

Critical path analysis

Critical Path Analysis (CPA) is a management tool designed to ensure the most efficient scheduling of any project. Suppose that a minor building project consists of the following activities:

- * Activity A....1 day essential before any other work can begin
- * Activity B....4 days must follow A and be complete by the end of the project
- * Activity C....3 days must follow A and be complete before E starts
- * Activity D....5 days must follow A and be complete before E starts
- * Activity E....2 days can be undertaken after D and C end

These conditions are illustrated as a simple network diagram. The shortest time in which the project can be completed is 8 days since A must be finished before D starts and D must be finished before E starts. This is called the critical path (indicated II) because any delay in completing any of these activities will delay completion of the whole project. This is the sense in which these activities are critical.

Activity B is not critical since it will take 4 days but has 7 days available for its completion. Similarly, Activity C will take 3 days but has 5 days available for its completion. The spare days are called 'float'. Activity B has 3 days float and Activity C has 2 days float. Critical activities have no float.

Real projects have far more complex activity networks and are analysed using specialist software. However, the principle is exactly the same. Use of CPA enables project managers to keep attention focussed on critical activities and to co-ordinate more efficiently the application of resources to the project.

CPA can also be useful in everyday management and decision-making. Recognising 'critical decisions' and critical activities in any business process is a powerful tool in prioritising work.