

# The Project Management Discipline: Achieving the Five Project Success Factors

By Eric Verzuh, PMP

Most of us at one time or another will be responsible for the successful completion of a project. From a simple LAN expansion to a major systems upgrade aboard an aircraft carrier we know that the U.S. Navy relies on the successful completion of many projects to achieve mission readiness.

This article will explore the challenges of managing projects as well as provide a systematic approach for improving the success rate of all projects. As an example, we'll examine one specific project management technique you can apply to any project.

Few projects are easy. Even when the technology is proven, the requirements are clear, and the budget is sufficient we can still stumble — turning what ought to be a routine deployment or upgrade into a nail-biting nightmare. What makes delivering projects so challenging? The answer is found in the definition of project: work that is temporary and produces a unique product or service.<sup>1</sup> There are a number of challenges associated with managing work that is both temporary and unique:

- Staffing.** As the project has a start and a finish, so does the project team. The more unique the project, the greater the difficulty in assembling a team with the appropriate skill mix.

- Budgeting.** Most budget cycles are set to reflect accounting cycles. But projects are driven by other factors, and often can't wait for the next budgeting cycle. After September 11, many projects were initiated, cancelled or re-prioritized — totally out of alignment with the annual budget.

- Authority.** When politics interferes with project progress, we usually mean that the organization's authority structures aren't supporting the project. That's not surprising, given that projects often require cooperation and participation across the normal functional boundaries within the firm.

- Estimating.** We estimate new deadlines and budgets before a project can be approved. But given that estimating requires forecasting the future, these cost and schedule goals are often built on more assumptions than facts. The project team is being asked to create something unique; that means it will solve new problems and encounter unexpected obstacles. Even projects that are similar to previous efforts can be difficult to forecast because most projects contain so many variables.

- Communication.** If people are the engine of accomplishing work, communication is the heart of true productivity. Projects that require cooperative, concerted effort from temporary, cross-functional project teams, require teams to re-create basic communication channels on every project.

As challenging as it can be to manage a project, the problem is magnified for a project-based organization such as the Space and



Naval Warfare Systems Command (SPAWAR) that has hundreds of projects. Each project has its own risks, stakeholders, communication channels and resource requirements.

The good news is that the project management discipline has evolved to address the challenges of individual projects, and continues to evolve to address the problems faced by project-based organizations. This is the first article in a four-part series that will present proven techniques to increase your project's probability of success. In

this article we'll examine the five project success factors and identify specific techniques to help you build them into every project.

## A Vision of Success

Before reading further take this test: visualize the best project you have worked on. Best project usually means that it was successful in terms of cost and schedule goals — and the customer found the outcome useful. On top of that, it was an experience you would gladly repeat. With this best project clearly in mind, write down the factors that made it so good — what was happening on the project that made it so successful? Have you got your list? Now read on!

I've given this test to literally thousands of professionals who work on projects in industries from aerospace to information technology to healthcare. Of the hundreds of factors they've identified, five factors crop up with overwhelming regularity:<sup>2</sup> (1) Agreement on the goals of the project. The customer, management, team and project manager had a clear understanding of what they wanted to accomplish and why; (2) A plan that will be used to measure progress during the project. This plan is both a cohesive description of an overall strategy and detailed enough to show clear responsibilities and specific accomplishments; (3) Constant, effective communication among everyone involved in the project. Probably the single most cited cause of project failure is "poor communication." Effective communication means putting the channels in place that keep all the right people informed at the right time, enabling coordinated action even as the project encounters unexpected challenges; (4) A controlled scope. Project scope is all the work required to complete the project's objectives. Scope is controlled by ensuring there are clear agreements on requirements, specifications and objectives before any work begins. Any proposed changes are carefully evaluated for their impact on cost and schedule, and all changes must be approved before we start to work on them. This seemingly bureaucratic restriction maintains a consistent focus on the cost-schedule-quality balance; (5) Management support. Timely decisions and sufficient resources are the two most cited examples of management support. Project teams and project managers don't have

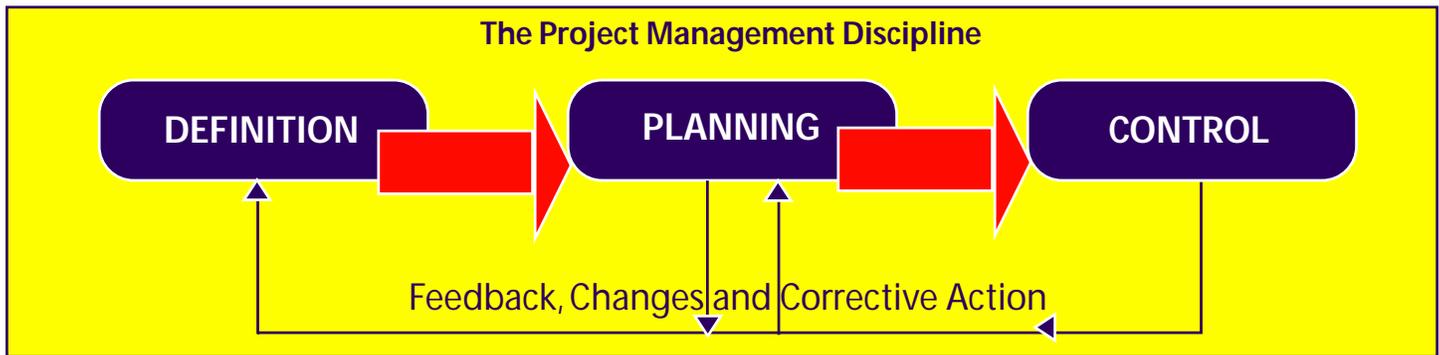


Figure 1.

enough authority to make all the decisions they need to get the project accomplished. They need cooperative, involved management. *Did you identify any or all of these factors for yourself? More importantly, do you have them on every project?* The project management discipline provides a systematic approach that every project team can follow to achieve these five success factors.

### A Systematic Approach

The Quality Management discipline has taught us that consistent processes produce consistent results. Figure 1 illustrates a project management process that can be applied to any project. As we examine each of the functions within the process, we'll also understand how each function contributes to the five project success factors. Fundamental to understanding the diagram in Figure 1 is recognizing that it is a management process, and therefore each of the functions takes place repeatedly, throughout the life of the project. It is true that definition will precede planning, and planning will precede control, but it is also true that the outcome of planning may cause the project manager to revisit certain definition activities and that monitoring and controlling a project will lead to updates in the plan. This cycle should become more apparent as we examine the model in greater detail.

**Definition.** Once a project is selected, a project manager is assigned and goes to work building the foundation for the project's success. Project definition activities include the following:

- Identify all stakeholders on the project and document their goals and involvement. Stakeholders include customers, vendors, core team members and supporting management within the firm.
- Develop a relationship with the project sponsor. A sponsor is an executive within the organization who is responsible for the success of the project. While the project manager performs the day-to-day oversight of the project, the sponsor provides the executive authority necessary to overcome organizational obstacles.
- Record the goals and constraints of the project using a statement of work or similar document. Goals and constraints can include the scope, budget, key schedule milestones, authority structure for the project, measures of success, communication standards, and other facts or assumptions that will affect the project. This document establishes a baseline agreement that is signed by the project stakeholders.

Project definition is the foundation for success because it establishes a common understanding of the goals and constraints of the project. Without it, the project team is shooting at a moving target. Through the activities of project definition we begin to build all five of the project success factors.

**Planning.** With a clear goal in place the project manager builds the action plan that describes the who, what, and when of accomplishing the project. Figure 2 represents a common planning graphic that includes all of this information. Planning typically includes the following activities:

- Develop a detailed description of the work on the project using a work breakdown structure (WBS). The WBS breaks the overall work of the project into small, individual tasks, much the same way an organization chart for a company breaks down authority. We will examine this technique in greater detail later.
- Analyze the sequence of the tasks. For all the tasks on the WBS, understand which tasks have to be performed before others. The classic diagram for this analysis is called a "network diagram." (Both PERT and Critical Path charts are forms of network diagrams.)
- Estimate the tasks to determine the required skills, effort, equipment and materials. Even though the business case provided a high level cost estimate, it is necessary to have detailed estimates in order to assign resources to accomplish tasks.
- Establish detailed project schedules documenting specific start and finish dates, responsibilities and completion criteria for each task.
- Determine the number of people on the team and what skills are necessary. For part-time team members, identify the dates their skills and effort are required. Staffing the project team often requires negotiating with other project managers or functional managers.
- Prepare contracts for vendors who are participating on the project.

The old saying is that "the devil is in the details." Clearly, building a plan provides the details for assigning clear responsibility and monitoring progress. But does project planning affect all five project success factors? Yes. Planning clarifies goals because it breaks high-level goals into detailed actions. The detailed plan becomes the basis for communicating with the team, management and customer. Scope is easier to control because it has been so completely defined. All together these elements make it easier to positively engage management and to get their support.

**Control.** The control function can be compared to driving a car: the driver monitors his vehicle and the environment, intentionally steering toward his destination, taking corrective action as obstacles or unexpected events arise. Driving the project includes:

- Monitor the progress of the project against the plan. Projects are typically too large for subjective assessments of progress to be valuable. Instead, we need specific measurements, such as the percent of the budget consumed to date. The detailed nature of the project plan allows for detailed measurements of cost and

What?	When?													Who?
Task Name	1	2	3	4	5	6	7	8	9	10	11	12	13	
<b>1. Put in lawn</b>														
1.1 Prepare soil				Pat										
1.2 Install sprinkler system								Hearthy Landscaping						
1.3 Plant seeds								Pat						
1.4 Water lawn														
<b>2. Build fence</b>														
2.1 Lay out fence location	Chris													
2.2 Install fence posts		Chris												
2.3 Attach fencing								Chris	Pat					

Figure 2.

schedule. We can see which tasks are late, which are early and which are consuming more or less effort than was estimated.

- Communicate with the project team and stakeholders. Since life and projects rarely go as planned, continuous, purposeful communication is necessary to keep all project participants informed and working together in harmony.
- Form the project team and attend to its health. Forming the team means assembling a disparate group of people into a team with a shared goal. Consciously build and maintain trusting relationships within the team.
- Maintain the cost-schedule-quality equilibrium. Be vigilant about potential changes to requirements or project scope and ensure all changes are approved before they are acted upon.
- Take corrective action to keep the project on track.

The five success factors permeate project control: manage from the plan, communicate, control changes, re-plan — and always keep an eye on the goal. Our original premise is that SPAWAR's mission accomplishment relies heavily on successful projects. But SPAWAR does not exist to perfect project management processes. Its goal is to deliver successful projects. The key is that project managers with a disciplined, systematic approach to managing their projects consistently produce better results.

## The Foundation of Planning and Control

This Define-Plan-Control model makes sense at the high level, but project teams get it done one day at a time. The foundation of successful planning and project control is a clear understanding of what should be happening on a day-to-day basis. We gain this understanding using a work breakdown structure or WBS. The WBS is simple, yet extremely powerful. Its importance derives from the inherent challenge of projects: since each project is unique, there will always be a unique set of tasks to plan and perform. The WBS breaks down a project from one large, unique, bundle of work into many discrete, manageable tasks. It sounds simple and it is, yet following a few straightforward rules provides a firm grasp of the project's details and a cohesive understanding of the big picture.

**Rule One:** Break it down one level at a time. Start at the highest level. Break the overall project into the big pieces. There is more than one way to break down a project. Some people prefer to focus on the big "pieces" they will deliver, such as hardware, software and documentation. Others will break the high-level view along the lines of the major phases of the project, such as requirements, design, construct, test, etc. No matter how you tailor your

approach, just be sure that the first tier of your WBS is a complete, high-level description of the project before you start breaking it down further. Once satisfied with the first tier, you can begin to break down each major task. The key is that you are breaking this task down into smaller tasks. Again, once you've decomposed a first tier task into several smaller tasks, review them to make sure you have identified every step necessary to produce the outcome described by the tier one task. Figure 2 provides an example of this concept: when we have accomplished tasks 1.1, 1.2, 1.3 and 1.4, we have also accomplished task 1.

**Rule Two:** Clearly describe each detailed task. The lowest level tasks form the basis for estimating the project, assigning responsibilities and measuring progress. That means that the more clearly we can define each task the better grasp we have of the overall project. To clearly define a task, give it a strong, descriptive name and completion criteria.

When building a WBS there is a temptation to use jargon and short, mnemonic tasks names — but don't do it. Abbreviated names such as "database" and "requirements" lead to misunderstandings because each of us will interpret the task in a different way. A strong task name describes what work will be performed and what result will be produced, for example, "design the database" and "produce a data model of the requirements." Every task needs completion criteria, which answers the question, "What does it mean to be done with this task?" If the output from the task must compile, pass a test, or be signed off, then clearly state that condition. The clearer your completion criteria, the easier it will be to estimate, assign and track the task.

**Rule Three:** Make it a team event. The surest way to build a detailed plan that has no connection to reality is to build it alone. Don't do it. Instead, get the team involved to make sure you have identified all the necessary tasks and you have the correct completion criteria. Involving the team increases their ownership, which leads to increased commitment.

**Rule Four:** Leverage past projects. Every project may be unique, but many are similar. If you are building a plan today, chances are good that another team has done something similar. Get their list of tasks and let that be a starting point. Then commit to updating your plan as you go, so that when your project is complete you have the new "best WBS" for that type of project. Soon you'll have developed a library of WBS templates that represent best practices for all kinds of projects.

## The WBS Improves Your Odds

A solid WBS is just one of the many tools and techniques in the project management discipline, yet this one technique influences all five of the project success factors:

- Clear goals. Sometimes everyone thinks they agree on the big-picture goals, but when reality hits we hear, "I didn't realize the project would entail all this work!" The WBS transforms the goals into manageable actions and provides a stronger basis for making commitments.
- A detailed plan. The WBS is the foundation of the action plan.
- Constant, effective communication.
- Clear, descriptive tasks make assigning work and reporting progress more meaningful.
- A controlled scope. The WBS is the definitive description of project scope. The stronger the initial understanding of project scope, the easier it is to manage changes.
- Manage-

ment support. The top-down nature of the WBS makes it meaningful to both management and team members.

A good WBS won't guarantee success. The five success factors won't guarantee success. But they do turn the odds in your favor. Given the challenging nature of projects — that is an edge you can't afford to ignore.

## Summary

In this article we've recognized that the nature of projects (*temporary and unique*) poses challenges that are addressed by the discipline of project management. With a systematic approach to clarifying the goals and constraints of a project, creating a detailed plan, and managing from that plan, we improve communication, management support and ultimately the chance for project success.

The WBS is just one of many proven project management techniques you can easily learn and apply to your project or to a piece of a larger project. It provides a framework for breaking down a large, complex, unique chunk of work (a project) into small, manageable tasks and enables you to keep an eye on both the details and the big picture.

In the next article in this series we'll switch perspectives and focus on the human element — how to build a cohesive, high performing team. Throughout all these articles, you will see that project management is a collection of skills and techniques that you can learn and apply to achieve results.

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### Sources:

1. Verzuh, Eric, *The Portable MBA in Project Management*, New York, John Wiley & Sons, 2003.
2. Verzuh, Eric, *The Fast Forward MBA in Project Management*, New York, John Wiley & Sons, 1999, p. 7-8.

*Eric Verzuh, a Project Management Professional, is President of The Versatile Company, a project management training firm. He is the author of the best selling book, "The Fast Forward MBA in Project Management." His latest work, "The Portable MBA in Project Management," is due out in May 2003. His firm has delivered project management courses to over two hundred SPAWAR personnel in Norfolk, Va., and Charleston, S.C., since 2001.* □

# NAVAIR Continues Joint Testing on Upgraded E-6B

By Renee Hatcher, Public Affairs Office

An E-6B Mercury, modified with a new cockpit and an advanced communications package arrived at Naval Air Station Patuxent River in January, where joint testing by VX-20 and Boeing E-6 test teams is continuing. The E-6 is a communications relay and strategic airborne command post (ABNCP) aircraft.

VX-20 is an Air Test and Evaluation Squadron providing "Full Spectrum Flight Test for the Fleet." The squadron consists of more than 400 talented test pilots, aircrew, engineers and support personnel who are committed to delivering efficient, comprehensive safe flight testing and engineering services. These services are delivered with a sophisticated fleet of approximately 30 current production and legacy aircraft.

"It's a great situational awareness enhancer," said Lt. Bob Strahm, project test pilot. "These improvements will do great things for the TACAMO community."

TACAMO refers to the Navy's "Take Charge and Move Out" mission. It is a Navy Air Wing fully integrated on an Air Force base, carrying out a Navy mission in joint operations. Commander, Strategic Communications Wing One provides operational control and administrative support for Fleet Air Reconnaissance Squadrons Three, Four, Seven and various training units. The Navy's TACAMO community provides a survivable communications link between national decision makers and the country's arsenal of strategic nuclear weapons. The E-6B Mercury aircraft enables the President of the United States and the Secretary of Defense to directly contact submarines, bombers, and missile silos protecting national security through nuclear deterrence.

The E-6 is a long-range, air refuelable aircraft equipped with four CFM-56-2A-2 high bypass ratio fan/jet engines with thrust reversers. The weapon system is electromagnetic pulse hardened. The has an endurance of more than 15 hours without refueling and a maximum endurance of 72 hours with in-flight refueling. Mission range is over 6,000 Nautical Miles

(NM). It carries a crew of five officers, nine enlisted aircrewmen and up to four trainees for TACAMO missions. For ABNCP missions it carries five Naval officers, nine Naval enlisted aircrewmen and an eight person battle staff as determined by the United States Strategic Command (J36).

E-6B is a dual-mission aircraft capable of fulfilling either the E-6A mission (communications relay for fleet ballistic missile submarines) or the airborne strategic command post mission, and it is equipped with an airborne launch control system (ALCS). The ALCS is capable of launching U.S. land-based intercontinental ballistic missiles.

The mission system and cockpit display upgrades will improve mission avionics, provide additional data processing capabilities, and increase reliability and maintainability for the Mercury. The upgrades also provide Automated Data Processing, Demand Assigned Multiple Access (DAMA) and Weight Savings (ADWS). Wide bandwidth data capability is also included through integration of a phased array antenna system. The improvements include SIPRNET and NIPRNET functions. Highlights of these functions include two separate onboard servers (classified and unclassified), access to servers on the ground via command managed local area network communication links, airborne user interface via laptop computers, and Ku band (high-speed) uplink and DAMA or Northstar Network (up to 16Kbps) downlink.

The upgraded cockpit is equipped with the Multifunction Display System (MDS) that is based on the Boeing Commercial 777 and 737-700 next generation avionics technology. The MDS will provide the fleet with state-of-the-art communications, navigation and surveillance capabilities in order to address emerging Global Air Traffic Management (GATM) requirements.

*Capt. William G. Okoniewski manages NAVAIR's E-6 Program Office (PMA-271).* □