

INTERACTIVE PROJECT ANALYSIS AND CONTROL SYSTEM

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BACKGROUND

Network Analysis is one of the oldest computer applications particularly in the management science field. Over the past twenty five years a large number of packages have been developed for large mainframe computers. These packages were extensively modified to include new facilities as the technique grew more sophisticated. As a result of this project engineers either had to make a considerable investment in understanding how to use these systems or be assisted by a specially trained operator. These systems were also designed for batch processing and although interactive front-ends were added they were mainly simple file editors.

With the advent of large scale time-sharing systems new packages were developed with specific interactive capabilities. However, it has proved difficult to control the cost of project management using these systems. However the same benefits may be achieved by using a suitable package on an in-house mini-computer with the advantage of being able to control the cost.

The major requirements for such a package is that it should be easily usable directly by the project engineers, at the same time providing enough facilities to realistically simulate the project environment.

INTRODUCTION

Interactive Project Analysis and Control System is an on-line package for planning and control of a project written in FORTRAN and designed to operate in a mini-computer time-shared environment.

It is derived from a package called ACSPERT which was developed in 1971 to provide interactive PERT/CPA facilities via a time-sharing bureau. This package has been in operation since 1972 and has been extensively upgraded to meet the requirements of a number of large users. Consequently IPACS derives the benefit of considerable experience of interactive network analysis.

ACSPERT main features are ease of use and efficiency of operation. These features have been retained in IPACS but considerable enhancements have been made the project control area. IPACS provides sufficiently detailed facilities to allow it to control individual resources to the nearest manhour.

IPACS has been developed in a modular open-ended format. This means that new facilities and extra options in existing facilities may be added with the minimum disruption. The file layouts have been designed to record most detailed information but the program is written so that extra information may be easily stored.

There are no absolute limits on the size of network that may be analysed, this being dependant on the amount of memory available. On a 64K byte mini-computer with a time-shared operating system it is designed to handle networks between 3000 - 4000 activities.

FEATURES

- * Free format input with default values for all items
- * Activities with multiple (complex) resources
- * Imposed milestones
- * Holidays
- * Responsibility codes and costs
- * Resource man-hours/week and costs
- * Interactive analysis of dates
- * Sub-networks
- * Hammock activities for overheads
- * The Report generator has control facilities
 - to select, group and sort activities
 - to specified special headings and non-standard time periods
- * The Report generator produces the following planning reports:-
 - Time Analysis
 - Bar Chart
 - Resource Analysis (tabular/histogram)
 - Cost Analysis
 - Event/Milestone Report

Control Features

- * Both the original plan (budget) and the actual implementation may be stored
- * The Field Progress report shows the actual and expected progress over the reporting period
- * Only exceptions from the forecast progress need be input via the progress commands to up-date the project
- * The management cost report shows actual against budgeted progress over the reporting period
- * Resource and cost reports show actual and projected actual against budget

SYSTEM OVERVIEW

IPACS provides a system for maintaining a database on a project. The database is contained in two separate files. Firstly the Project Network Details (PND) which contains an entry for each activity. Secondly the Project Reference details which records all other information e.g. titles, milestones, holidays, resources, responsibility codes, costings, etc.

A new project is initially set up by using the NEW command. This will ask for some reference details and a specification of each activity. After a new project is established HOLIDAYS and MILESTONES may be entered and RESOURCE and RESPONSIBILITY CODE profiles defined. These commands also provide facilities for editing and listing all these details.

The network data may be subsequently EDITED where there are a set of facilities for adding/overwriting activities, modifying individual fields and listing selected activities based on criteria about individual fields. Activities may also be entered as SUB-NETWORKS from a library. This means that standard tasks need not be redefined each time they occur.

A project may be ANALYSED to establish the earliest and latest dates for each activity taking into consideration imposed milestones and holidays. All activities are considered to start at this earliest date unless they are SLIPPED back.

Once a time schedule has been established for a project then a series of reports may be produced. These show the time schedule of the project in clear tabular form (TIME ANALYSIS) or in graphical form (BAR CHART). The resource requirements (RESANAL) and costs (COSTANAL) can be shown in tabular or histogram form. An EVENT (or Milestone) report shows key dates. Each report may be controlled as to which activities should be analysed, the sequence and grouping of the activities, the dates covered, and special formatting requirements.

The initial analysis of the project is the planning and evaluation stage. Once a plan for the project has been finalised then the updating mode is changed to ACTUAL. This preserves the initial plan as a budget against which to measure the actual progress of the project.

Updating and monitoring the project is done on a reporting cycle. Firstly a Field Progress Report is produced showing for all current activities the actual and forecast progress up to the reporting date. This report is used on an exception basis, only differences from the forecast need be recorded by the field supervisors. These differences are entered via the PROGRESS command which automatically progresses all other activities in line with the forecast. All the same time as the project is progressed, a Management Cost Report is produced showing the actual progress compared with the budget. At this time the next FPR can be produced which starts the next loop of the reporting cycle.