

Rolling Wave Project Planning

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Rolling Wave Project Planning (RWPP) is a phased iterative approach to project development, applicable to new product development, information systems and other technical development environments. It is an excellent formal project development approach for inventive work. When done well, it balances structured process with flexibility. It is appropriate for project life cycle models/methods that allow incremental development (spiral, evolutionary prototyping, etc.).

Gaps in Project Performance

Many organizations have a disconnect between project planning and execution. Over the past two years, I have asked over one thousand project practitioners “why do projects fail?” and collected the data. In every session, the practitioners cite poor planning. Exhibit 1 lists general themes relating to planning, execution, and control (they are three of the five process groups described in the *PMBOK Guide*) and suggests large gaps in project performance.

Planning is the filter between the complex, dynamic, and risky “open” systems of the organization environment with the “closed” project system. Project planning must provide structure, while preserving flexibility, especially for those projects involving inventive work. In many situations, it is not possible to determine precise answers and create detailed plans. We need ways to “sense and respond” to change and emergent innovations. In this environment, project planning must balance emphasis on project goals with capability (existing resources and knowledge).

Planning Assumptions and Inventive Projects

Before selecting the RWPP strategy, the project planning team should consider organizational climate and basic planning assumptions. Project planners hold many assumptions, or are influenced by organizational behaviors that reward certain assumptions. One common set is:

- Assumption No. 1: The best way to solve problems is to break into sub problems and solve them.

- Assumption No. 2: Planning and doing are separate project functions.
- Assumption No. 3: The future is predictable; a plan prescribes a course of action.
- Assumption No. 4: Projects are simple. (In-depth probing reveals that the performance gaps identified in Exhibit 1 originates with over-simplified assumptions held by project planners.)

These assumptions lead to linear, step-by-step problem solving approaches. Certainly, there are many projects that are compact, well defined and modular in nature (thus, the assumptions are valid). However, if the assumptions are false, then the project manager should consider RWPP.

Inventive work involves strong elements of discovery, and requirements tend to emerge and evolve as the project takes shape. For example, many efforts involving prototyping or demonstration projects have the purpose of identifying customer requirements in a cycle of build-show-evaluate-modify. Early and razor-sharp project definition is difficult for inventive projects.

The RWPP Work Breakdown Structure Strategy

The work breakdown structure (WBS) is an absolutely essential technique of project management, providing a framework for all planning and execution activities. A poor WBS undermines all project planning, execution, and control work. The goal of project scope management, and the WBS, is to capture *all the work and only the work needed to produce the product of the project*.

The WBS is NOT a schedule, and is developed *before* the project team develops a timeline for the project. The WBS is a *hierarchy* of the work and does not show flow between work packages. A WBS is an input to schedule development, risk management, cost estimating, and other project management concerns.

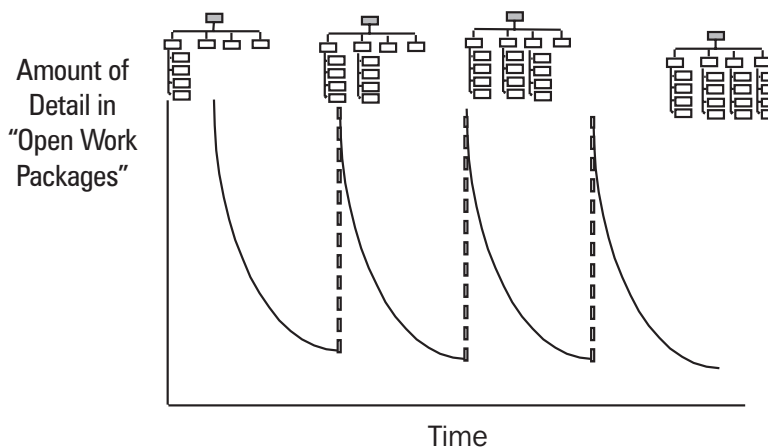
A core premise of RWPP is the use of time-phased structure at the high level of the WBS. At the end of each phase, the team develops the work for the next phase.

Exhibit 2 illustrates the evolving decomposition of work into work packages. In RWPP, planners rely on successive waves of planning performed in carefully-described discrete planning horizons.

Exhibit 1. Typical Gaps in Project Performance

Project Process	What We'd Like	What We Get
Planning	Disciplined planning and execution	Ad hoc or non existent
Executing	Good communications, managed risk Continuing commitment from all stakeholders Getting it right the first time	Heroics, rework, workarounds and scope creep
Controlling	Constant and real time assessment of status, timely response and corrective action Linear waterfall development models	No baselines Complex, iterative, spiral development

Exhibit 2. WBS Development and Management during Periodic Replanning Cycles in Rolling Wave



Applying the RWPP Approach

Before implementing RWPP, the project must perform the essentials like chartering (initiating) and project/product visions. I list the steps to RWPP and describe them in the following subsections:

1. Evaluate the development strategy with respect to product and project life cycle
2. Develop time buckets
3. High level estimating
4. Detail first WBS
5. Baseline
6. Execute first phase
7. Replan next phase.

Step One—Evaluate the nature of the product and the product development strategy. Evaluate the life cycle strategy and organizational constraints (such as mandated methodologies). Evaluate advantages and disadvantages and determine if Rolling Wave is the most appropriate approach.

Step Two—Develop criteria for planning horizons, to include total number of horizons, and duration for each horizon. We also call these planning horizons “time buckets.”

As an analogy, think about navigating a boat across a treacherous and unknown sea. Say the horizon is twenty miles off, and you think the crossing is ninety to one hundred and ten miles long. You should stop the boat, peer

Exhibit 3. More Paradoxes Evident in RWPP

1. Control versus Flexibility (consolidated and fluid)
2. Process versus People
3. Procedures versus Principles (practice and theory)
4. Detail versus Breath (exact versus close enough)
5. Granularity versus Gestalt (holism)
6. Short-term versus Long-term
7. Here and There (the local-global problem)
8. Patience versus Urgency

off to the horizon, and rechart your course at least five times. This is the assumed total distance of the horizon divided by the distance to the horizon.

Step Three—Based on your *available* knowledge and currently valid assumptions, develop high-level cost and resource estimates for each of the planning horizons.

Do not drill down to details or attempt bottom up estimating. The team is likely to bog down in detail. I describe “chunking vision” in more detail in a later section of this paper.

Step Four—Perform this step in a concurrent planning session. Project participants develop individual work packages for the first horizon, “bottoms up.” This includes estimating task durations, resources, and cost.

Also, identify any work that might occur in the later horizons using “top down” methods. In inventive projects, requirements are progressively elaborated.

Establish a work package and fixed date for replanning for the next time horizon. Remember that work packages produce value and consume time and resources. The deliverable of the replanning work package is an updated RWPP plan. The planner can fix the date and set dependency a particular deliverable, or a trigger such as percent complete.

Step Five—Baseline your project plan with appropriate approvals from executives, sponsors, users, project manager, and participants. The baselining process should include a risk analysis before setting the baseline. Fix the triple constraint and establish management reserves.

Step Six—Executing the plan for the first phase including the replanning task.

Step Seven—Assess the project team’s learning, the needed work, and replan the next horizon of the project (go back to Step 3).

The time and cost baselines are sometimes refined. The work scope baseline (WBS) is modified to reflect the added detail.

The project team continues the cycles of planning and implementation through the project.

Chunking Vision and Maintaining Commitment

Decomposition of objectives and work is fundamental to project planning. Sometimes the “vision” is a well-articulated description of the problem, but often it is a fuzzy description of technology or solution. In RWPP, it is important to have a strategy for “managing and chunking vision.” Visible models, well-articulated requirements statements, and stakeholder involvement are a few important supporting techniques.

Maintaining energy and enthusiasm is also an important project management concern. RWPP’s participative nature provides benefits here as well, as there is a periodic emphasis on the big picture.

In one case, I had five project teams take a seemingly impossible target, and chunk the vision into a two-month time bucket, focusing on accomplishing some achievable intermediate goals, rather than the target itself. This simplification helped to avoid passive cynicism.

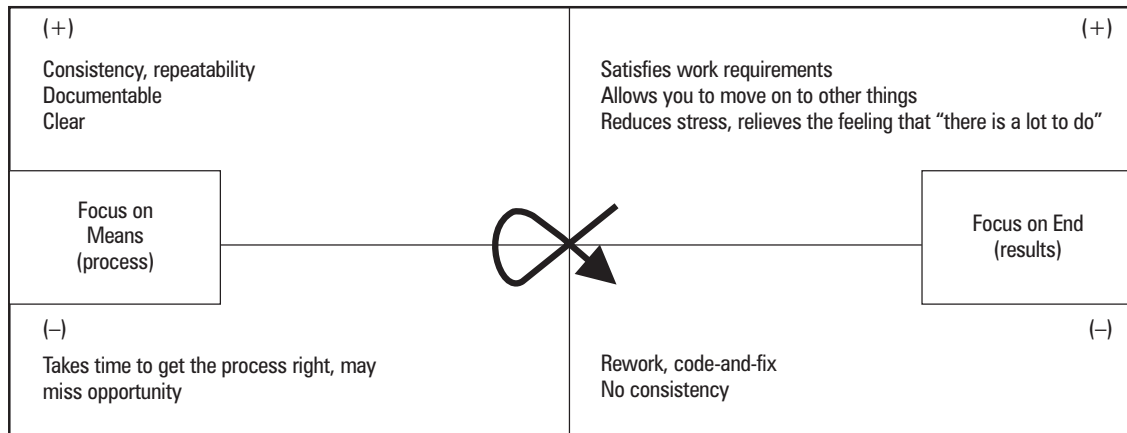
How Long Does It Take To Perform RWPP?

I have seen groups establish the initial RWPP approach in as little as one day. Of course, the quality and usefulness of the plan is in direct proportion to the amount of effort applied to the planning. Subsequent planning efforts range from several hours to several days.

The project should scale the planning effort to risk, complexity, and newness.

Most project participants are familiar with the refrain, “there’s never enough time to plan but always time to do it over.” Planning often appears overwhelming; RWPP

Exhibit 4. Polarity Map for Means-End Paradox—The curved arrow suggests the shifting areas of emphasis in a well-managed polarity.



provides a simple and useful starting point to those who shun planning because it seems overwhelming. Good project planning is what organizations need most and practice least.

Surfing the Paradoxes to Master RWPP

People will feel discomfort (individually and collectively) about simultaneously managing precise and imprecise data. In most cases, I find the discomfort is traceable to a fear of blame, and a somewhat unrealistic expectation that a “correct” plan is possible. The project manager must show a firm commitment to the planning discipline. People’s discomfort, and organizational inertia will create the tendency to skip the replanning, and move to *ad hoc* “code-like-hell” practices.

There are a number of paradoxes project and enterprise planning. A paradox is a condition that is simultaneously true. For example, quantum physics holds that energy and mass are the same thing at the subatomic level. In organizations, people must have individual identity and team identity. Two important paradoxes are described below, and additional paradoxes are listed in Exhibit 3.

- *Means (Process) versus Ends (Results)*—Our project teams need to achieve a result, but over the long term, consistent results can only come through a repeatable process. If the project is all process, then the project completes no work. On the other hand, if the project is “all task” then ad hoc and the project inconsistent results, and perpetuates cultures based on heroic efforts.

- *Knowledge (Discovery) versus Task (Problem Solving)*—This is a very common in technical disciplines, and is often a cause of conflict between scientists and engineers. Project involve work (“tasks”) that can and should be scheduled, but inventive projects involve capturing knowledge (“You can’t schedule a technological breakthrough.”)

Gaining mastery of the RWPP technique requires understanding the paradoxes. One way to understand the paradox is mapping quadrants, as illustrated for the Means-End paradox in Exhibit 4. It takes both extremes of the paradox and synthesizes that advantages and disadvantages of the poles. The arrow suggests the sequencing of concerns in managing the paradox. A “crusader” would use this map for insight to balancing process and results.

Currently, many organizations are implementing “project offices.” In many cases, those in office rigidly expect that they have the “right” method and expect others to comply. Often you will find that the “methodology police” do not like RWPP. They emphasize bureaucratic systems and procedural control. For RWPP to work, trust in the process is essential to achieving good results.

Toward More Robust Planning on the Enterprise Level—Balanced Enterprise Planning

Projects are instruments of strategy. Through projects, organizations seek to achieve their intended goals, but opportunity often bubbles up from individual projects to the enterprise level. Planning facilitates the organiza-

tional communications process and enables the capture of knowledge.

RWPP is a “strategy pump” that pushes opportunity up to executive levels for further consideration. Enterprises find many opportunities at the grass roots. This idea supports contemporary strategic leadership thought for a “democratization of planning.”

The RWPP approach is consistent with the financial allocation/budgeting process used in many companies. For example some companies use five-quarter rolling wave funding and match the selection and support of projects to current priorities and opportunities.

RWPP is also consistent with phase-gate approaches to project development, which provides off ramps or exit points for trimming the project portfolio. It recognizes that planning and the environment are not static, but dynamic driven by nature of situation.

Conclusion: Balance in the Tides-of-Change Environment

Planning and implementation skills are core project manager competencies. Excellent project managers evaluate the upsides and downsides of the strategies, and select actions that emphasize balance. Rolling wave project planning offers many advantages over conventional linear planning approaches, and is destined to become a widely used technique for inventive work.

In a tides-of-change environment, project managers must develop robust strategies to respond to dynamic environments. Just as the tides scour up the sand, rolling wave project planning pushes up risk and opportunity to create value and leverage. It is dynamic and encourages adaptive, flexible planning and implementation. It is especially good for inventive projects and those subject to changing scope. Tides are never all the way “out,” nor are they all the way “in”; they have paradoxical properties. Rolling wave project planning can help managers bring a flexible discipline to project planning.