

## Developing Project Plans – Explanation and Instructions

On the basis of the Statements of Opportunity, EOL management has selected a subset and has encouraged submission of developed plans by the submitters. *At the plan-submission stage*, the submitters are responsible for selecting tentative members of the teams and obtaining agreement to participate from them and their supervisors and facility managers. The encouragement to submit a developed plan is not a commitment from EOL to support, but rather an assessment that the probability of support is high enough to justify the effort of developing a more detailed plan that can be the basis for resource allocation.

The Project Plan should provide enough information for EOL management to determine the importance of the project (to assess priority), the resources that would be required, the likelihood of success, etc. This plan should be developed by the team likely to work on the project in order to incorporate their input and buy-in. The Project Plan, if accepted (perhaps after modification), becomes the project definition and therefore is a reference for both the project team and EOL management regarding expectations. The Project Plan should be detailed enough to become a functional definition for the project and should provide information on the project's match to capabilities and its broader impacts.

The Project Plan should not overly emphasize scientific justification, except to repeat the information in the Project Overview. The primary purpose is not to justify the project. Instead, the Plan's primary function is to serve as a detailed project implementation plan that can be used to guide the conduct of the project. Within its limit (no more than 10 pages, 12" typeface, margins no less than 1"), the Plan should follow the accompanying Outline format and should contain this information:

1. Information from the Statement of Opportunity, developed more technically and specifically. For example, the project objectives should be used to define specific milestones to be accomplished, and a set of functional specifications for the final product should be included.
2. A clear statement of scope, developed from the Statement of Opportunity but now more specific. This should provide an adequate basis for determining if and when the project is complete and if it has accomplished its goal.
3. A Project Network Diagram, which is a key part of the Project Plan and should be developed by the project team, usually via a project-planning meeting. To construct this diagram, the project should be broken into "activities" that can be conducted independently (i.e., a "Work Breakdown Structure" (WBS) is needed). These plans therefore differ from usual science proposals also in that a much greater level of detail is needed. The justification for this is the need to avoid sub-critical allocation of resources that leads to project failure. The WBS also provides the information needed for later sections of the plan, e.g., for resource needs. The specific products expected from generating the WBS and constructing the network diagram are:
  - A. Definition of independent activities, each of which has defined resource needs, duration, and result. (Further breakdown of activities into "work packages" or plans for accomplishing the activities is not required at this stage and can be developed after

project approval.) The work breakdown could start from the project objectives, and continue until the lowest-level components have these characteristics:

- (i) Each is independent in the sense that, once started, it can proceed to completion without dependence on other activities. The activity description should specify what the prerequisites are to starting the activity (e.g., completion of other activities whose products are needed by this one).
  - (ii) Each should have a starting event to define its beginning (even if this is, for the first activities, agreement to initiate the project).
  - (iii) Each should have an end event and a result, such that it can be considered complete upon delivery of that result.
  - (iv) Each should have an estimated duration, and that should be not more than a month and preferably two weeks or less.\*
  - (v) Each should have estimates of resources needed (including people's time).
- B.** Estimates of resources required, by activity as well as for the project, determined from the WBS.
- C.** Definition of the "theoretical" schedule (with assumptions as required), obtained by assembling the activities identified in the WBS as a network diagram (or "PERT" chart) with a time line.
4. A project schedule, justified by analysis of the network diagram, but tempered by contingency considerations.
  5. Resource needs, justified by analysis of the WBS. This section should include identification of key people when they are required for the success of the project.
  6. A management plan for the project. Who will assume overall responsibility, what assistance will that person need, how will progress be monitored, who will track the budget and resources?
  7. A section on risk analysis: What are the primary risks, how has planning anticipated them, and what management steps will be needed to control them?

\* For items involving a "wait", as for delivery of orders, separate the ordering and the use of the component into different activities so that a "wait" can be built into the schedule between them.