

Note on Project Management

The “Guide to the Project Management Body of Knowledge” (PMBOK Guide)¹ published by the Project Management Institute defines projects and project management as follows:

- A project is a temporary endeavor undertaken to create a unique product, service or result.
- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.

Examples of projects include construction of new buildings, the installation of a new computer system, and the development and market introduction of a new product. Projects typically include an extensive set of activities that must be done in a prescribed order. For example, the foundation of a house must be laid before the walls are erected. When the entire set of activities is complete, the project is complete. Many project management techniques have been developed to ensure a high-quality project is completed within the constraints of activity precedence, time scheduling, and cost budgeting. This note concentrates on the program Evaluation and Review Technique (PERT) and Critical Path Method (CPM) techniques of project management.

History of PERT

In the late 1950s, the US Navy faced a formidable organizational task in the development of Polaris, the first weapons system capable of launching a long-range ballistic missile from a submerged submarine. The project was characterized by research and development tasks whose durations were uncertain but which had to be performed under the severe time pressures of an arms race (compare this with R&D races in industry to develop new projects). A new method was invented to manage this project, called PERT. PERT concentrated on scheduling in an uncertain environment.

About the same time, a similar method for managing projects was developed by the DuPont chemical company jointly with Remington-Rand to manage equipment maintenance. CPM assumed activity times were known with certainty, and it concentrated more on trade-offs between cost and project completion time, but the essential ideas were similar to PERT. Since that time, PERT and CPM have each added features useful in the other and are now virtually indistinguishable. This note will use the acronym PERT to describe this hybrid method.

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