

project planning and management series

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ACKNOWLEDGEMENT

The Project Planning and Management Series consists of a set of manuals and associated modules presenting practical approaches, tools and techniques for project planning and management. (See list on back cover). A product of the Government of Jamaica/USAID National Planning Project (1976-1980), the series was developed by the Project Development Resource Team (PDRT) of PAMCO for use in "action-training" workshops and reflects extensive experience in training and project development. All present PDRT members are contributing authors and have worked together in writing, revising and publishing the series. Special credits are due to Dr. Marilyn Kettering for design and development of the series; Dr. Bruce Brooks for writing final versions of many modules; Mrs. Marjorie Humphreys for assuming primary editing and production responsibility and for organizing draft papers into more useful materials; Mr. Lascelles Dixon, head of PDRT since 1979, for designing the cover and improving many of the illustrations; and Mrs. Christine Hinds and Miss Linette Johnson for typing the drafts and final manuscripts. Any comments on the series and its usefulness are welcome.

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MODULE 10

MILESTONE DESCRIPTION CHARTS
Bruce Brooks & Herlyn Kettering

- A. **PREREQUISITES:** Module 3: Work Breakdown Structure
 Module 4: Activity Description Sheets
 Module 7: Project Scheduling - Bar Charts
 Module 9: Project Scheduling - Network Analysis

B. **DISCUSSION:**

A Milestone Chart depicts the events that mark the end of a sequence of activities or the beginning of a subsequent sequence of activities.

Description of Milestone Charts

The Milestone Chart begins by describing the work breakdown of activities in the total project. This is accomplished by using the Work Breakdown Schedule (SEE MODULE 3 FOR DISCUSSION AND EXAMPLE OF THIS TOOL). The time required to complete each activity is estimated considering the resources available and the required specifications for completion of each activity (SEE ILLUSTRATION 1, MODULE 9 - NETWORK ANALYSIS).

When the Work Breakdown and Activities Chart, including a duration time-estimate for each activity are done the information is arranged in a bar-chart diagram (SEE MODULE 7) with the milestone symbols showing the timing and administrative status of the action required in relation to each activity. Solid colour portions of the activity breakdown bars indicate the degree of completion of each activity and the remainder of the bar (which is not solid colour) shows what is yet to be done. A dotted portion of a bar, representing an activity on the chart, is used to indicate late initiation of the activity, while early initiation on an activity that is ahead of schedule, is shown by a solid activity bar with a break in it preceding the scheduled time for the activity. Illustrations of these different milestone symbols that are used are shown in ILLUSTRATION 1.

Advantages of Milestone Charts are to:

- 1) facilitate prior planning including determining duration time for each activity and dividing the total project into specific activities;

- 2) provide the project management with a concise framework for a timely review of progress for each activity needed to complete the project on time within the planned resource base;
- 3) assign definite responsibility for monitoring and controlling the completion status of each activity throughout the life of the project;
- 4) signal the failure to finish an activity on schedule or ahead of schedule, thus, enabling the project management to take definite action, e.g., introduce additional resources, shift resources from activities ahead of schedule to those that may be lagging, or make planned budgetary changes to meet the project schedule; and
- 5) incorporate the project Work Breakdown Schedule and the Activities Breakdown Schedule into a concise and timely management tool for controlling and implementing each of the project activities.

C. PURPOSE:

Milestone Charts mark the points in time when a project manager must make important decisions, issue approvals and make authorizations relative to the project activities. They show control points during the implementation stages of the project that indicate when decisions must be made to keep the project activities moving and on target.

D. USES:

Milestones aid project managers to make timely control and implementation decisions on project activities by:

1. identifying key events or decisions in relation to the project activities;
2. permitting continuous monitoring of the progress of a sequence of activities in relation to planned checkpoints by using this tool in conjunction with Bar Charts and Network diagrams of sequenced activities; and
3. signalling the status of project activities to provide the project manager with a concise view of the project status at a specific point in the overall duration of the project up to the end of the implementation phase.

E. DEFINITIONS:

- 1) *Activity* is the lowest level of the project work breakdown structure. (SEE LEVEL 4, MODULE 3, p. 5 "WORK BREAKDOWN STRUCTURE").
- 2) *Project status* is the progress made on the project activity as indicated by its more significant milestone.
- 3) *Status date line* is the degree of completion of an activity at a specific point in time.
- 4) *Milestone levels* are a schedule of decisions or actions required at various administrative levels in the project work breakdown structure, e.g., project level milestones and activity level milestones. The designation of milestone levels facilitates reporting and control by concisely assigning responsibility to the project level administration and the task-level administrator.
- 5) *Milestone symbols* are the characters used to designate the administrative level and the timing for making decisions or completion of specific activities or tasks.

F. LIMITATIONS AFFECTING MILESTONE SCHEDULING:

- 1) It is difficult to break the project down into all of the activities needed to successfully complete the schedule.
- 2) Accurate duration time estimates may not be available at the planning stage.
- 3) There are some things that are uncertain or unknown to project planners at this stage in planning, e.g., the skill of the workers, the availability of the needed quantity and quality of some of the required resources, and the delays in obtaining some resources. These limitations will only be revealed as the project progresses.

G. ASSUMPTIONS: None

H. OUTPUT:

A milestone chart to be used by a project manager.

I. STEPS FOR CONSTRUCTING A MILESTONE SCHEDULE:

- STEP 1: Identify and briefly describe each activity necessary to complete the project. (SEE MODULE 4, p. 3, ACTIVITY DESCRIPTION SHEET) and arrange them in a logical sequence.
- STEP 2: Estimate the time that will be needed to complete each activity, in time-units, with consideration given to the probable availability of resources and imposed activity specifications.
- STEP 3: Draw a bar chart showing each activity duration - time plotted against the time-scale.
- STEP 4: Make a list of the Milestones associated with each of the activities arranged in the same sequence as the activities.
- STEP 5: Devise a code to show the management level of project activity decisions and reporting on the status of the activities. For example: (I) can be used to show a management level decision made completely outside the project, such as a decision made by the Ministry of Industry & Commerce, (II) can be used for project level decisions, i.e., project manager, (III) could show that the lowest management level, the Activity Manager, takes responsibility for making the decisions relative to a specific activity. An example of this kind of reporting level milestone scheduling is shown in ILLUSTRATION 3 at the end of this module. This illustration also shows the interface between activities by the use of (Δ) a vertical arrow connecting the decision on one activity on which a specific decision cannot be made until the milestone decision(s) on the previous activity has/have been made.

A management level code example is shown in ILLUSTRATION 3.

- STEP 6: Devise a code for indicating the time status of the project. An example of a code for this purpose is shown in ILLUSTRATION 1, of this module, ITEMS 2 THRU 6.

Two other useful management aids can also be shown on the MILESTONE STATUS CHART by additions to the activity bars, breaks in the activity bars, extension of the bars, or solid colour portions of the bars. These two management aids are shown by using the symbols shown in ILLUSTRATION 2 which, will give the project manager the necessary information for determining how the project is progressing relative to each of the activity milestones. These are explained as follows:

- (a) variations in the structure of the activity bars to indicate the situation in activity initiation time; and
- (b) the degree of progress toward completion of an activity in relation to the scheduled time. An example showing the use of all of these symbols, i.e., management levels, activity initiation status, and completion status, is shown in ILLUSTRATION 2 in this module.

STEP 7: Construct a Milestone Status Chart by incorporating all of the steps previously outlined. The result will be a bar chart with the symbols for the milestones appropriately placed. The milestone keys are listed on the left hand side of the chart and most activities are represented by a bar on the right hand side of the chart. Note that there are milestones without any activity bars to indicate executive and project level approval milestones.

Milestone Status Charts are only one of the tools used by project managers to implement and control a project. There are several others that should be developed in conjunction with milestone charts. The development of Project Network Diagrams (MODULE 9) requires that Bar Charts (MODULE 7) Activity Charts (MODULE 4) and Work Breakdown Charts (MODULE 3) be done beforehand. The task of construction and use of this tool will be greatly simplified if the project planners prepare these planning and control tools along with Milestone Charts.

These tools put into graphic form the project plans to show management who makes decisions, when decisions are to be made, and what the status of the project is at any point during its planning and implementation phases.

ILLUSTRATION 1.

MILESTONE SCHEDULE SYMBOLS

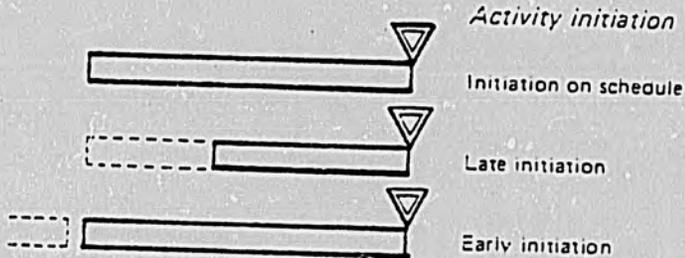
Milestones

All symbols in the following figures apply to all three levels but will be shown for the project level only.

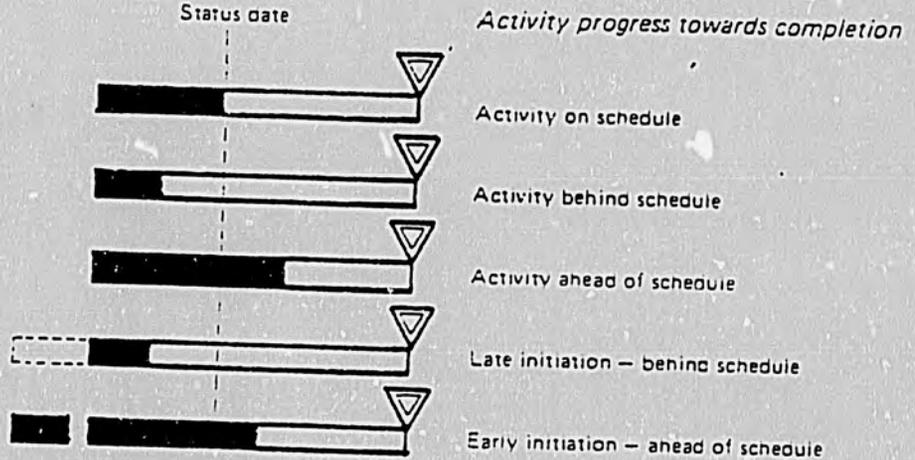
-  1. Executive level (or outside approval)
-  Project level
-  Task level
-  2. Scheduled completion date
-  3. First schedule revision
-  4. Actual completion date
-  5. Rescheduling request
- E** 6. Best estimate of completion date (from detail schedule system)

Note:
Open symbol indicates scheduled completion.
Solid, inverted symbol indicates actual completion.

Activity bars



Status date

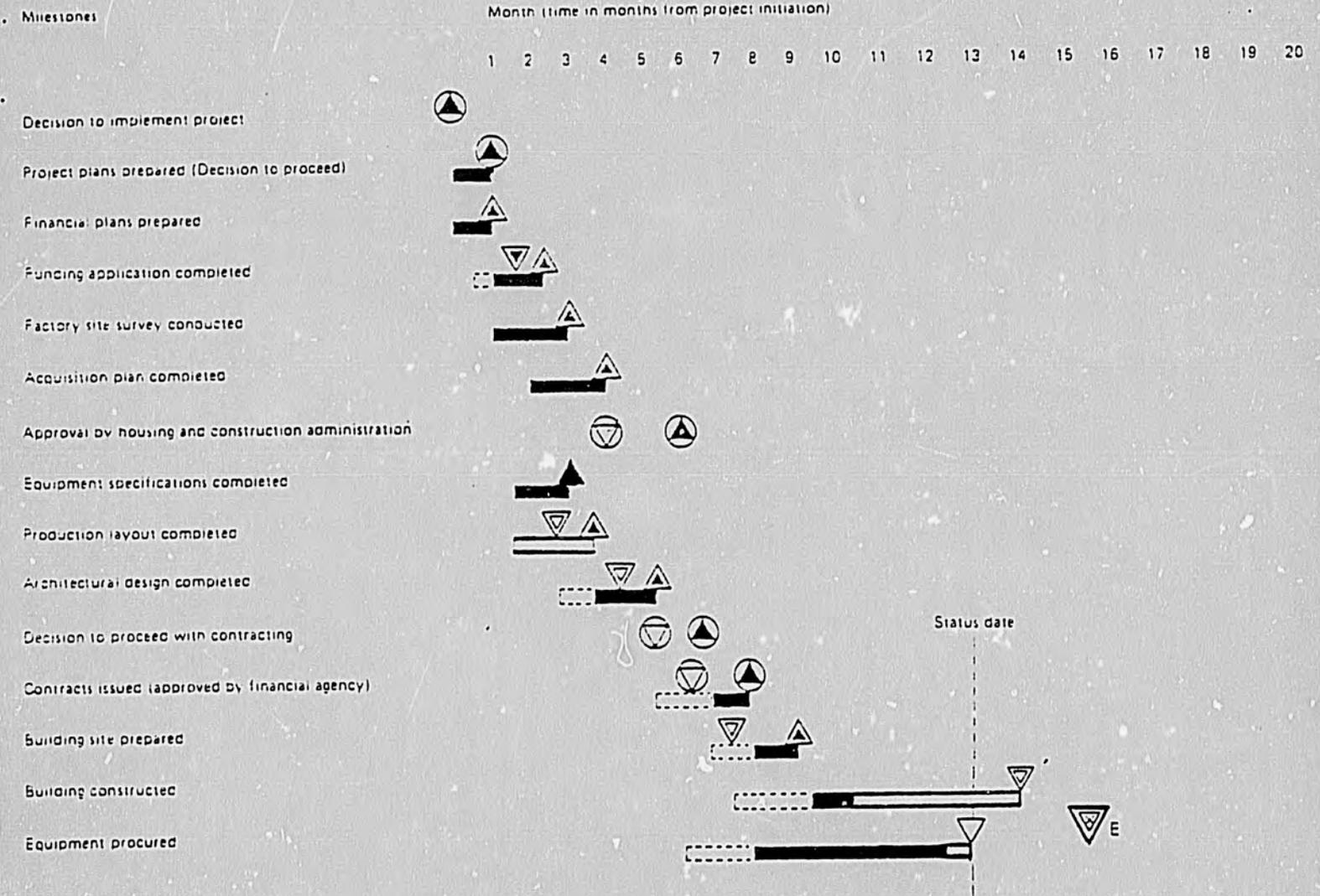


Source: Illustrations 1, 2 and 3 in this Appendix were taken from "The Initiation and Implementation of Industrial Project in Developing Countries, A Systematic Approach. United Nations Publication ID/146, 1975., pp. 23, 40 & 41". Minor changes were made in the Titles of the Tables.

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ILLUSTRATION 2.

EXAMPLE OF MILESTONE STATUS CHART



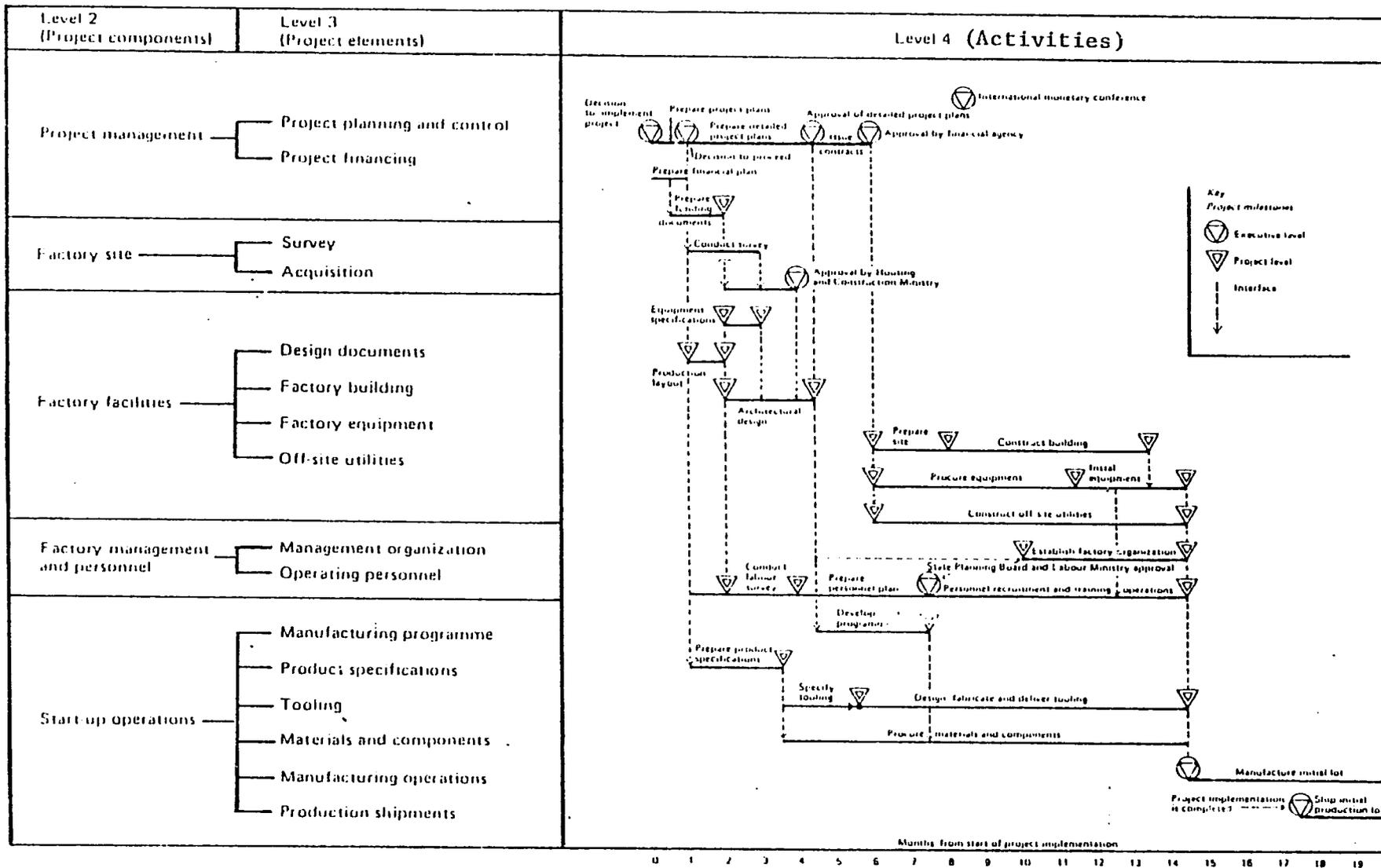
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ILLUSTRATION 3.

PAMCO, PDRT
Resource
Material

PROJECT PLAN AND MILESTONE SCHEDULE

Best Available Document



Project Planning and Management Series.

MANUAL - I Planning for Project Implementation
MANUAL - P Project Planning
MANUAL - M Project Management
MANUAL - PF Pioneer Farm Implementation Planning

MODULES

1. Defining Project Objectives (Objective Trees)
2. The Logical Framework
3. Work Breakdown Structure
4. Activity Description Sheets
5. Project Organization
6. Linear Responsibility Charts
7. Project Scheduling - Bar Charts
8. Bar Charting for Project Control/Scheduling
9. Project Scheduling - Network Analysis
10. Milestones Description Charts
11. Resource Planning & Budgeting
12. The Role of PAMCO
13. Project Technology Analysis
14. Demand Analysis
15. Market Strategy Analysis
16. Project Area Analysis
17. Project Costs & Benefits
18. Project Profile
19. Financial Analysis
20. Cash Flow Analysis
21. Discounting
22. Net Present Worth Analysis
23. Cost-Benefit Analysis
24. Benefit-Cost Ratio Analysis
25. Internal Rate of Return
26. Social Analysis of a Project
27. Economic Analysis of Projects (including Border Pricing)
28. Financial Statements & Ratios
29. Project Selection & Ratios Analysis
30. Brainstorming
31. Decision-making System for Projects
32. Project Institutional Environmental Analysis
33. Ecological Analysis for Projects
34. Introduction to Contracts, Jamaican Contract Documents & Tendering Procedures
35. Selection & Use of Consultants
36. Project Documents for Planning & Implementation
37. Report Writing for Projects
38. Project Files
39. Formats for Pre-Feasibility & Feasibility Studies
40. Motivation of Employees and Personnel Evaluation
41. Design of a Project Management Control System
42. Evaluating & Forecasting Project Progress & Performance
43. Project Termination
44. Introduction to Lending Agencies
45. Organizing and Conducting Conference Meetings
46. Withdrawal of and Accounting for Loan Funds in the Financing of Projects