Rolling Wave Planning

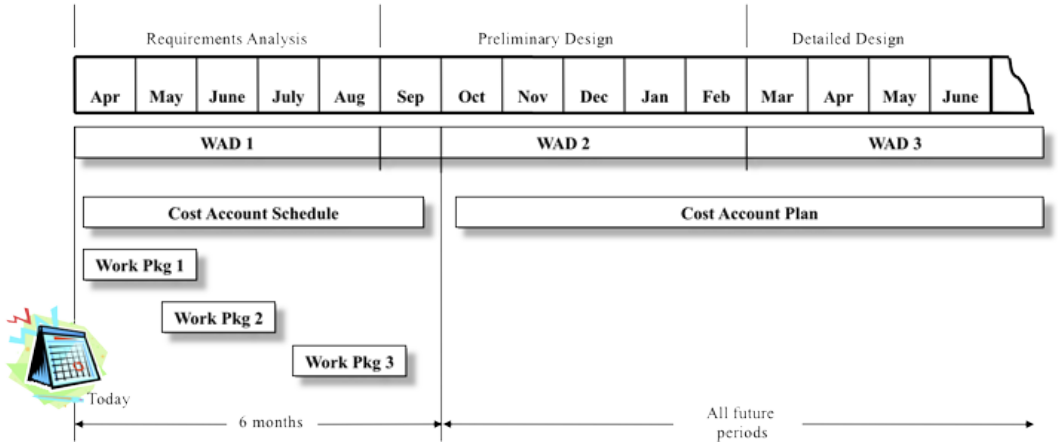
Rolling Wave Planning is a method of carefully budgeting to ensure the success of cost and schedule management. Long-term activities are difficult to plan since there are many variables. Thus, we plan in rolling waves or "just in time planning." Project plans are initially defined at a high level. As development progresses, detailed planning for each phase is performed. The detailed planning for the next phase of the life cycle is completed just before the start of that phase aptly named "just in time planning." This ensures maximum accuracy in budget planning.

Methods of Applying Rolling Wave Planning for Software Engineering Projects

Now that WAD and Rolling Wave have been introduced to you, we will begin exploring methods of applying them.

Establish the WADs for Each Phase in the Lifecycle

This approach takes advantage of the natural phase subdivisions and corresponding intermediate milestones of the software project and provides the best, objective work in progress measure. The image below depicts the WAD Lifecycle.



Each WAD defines the tasks to be performed and the budget allocation. If the WAD covers a period greater than some designated period, usually six (6) months, a Cost Account Plan (CAP), or high-level schedule is defined. The CAP allocates the hours for the tasks defined in the WAD and shows how contract hours are allocated over the entire time covered by the WAD. The CAS is a detailed schedule of the work to occur within the next few (usually six) months.

The WAD originator (Program Manager), Financial Analyst, and WAD manager, typically the software supervisor, agree to and sign the WAD.

Perform the CAP to Cost Account Schedule (CAS) Conversion

Budget allotments allocated in the CAP are distributed among detailed work packages defined in the CAS (the detailed schedule) for the upcoming phase.

Budgets from multiple planning packages may be combined and redistributed and the work packages may be re-planned. This activity occurs as close to the next software phase as possible, but not later than 30 days before, and takes into account the most current program information. To achieve a sufficient level of accuracy, the planning cycle for each phase must not begin too early.

A change to the total budget allocated to the planning packages and work packages require a formal WAD revision.

The WAD Manager performs this formal process with Program Management and the Financial Analyst's oversight.

Develop Detailed Plans for Each Phase

The traditional software development process model provides the basis for consistent phase and milestone definitions required to define the work packages for each CAS.

Suggested Lifecycle Phases

- System Requirements Analysis
- System Design
- Software Requirements Analysis
- Preliminary Design
- Detailed Design
- Code and Computer Software Unit (CSU) Testing
- CSU Integration and Testing (I&T)
- Computer Software Configuration Item (CSCI) Testing
- System Integration and Testing

You may combine phases as required by your customer or tailor as appropriate.

Define the Progress Points or Milestones by Phase

Each software development phase has well-defined activities and measurable progress points that can be used to monitor, measure, and document progress.

Refer to the Milestones by Phase document for descriptions of the nine (9) phases, 42 recommended work package tasks, and 146 recommended milestones for each phase.

Milestones by Work Package and Phase (PDF attached to the same item as this PDF in Blackboard).

Rolling Wave Planning Example

Suppose the Program Manager / System Engineering Manager funds the Software Engineering Organization to support System Requirements Analysis phase. This activity is scheduled for four (4) months, September 1 through December 31. The software organization is required to provide two senior software engineers (one of which is the supervisor) at the start of the task and jump to four total software engineers at the start of the second month.

The available hours/month on the task is specified as 150 hours/month. This figure is derived as follows:

Hours in the year (52 weeks x 40 hours/week)	2080
Less average Vacation hours / person (100 hours/year) 1980	1980
Less average Holiday hours / person (80 hours/year) 1900	1900
Less average Sick leave hours / person (100 hours/year) 1800	1800
1800 hours = 12 months (m) x 150 hours/month (h/m)	

The software manager has a WAD which contains 2100 hours and can be defined as follows:

2100 h = [2 senior software engineers x (4 m x 150 h/m)] + [2 more software engineers x (3 m x 150 h/m)]

Or 2100 h = [1 m x (2 senior software engineers x 150 h/m)] + [3 m x (4 software engineers x 150 h/m)]

With this information, the software supervisor develops the following CAS:

Cost Account Schedule

Work Package Tasks & Milestones	Month 1 March	Month 2 April	Month 3 May	Month 4 June
1. Software engineering support for SSS				
1.1 SSS Internal draft	200			
1.2 Revision for preliminary SSS	100			
2. SRR preparation & participation				
2.1 Prepare draft SRR data package		450		
2.2 Internal review of draft SRR data pkg		150		
2.3 SRR data pkg revised for CDRL submit			500	
2.4 Conduct SRR (3 days)			100	
2.5 Respond to SRR action items				600
Total:	300	600	600	600