to record what was said and who said it

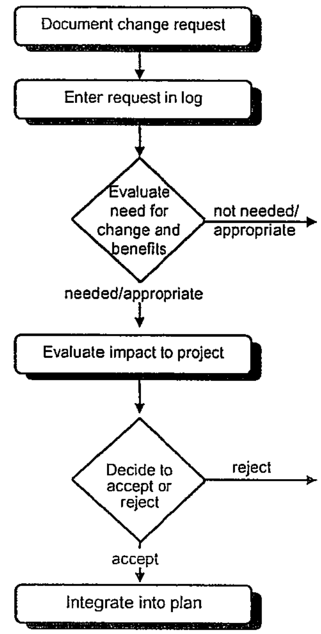
- Follow-Up – make an immediate note (date activate) of ALL follow-ups and promises

- Store and Retrieve – associate the information to an individual (by last name) or to a project

# *Change Management Process*



# Change Management Process




- **Document change request.** The individual or group requesting a change of scope submits the request in writing, or the project manager documents the request.

- **Enter request in log.** The project manager or project change controller should maintain a log of all written requests for change of scope. This Log should be part of the project notebook.

- **Evaluate need for change and benefits.** Each request for change should be evaluated by individuals who can determine whether the change is needed or not, and whether it is appropriate or not. If the change is not needed or appropriate, notify the requester. (Note: The requester should have a court of appeal.)

- **Evaluate impact to project.** If a change request is needed and appropriate, the next step is to evaluate the impact of the change on the project's schedule, budget, resources and quality.

- **Decide to accept or reject.** The decision to accept or reject the change is based on the analysis of need for change, benefits of the change, and impact to the project. If the change is rejected, notify the requester.

- **Integrate into plan.** If the change is accepted, modify the project plan and notify all project participants.

# Change Management

## Typical Causes of Change:

- Requirements Changes
- Design Changes
- Technological Changes
- Business Changes
- Regulatory Changes
- People Changes
- Corrections

# *Project Change Control Chart*

| | | | | |
|---|---|---|---|---|
| Project Name: | | | | |
| Project Manager: | | | | |
| Change Requester: | | | Request Date: | |
| **Reason(s) for Change** | | | | |
| | | | | |
| **Present** | Completion Date | Work Months | Total Project Personnel | Project Cost |
| | | | | |
| **Change(s) to Project Scope or Previous Estimates** | | | | |
| | | | | |
| **Revised** | Completion Date | Work Months | Total Project Personnel | Project Cost |
| | | | | |
| **Impact(s) on Project** | | | | |
| | | | | |
| **Recommendation(s)** | | | | |
| | | | | |

Department Manager's Signature ______________________ Date ______

Sponsor's Signature ______________________ Date ______

❑ Approved
❑ Disapproved Reason (if any) ______________________

# *Change Log*

| | |
|---|---|
| Project Name: | |
| Project Manager: | |

| Request Date | Description of Change | Change in Effort | Change Requester | Approved Yes/No? | Approval Date | Revised Completion Date | Actual Completion Date |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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# *Track & Manage Key Points*

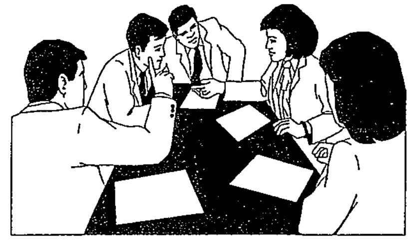
1. Start with a plan you believe in
2. Keep it realistic
3. Capture useful actuals
4. Renegotiate when things change

# NOTES:

# Perform Post–Project Review

## STEP 10

**NOTES:**



# Project Management Process

| Phase | Step | Deliverable |
|---|---|---|
| INITIATION | 1. Define the Project | Project Definition Documentation |
| | 2. Establish Project Structure | Team Operating Agreements |
| PLANNING | 3. Generate Tasks | Work Breakdown Structure<br>Task Descriptions |
| | 4. Determine Roles & Responsibilities and Develop Estimates | Responsibility Matrix<br>Effort & Duration Estimates |
| | 5. Define Task Interdependencies and Develop Schedule | Project Network<br>Gantt (Schedule) Chart |
| | 6. Perform Resource Loading and Leveling | Resource Loading Data and Histogram |
| | 7. Generate Project Budget | Project Budget and Graph |
| | 8. Develop Risk Management Plan | Preventive and Contingency Plans |
| CONTROL | 9. Track and Manage the Project | Status Reports, Action Plans, Status Meetings |
| CLOSE-OUT | 10. Perform Post-Project Review | Project History Documentation |

**Project Close-Out Process**

- Collect final actuals
- Conduct post-project review meeting
- Document and store project history

# *Step 10: Perform Post-Project Review*

## Description

This final step in the Project Management Process occurs in the Close-Out phase and wraps up everything that has gone before. The post-project review is an audit during which the project team evaluates the project as objectively as possible. The end result of the review is documentation that provides a final project accounting to management, and creates project history as an aid to future project teams.

## Process

⇨ **Collect final actuals**. The team must gather as much information as possible, including history collected during the project, final schedule and budget, quality indicators, and other information relevant to the project. (NOTE: This is not a review of the product.)

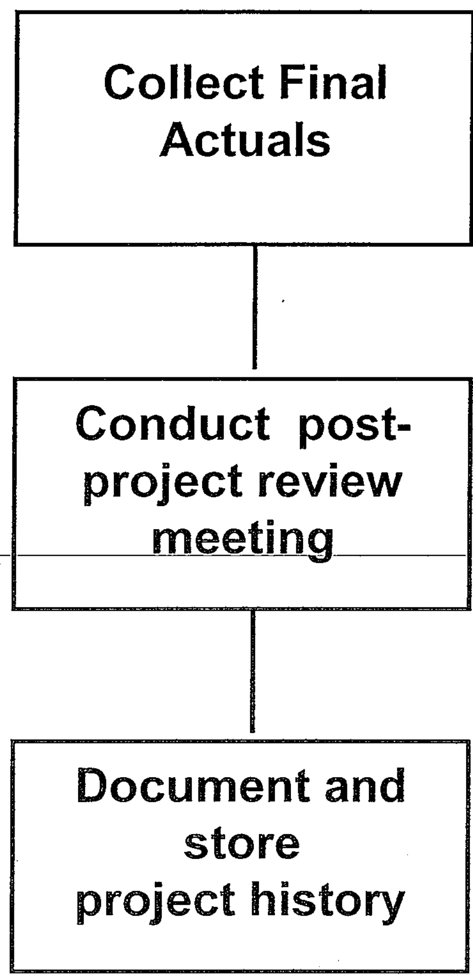
⇨ **Conduct post-project review meeting**. The purpose of the meeting is to conduct an objective evaluation of the project. Therefore, the project manager must position the meeting as an opportunity for participants to expand their learning from the project experience, rather than as a blame session.

***Recommendations:***

- ➔ Schedule the meeting soon after the project.
- ➔ Distribute an agenda and discussion questions prior to the meeting.
- ➔ Document ideas generated in the meeting.

⇨ **Document and store project history**. The post-project review meeting should provide information needed for final project reports to management. It should also result in documentation that can probe valuable for future project teams. Teams should decide which information will be most pertinent in the future, the format in which the information will best be saved, and where it will be stored.

# *Project Close-Out Process*



**Post–Project Review QuestionTopics**

- Product Requirements
- Schedule
- Budget
- Tracking and Control
- Team Issues
- Managing Relationships
- General Questions

# Guidelines

☑ Establish a clear purpose for the meeting: to finalize the project and to support learning.

☑ At the meeting, list actions or practices worth repeating the next time and describe what you would do differently.

☑ Use a facilitator to help keep the meeting focused on learning, not on blame.

# Questions for a Post-Project Review Meeting

## Product Requirements:

- When the project was complete, did the project deliverable meet user requirements without additional work?
- If additional work was required, describe it. Why was extra work needed?
- Did requirements change during the project? How did you manage change? How would you manage change on the next project?
- What did you learn about developing and writing projects requirements that will help you on the next project?

  (NOTE: A more detailed product review may be held 30, 60, or 90 days after the post-project review.)

## Schedule:

- How close to scheduled completion was the project actually completed?
- What factors enabled the team to stay on schedule?
- What factors caused delays?
- Overall, what did you learn about scheduling on this project that will help you on the next project?

## Budget:

- How close to budget was final project cost?
- What did you learn about budgeting that will help you on the next project?

## Project Tracking and Control:

- What did you learn about tracking performance that will help you on the next project?
- What did you learn about taking corrective action that will help you on your next project?

## Team Issues:

- What did you learn about staffing that will help you on the next project?
- What worked or didn't work about team communication? In other words, did you have adequate methods for keeping each other informed?
- What worked or didn't work about how work was distributed? Did you have the right skill mix? Was work assigned to the best person for the job? Did everyone clearly understand roles and responsibility so that work was completed without duplication omissions?

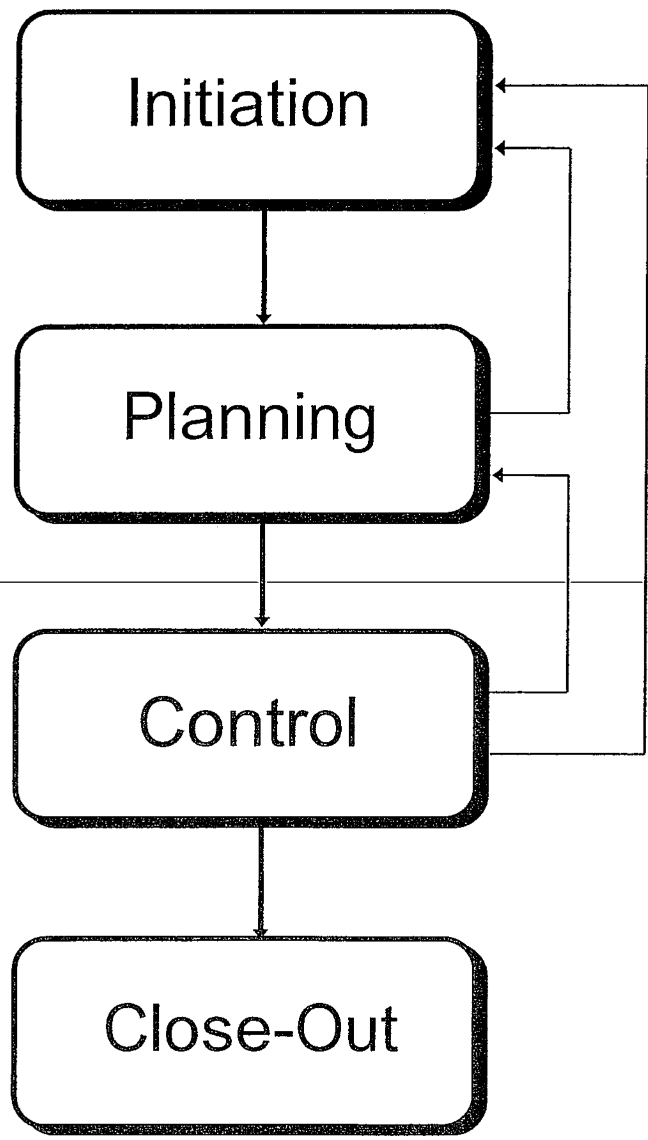
## Managing Relationships:

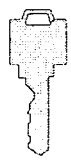
- What lessons did you learn about managing the working relationship with your client?
- What lessons did you learn about managing working relationships with other departments or divisions?
- What lessons did you learn managing working relationships with outside vendors or contractors?

## General Questions:

- What technological advances were made on this project? What did you learn that could be used on future projects?
- What project planning techniques were most useful on this project? Did you use project management software? What did you learn that would help you on the next project?
- What techniques or systems did you develop for this project that could be used on other projects?
- List any recommendations you have for future development.
- If you could do the project over, what would you do differently?

# *Project Management Phases Summary*

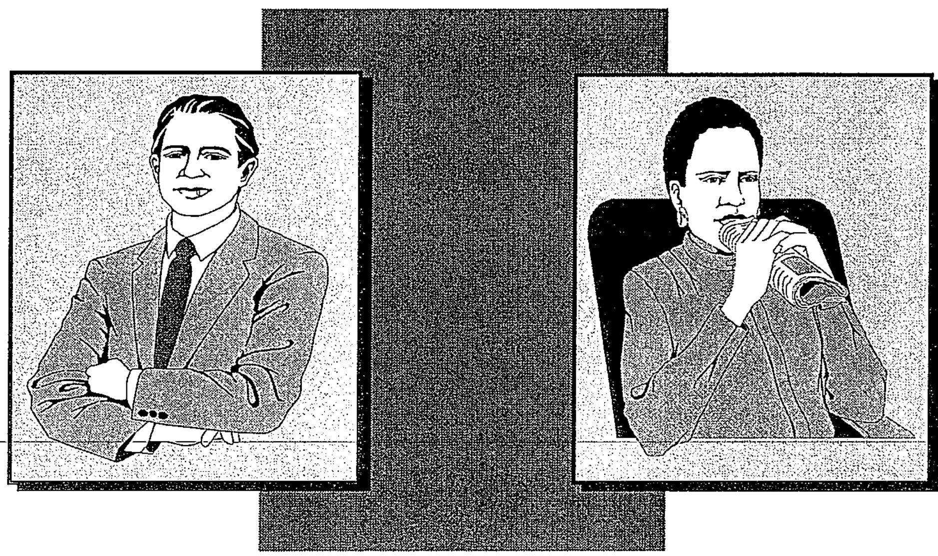




# *Key Points*

1. **Put it in plan**
2. **Evaluate based on original success**
3. **Communicate lessons leaned**

# Managing Conflict



## NOTES:

# Influencing Without Authority: Sources of Power

## What kinds of power do outstanding project managers use?

Outstanding project managers are those who complete projects on schedule and within budget, who meet the objectives, and whose team members would choose to work with them again on another project.

_____ **Coercive Power:** Induces compliance because failure to comply will lead to punishments such as undesirable work assignments, reprimands or dismissals.

_____ **Connection Power:** Influential because others wish to gain the favor or avoid the disfavor of an important person with whom the project manager has a connection.

_____ **Expert Power:** Ability to influence because others respect the project manager's expertise, skill, and ability to produce results.

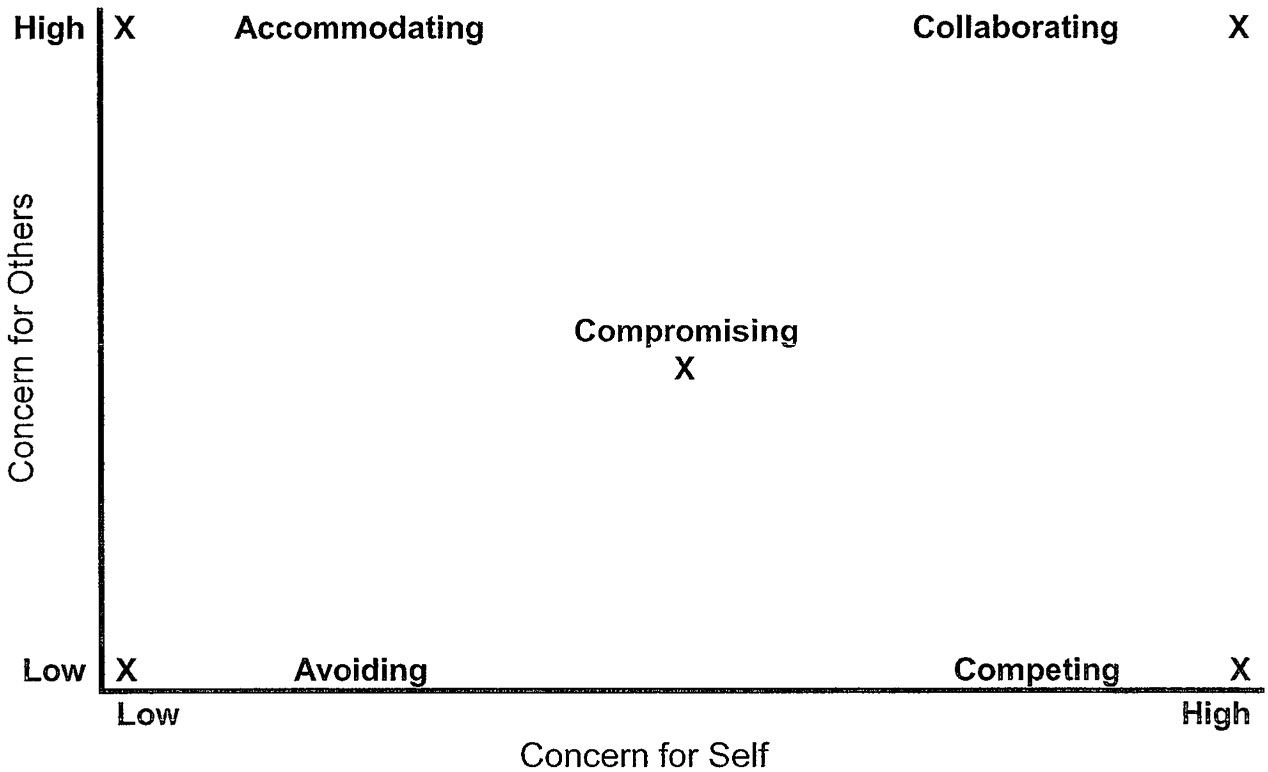
_____ **Information Power:** Based upon the project manager's possession or access to information which is considered valuable and needed by others.

_____ **Legitimate Power:** Perceived as powerful because of their position in the organization. The higher the position, the more powerful they are perceived to be.

_____ **Charismatic Power:** Ability to influence because their personality is liked and admired by others.

_____ **Reward Power:** Influential because they can provide rewards. Rewards not only mean money, but can include recognition, praise, training, desirable working conditions, etc.

# Conflict Response Styles



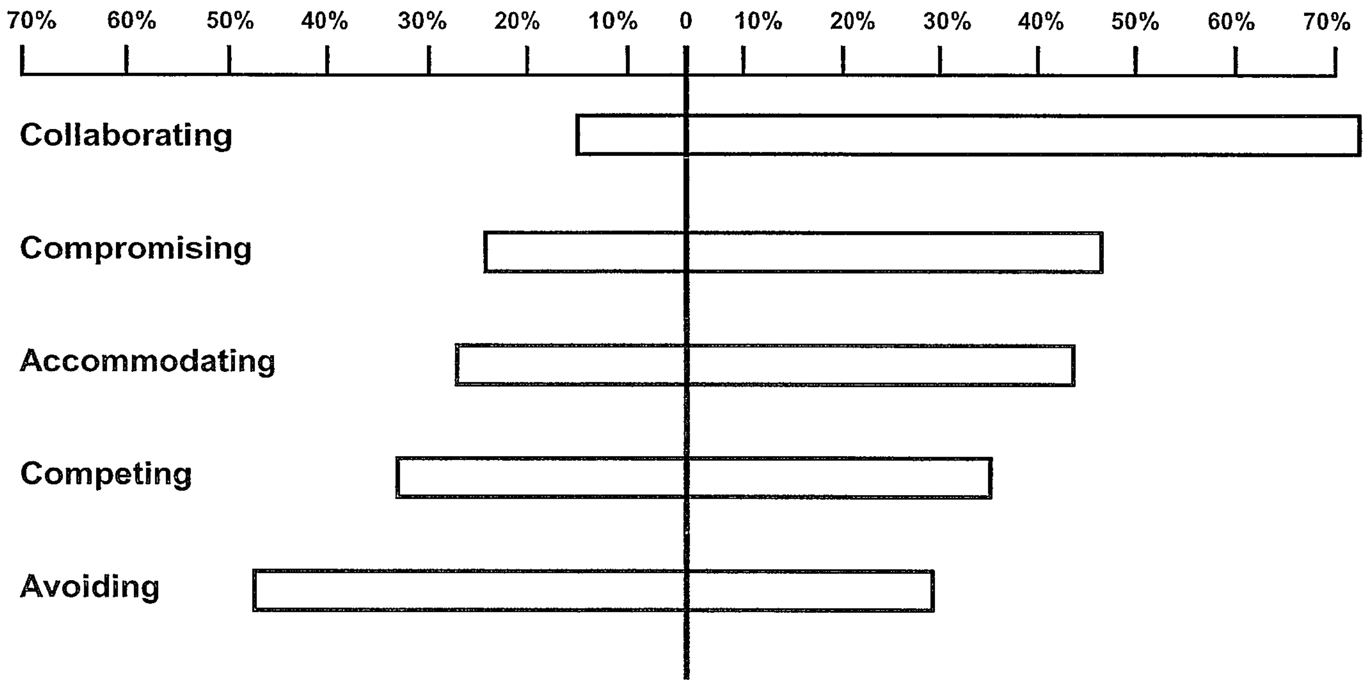
# Conflict Response Styles

| Approaches | Descriptions | Adages |
|---|---|---|
| 1. Competing | Hard-nosed, conflicting, moving against each other | Put your foot down where you mean to stand. |
| 2. Compromising | Splitting the difference, sharing, horse-trading | You have to give some to get some. |
| 3. Avoiding | Moving away from others, losing/leaving, withdrawing | Let sleeping dogs lie. |
| 4. Accommodating | Yielding/losing, friendly, helping, moving toward the other | It is better to give than to receive. |
| 5. Collaborating | Problem solving, integrating | Come, let us reason together. |

## Conflict Response Styles

**Percent of successful project managers whose style rejects this mode for resolving conflicts.**

**Percent of successful project managers whose style favors this mode for resolving conflicts.**



# *Elements of Collaborative Conflict Resolution*

## 1. Separate the people from the problem.

- Understand the other side's thinking:
  - Discuss each other's perceptions.
  - Give them a stake in the outcome by making sure they participate in the process.
  - Make your proposals consistent with their values.

- Deal with the feelings involved in the negotiation:
  - Separate feelings from the facts.
  - Make emotions explicit and acknowledge them as legitimate.
  - Allow the other side to let off steam, but don't react to emotional outbursts.

- Listen well and communicate clearly:
  - Listen actively and acknowledge what is being said.
  - Speak about yourself, not about them.
  - Speak with good reason.

## 2. Focus on (identify) interests, not positions.

A position is something you have decide upon; interests are what caused you to decide.

- Ask yourself *Why?* Ask them what they want to achieve.
- Ask *Why not?*
- Analyze the consequences to them of agreeing or refusing to your proposal.
- Keep a list of your interests and theirs.
- Communicate/explain your interests—be specific.
- Clarify and acknowledge their interests.
- State your interests first—proposals later.

## 3. Generate a variety of possibilities before deciding what to do. Invent options for mutual gain.

- Use brainstorming-with your side and their side.
- Use a different perspective: examine the issue in the eyes of people from other disciplines and professions.
- Create potential agreements that differ in strength.
- Alter the scope of a possible agreement.
- Dovetail differing interests.
- Make the other side's decision easy.

## 4. Use objective standards and criteria.

- Agreements can be based on fair standards. Possibilities include:
  - Professional standards
  - Scientific judgment
  - Market value
  - Costs
  - Moral standards and/or what a court might decide

- Insist on using fair procedures.

- Present each issue as a mutual search for objective criteria.

- Don't give in to pressure.

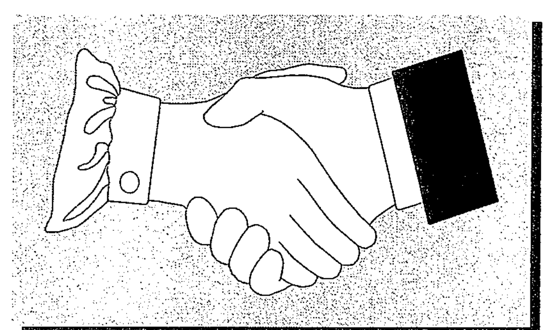
## 5. Know your BATNA (Best Alternative to a Negotiated Agreement).

- Develop a list of actions you could take if you're not able to reach agreement with the other side.

- Maximize those actions with the most promise and determine how to make them practical.

- Provisionally choose the one option that appears the best.

- Contemplate the other side's BATNA.



## NOTES:

# The Three Stages of Collaborative Conflict Resolution

## Analysis:

- Diagnose the situation.
- Gather information, organize it, and analyze it.
- Consider differing perceptions, hostile emotions, and unclear communication.
- Identify your interests and those of the other side.

## Planning:

- Plan ways to handle people problems.
- Determine which of your interests are most important.
- Assess some realistic objectives.
- ~~Generate additional options and criteria for deciding among them.~~
- Develop your BATNA.

## Discussion:

- Address differences in perception, feelings, and frustration.
- Acknowledge difficulties in communication and figure out ways to handle them.
- Work to understand interests of the other side.
- Jointly generate options that are mutually advantageous.
- Seek agreement based on objective standards.
- Agree on the settlement and document it.

# Conflict Analysis and Planning Sheet

1. What is the current situation? How did the conflict evolve?

2. What is the other side's viewpoint?

3. What is your underlying need? Why do you want what you're asking for?

4. What do you think their underlying need is? Why do you think they want what they're asking for?

5. What problems do you anticipate happening during the discussion relative to your feelings/typical behavior in a conflict? How can you handle these so they don't derail the negotiation?

6. What problems do you anticipate happening during the discussion relative to their feelings/typical behavior in a conflict? How can you handle them so the negotiation can proceed constructively.

7. How would you prioritize your interests?

8. How do you think they're prioritizing their interests?

9. What is your BATNA?

10. What do you think their BATNA is?

11. What objective criteria (e.g., professional standards, scientific judgments, precedents) could you use as a base for an agreement?

12. What do you think the consequences are to the other side of agreeing to or refusing possible proposals? How will they be perceived by those important to them? What will be economic consequences be? What precedent will it set for them? What can you do to make it easier for them to agree?

## NOTES:

# Recognizing Group Processes: Task Behaviors

Task behaviors contribute to the team's accomplishment of work.

## Initiating

- Stating the goal or problem
- Making proposals for how to work on an issue
- Setting time limits or targets

"Our project has slipped by two weeks. We need to meet by tomorrow at 5:00 p.m. to discuss how we'll get back on track."

## Seeking Information, Giving Information

- Requesting and offering facts and ideas about an issue.

"How long was the test equipment down?"

"The test equipment was down for 2 hours."

## Seeking and Giving Opinions

- Requesting and offering opinions about a situation or idea.

"I think it broke because maintenance was delayed 2 weeks. What is your opinion of what happened?"

## Clarifying and Elaborating

- Defining terms
- Clarifying confusion
- Adding information to increase understanding

"What that means is that we'll be over budget (annual budget, not monthly budget) by 10% which is equal to $100,000."

## Summarizing

- Reviewing ideas and issues discussed
- Synthesizing progress on an issue.

"So far, we've discussed three ideas for bringing the project back on schedule."

## Consensus Taking

- Checking to determine if the team is nearing a decision
- Asking for feedback on a possible decision.

"It sounds like the solution we're all leaning toward is to add resources. Are we ready to make that decision?"

# Recognizing Group Processes: Maintenance Behaviors

Maintenance behaviors build and maintain the team's good relationships.

## Encouraging

- Inviting the participation of group members.

> "Muriel, you've been communicating successfully with user groups. I'd like to hear what you have to say about this situation."

## Gatekeeping

- Monitoring team members' contributions by reducing the comments of more dominant members.
- Increasing the participation of less talkative team members.

> "Ira, you've made several important points. Let's hear from some other people who haven't commented yet. Bob, what are your thoughts?"

## Harmonizing

- Reducing destructive types of disagreement between individuals so that more constructive management of the problem can occur.

> "You three are feeling a lot of heat about this issue. All your ideas have merit. Let's see if you can step back and figure out a way to accommodate all your concerns and ideas."

## Active Listening

- Acknowledging another person's communication to ensure you have understood them.
- Paraphrasing what they have said.

> "So, what you're saying is that if we assign John to that task we'll be able finish 2 weeks earlier than we had planned."

## Standard Setting and Testing

- Examining the group's process orientation
- Checking to see how people feel about the way the group is working
- Raising problems and working through them.

> "Let's take a time out. How is everyone feeling about the way we're working as a team? What's working? What do we need to do differently?"

# Techniques for Leading Groups: Facilitation Skills

## Basics

- Understand the facilitator's role: A neutral person who guides the group as it works on its tasks.
- Realize that as the project manager it will be extremely difficult to remain neutral. Make your role distinctions obvious by standing when facilitating, and sitting when contributing as the project manager.
- Observe the group and try to identify its patterns regarding tasks and maintenance behaviors. Is there balance, or does one group of behaviors take precedence?
- Observe other patterns, such as who talks the most, who talks to who, and the general tone of comments. Look for behaviors, but don't make judgments or interpretations about what they might mean.
- Be aware of the messages your nonverbal behaviors may be sending to the group.
- Listen more, talk less.

## General Techniques

- Allow participants to add to the agenda at the beginning of the meeting. (Ideally, you will have distributed an agenda before the meeting.)
- Introduce the first agenda item and make a suggestion about how to work on it (e.g., review the facts, brainstorm possible causes, and evaluate solution).
- Be explicit about identifying the different processes the group is using. For example, "Now that we've reviewed the facts, let's start brainstorming some possible causes for the problem."
- Slow the group down and move them forward, as needed. Slow them down when you observe that they're making quick decision, or not giving enough consideration to the issue. Move them forward when they appear to be stuck-their energy is low or they express frustration.
- Ensure participation of all members by setting a positive and encouraging tone. positive feedback makes it easier for people to participate.
- Use gatekeeping to get input from the quieter teams members.
- When several people want to talk at the same time, choose one to go first, then name the others in the order they will talk.
- If someone is talking and a number of people raise their hands to express their desire to talk, recognize them by pointing to each one in the order you will call on them after the person is finished speaking.

# General Guidelines for Handling Disruptive Behaviors

## Accept

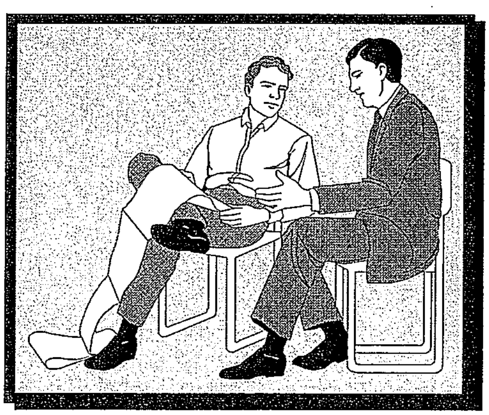
- Acknowledge the behavior.
- Describe it without evaluating it.
- Validate your perceptions.
- Use active listening.

"Dan, it seems like you don't agree with that suggestion. Is that accurate?"

## Legitimize

- After accepting the person's behavior, legitimize the worthiness of his or her underlying emotions.

"I know it can be frustrating when there's disagreement on an issue."



## Defer

- Trying to work an inflammatory issue in the meeting may be too disruptive, so deferring the issue until a break, or after the meeting may be more appropriate.

> "Let's see if we can address your concerns as we move forward on the issue. If we can't talk, let's talk about it during the next break."

## Graduated Response

- Reacting to someone who exhibits disruptive behaviors should be done gradually. Begin with the most subtle and least threatening approach. If that doesn't work, be slightly more direct. The next step would be to talk to the person individually at a break.

# *Handling Disruptive Behaviors*

| Description | How to Handle |
|---|---|
| Chronically arrives late; stops the meeting to get caught up | • Don't confront in the meeting.<br>• Ask off-line what you can do to make the meetings worth their coming on time.<br>• Assign them a role; e.g., recorder.<br>• Start meetings on time; don't wait for them!<br>• If they still come in late, don't stop to update them- just acknowledge their arrival with a quick hello. |
| Chronically leaves meetings before they're over. | • Don't confront in the meeting.<br>• Ask why-maybe you're not leading the meeting in a worthwhile manner.<br>• When the meeting starts, ask people if they can stay until the end. |
| Criticizes just about everything that is suggested. | • Suggest that the group use an operating agreement of not evaluating statements until everyone has voiced his or her ideas.<br>• Use the agreement to handle anyone who breaks it. |
| Disagrees nonverbally in an obvious, theatrical manner. | • They may not be aware of their behavior.<br>• Tag the behavior and check out your perceptions.<br>• If necessary, talk with them off-line. |
| Carries on side conversations while you or another participant is talking. | • Walk up and stand close by them.<br>• Ask that only one person in the room talk at a time. |

| Description | How to Handle |
|---|---|
| Brings up the point or issue over and over. | • Record the issue on a flipchart to show it's been heard and noted.<br>• Give them a 3-minute forum to talk the issue out. Explicitly state that you want them to let go of the issue when they're finished talking about it, so they can be free to move forward with the rest of the group. |
| Dominates the meeting; talks much more than others, and sometimes more loudly. | • Move physically closer to them and maintain eye contact. Once they stop talking, shift your attention to someone or something else.<br>• If necessary, talk with them outside of the meeting. |
| Makes personal attacks on another person. | • Protect the attacked person without attacking the attacker.<br>• Refocus the meeting's objective; you are there to work on issues, not people's personal concerns. |
| Comes and goes at the meeting; leaves to take phone calls or handle an emergency; often a key person at a management level. | • Talk to the person before the meeting.<br>• Bring to their attention how their behavior disrupts the meeting and wastes other people's time.<br>• Get them to agree to not be interrupted during the meeting.<br>• Hold the meeting away from their office area. |
| Talks before others are finished; cuts people off. | • May not be a rude person-just impatient or excited.<br>• Be a traffic cop. Hold up the interrupter and ask him or her to let the other person finish talking.<br>• Discuss after the meeting, if necessary. |