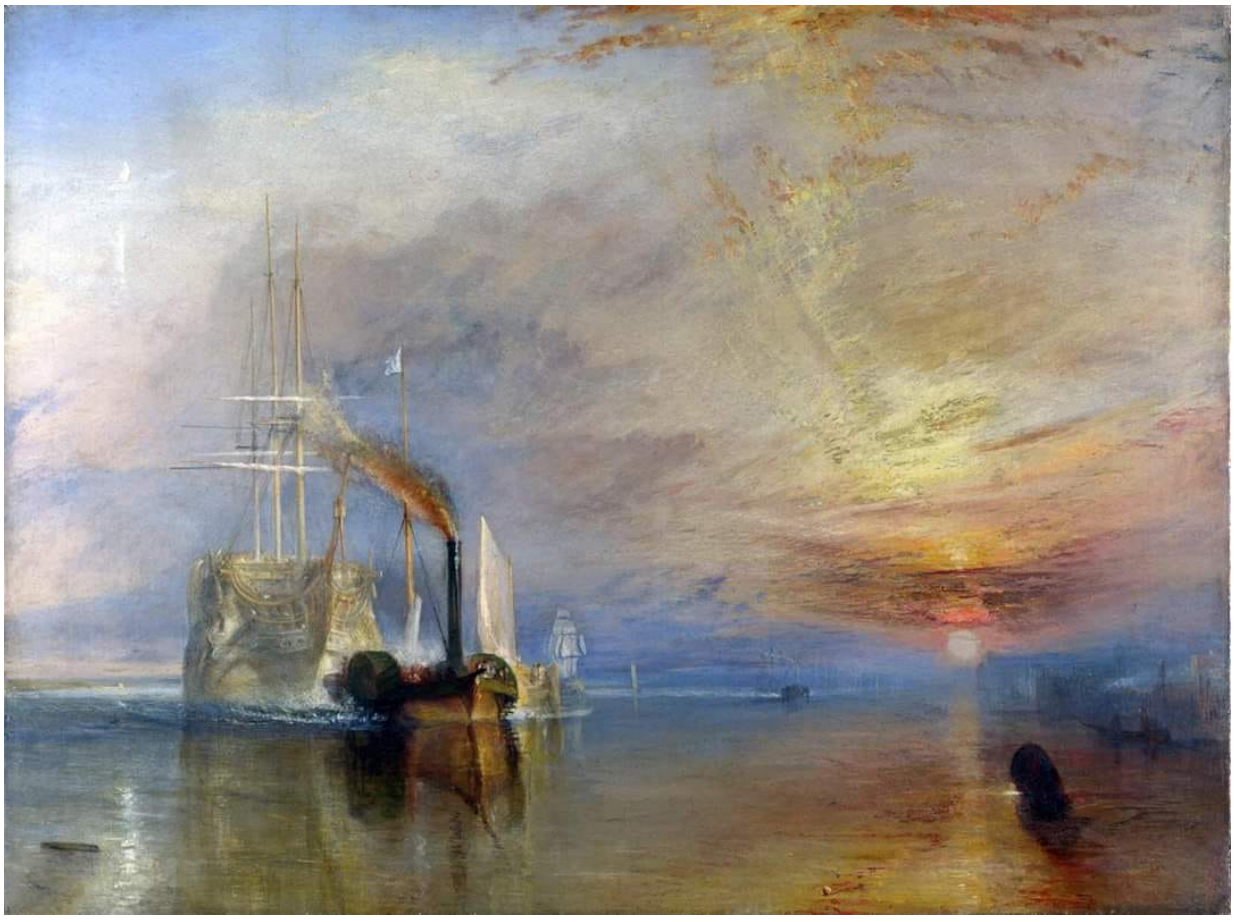
Earned Value Management – Early Computers

Place Holder – Full paper will be uploaded after publication

Introduction

The use of mainframe computers in the 1960s was integral to the development of critical path scheduling and Earned Value Management. This paper will look at some of the earliest developments.

Extracts from various manuals are copied below as a starting point (but there's a lot of research to do).



The full paper is on its way.

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First Edition ..... January 1966

Technical Publication 3337/5

Issued by Technical Publications Group of
Education and Technical Services Division
International Computers and Tabulators Limited
Head Office: I.C.T. House, Putney, London S.W.15
and Printed in Great Britain by
Printing and Stationery Department, Letchworth, Hertfordshire

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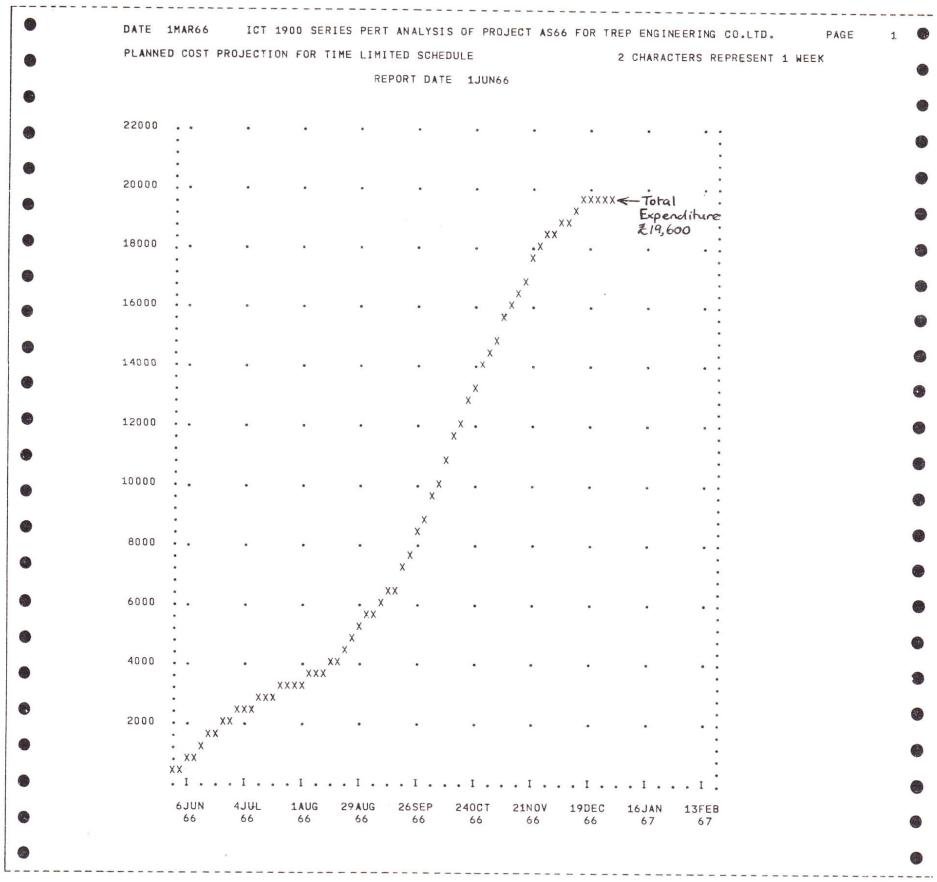
COST ANALYSIS

Various types of Cost Output Summaries are available and these can be related to any of the schedul obtainable for Time and Resource analyses. The outputs are available in both numeric and graphic form at the user's discretion. The printout below shows the planned cost projection for the Time Li schedule. The user can specify both the scale and time period for any projection required.



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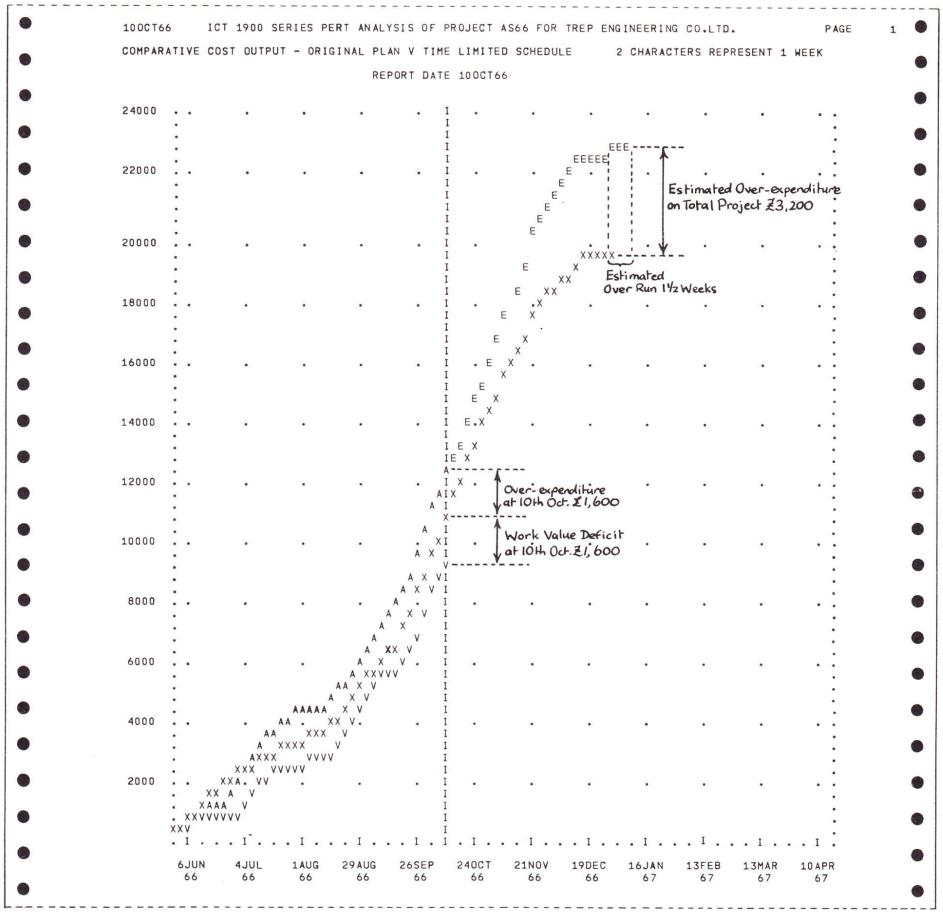
The following diagram shows the cost projection of the specimen project as at the 10th October 1966. The actual costs incurred as well as the value of work performed can be compared with the planned cost. Based upon performance to date the projection has been extended to show the revised estimate of total expenditure.



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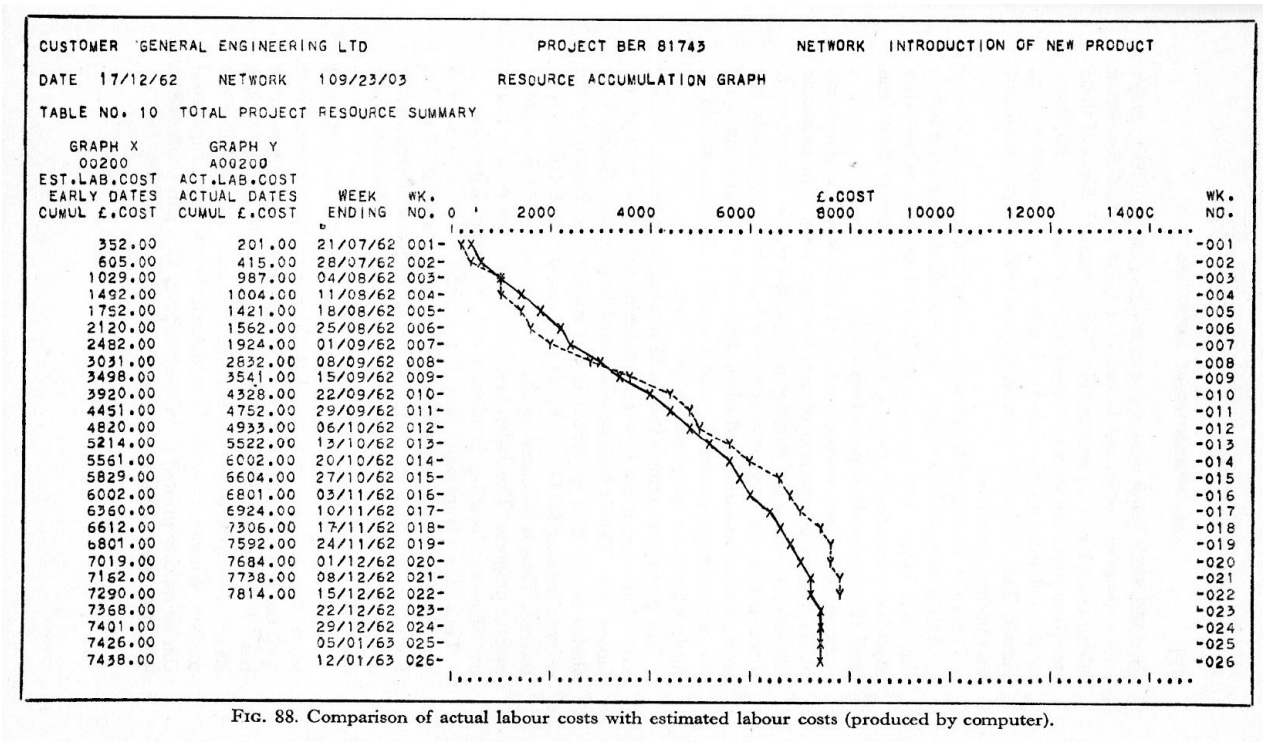

CUSTOMER GENERAL ENGINEERING LTD — PROJECT BER 81743 — NETWORK INTRODUCTION OF NEW PRODUCT

DATE 17/12/62 NETWORK 109/23/03 — RESOURCE ACCUMULATION GRAPH

TABLE NO. 10 TOTAL PROJECT RESOURCE SUMMARY

GRAPH X 00200 EST.LAB.COST EARLY DATES CUMUL £.COST	GRAPH Y A00200 ACT.LAB.COST ACTUAL DATES CUMUL £.COST	WEEK ENDING	WK. NO.
352.00	201.00	21/07/62	001
605.00	415.00	28/07/62	002
1029.00	987.00	04/08/62	003
1492.00	1004.00	11/08/62	004
1752.00	1421.00	18/08/62	005
2120.00	1562.00	25/08/62	006
2482.00	1924.00	01/09/62	007
3031.00	2832.00	08/09/62	008
3498.00	3541.00	15/09/62	009
3920.00	4328.00	22/09/62	010
4451.00	4752.00	29/09/62	011
4820.00	4933.00	06/10/62	012
5214.00	5522.00	13/10/62	013
5561.00	6002.00	20/10/62	014
5829.00	6604.00	27/10/62	015
6002.00	6801.00	03/11/62	016
6360.00	6924.00	10/11/62	017
6612.00	7306.00	17/11/62	018
6801.00	7592.00	24/11/62	019
7019.00	7684.00	01/12/62	020
7162.00	7738.00	08/12/62	021
7290.00	7814.00	15/12/62	022
7368.00		22/12/62	023
7401.00		29/12/62	024
7426.00		05/01/63	025
7438.00		12/01/63	026

FIG. 88. Comparison of actual labour costs with estimated labour costs (produced by computer).

ICL 1500 PERT 1962

This is from Sam Woodgate's book, showing the fact that ICT1300 PERT also ran Cost Control, we did a lot of scenarios for Earned value analysis as it was known using the 1300 for the new 1900 PERT as it had then a better resource scheduling algorithm than I had in ICT1500 PERT

H Sam Woodgate was drafting his book "Planning by Network" which he started back in late 1961 and printed first edition in April 1964

I with two other basically wrote the book under his direction, we drew all the diagrams and we indicated PERT /COST USAF etc, as ICT was heavily involved in the UK Government's direction for project Management, Cost Controls and Scheduling

The terms shown in the first print draft of 1900 PERT Manual back in mid-1963 was the culmination of a whole plethora of meetings from 1961 through to end April 1963, at ORS, when ICT produced the draft from which I just scanned the page, section 5.2

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Section 5

PROJECT COST CONTROL

GENERAL CONSIDERATIONS 5.1

The subject of cost control is complex, controversial and susceptible to many forms of application and interpretation. The facilities in the program aim essentially at providing a type of control that is directly linked with a network and which by its nature must be considered as a method of direct costing; but special cost-oriented activities (called Hammock activities) may be used to include overhead costs and to provide a medium for indirect cost measurement.

DEFINITION OF COST REQUIREMENT 5.2

To obtain a realistic cost picture of the current state of a project, it is necessary to measure:

(a) Original *planned* expenditure
(b) Actual expenditure to date
(c) Actual *value* of work done to date
(d) Future expenditure

both for the project as a whole, and also for subdivisions of a project that may be as small as individual activities, but which more usually will be groups of activities divided by reference to their cost codes.

To enable the computer to calculate these figures it is necessary to input:

1 *Time* progress data, such as activity start or completion dates, and the time to completion for activities in progress.

2 *Cost* progress data, which is the actual cost of completed or partially completed activities, including Hammock activities, which are explained more fully in Section 5.4.

PLANNED COST AND ACTUAL VALUE 5.3

The planned cost for an activity not yet performed, as well as the actual value of a completed or partially completed activity, are computed by extending the activity's required resources by the appropriate resource unit costs. These are input for a project using formats identical to those for specifying resource availabilities described in Section 4.2.

It is the aggregation of these activity costs and values which forms the totals for the headings listed in Section 5.2.

HAMMOCK ACTIVITIES 5.4

In practice, most users will find little difficulty in assigning costs to resources to obtain the planned cost and the actual value figures, but the factual measurement of cost incurred, activity by activity,

ICL 1900 PERT 1963

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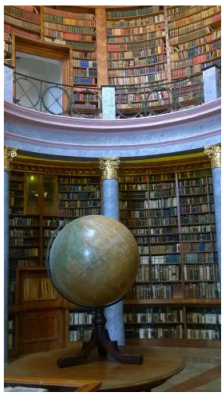

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