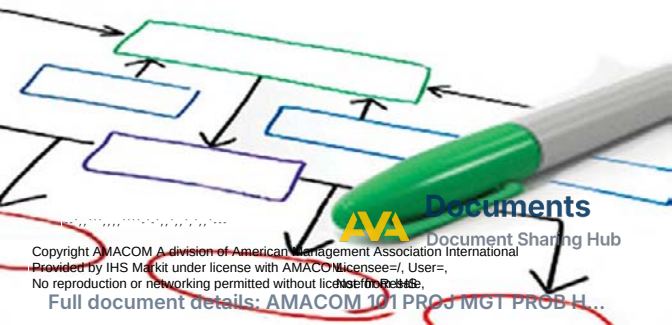


Tom Kendrick

Author of *IDENTIFYING AND MANAGING PROJECT RISK*

101 PROJECT MANAGEMENT PROBLEMS AND HOW TO SOLVE THEM

Practical Advice for Handling Real-World Project Challenges



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101 Project Management Problems

and How to Solve Them

Practical Advice for Handling
Real-World Project Challenges

Tom Kendrick

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To all the good project managers I have worked with,
from whom I have learned a great deal.
Also to all the bad project managers I have worked with,
from whom I have learned even more.

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Introduction

“It depends.”

Project management problems frequently arise as questions, and most good project management questions have the same answer: “It depends.”

By definition, each project is different from other projects, so no specific solution for a given problem is likely to work exactly as well for one project as it might for another. That said, there are general principles that are usually effective, especially after refining the response with follow-up questions, such as “What does it depend on?” For many of the project management problems included in this book, the discussion begins with some qualifications describing what the response depends on and includes factors to consider in dealing with the issue at hand.

This book is based on questions I have been asked in classes and workshops, and in general discussions on project management regarding frequent project problems. The discussions here are not on theoretical matters (“What is a project?”), nor do they dwell on the self-evident or trivial. The focus here is on real problems encountered by project managers working in the trenches, trying to get their projects done in today’s stress-filled environment. These responses are based on what tends to work, at least most of the time, for those of us who lead actual projects.

Some problems here relate to very small projects. Others are about very large projects and programs. Still others are general, and include some guidance on how you might go about applying the advice offered in a particular situation. In all cases, your judgment is essential to solving your particular problems. Consider your specific circumstances and strive to “make the punishment fit the crime.” Adapt the ideas offered here if they appear helpful. Disregard them if the advice seems irrelevant to your project.

Several general themes recur throughout. Planning and organization are the foundations for good project management. Confront issues and problems early, when they are tractable and can be resolved with the least effort and the fewest people. Escalate as a last resort, but never

hesitate to do so when it is necessary. People will treat you as you treat them, so act accordingly. Good relationships and trust will make solving any problem easier—you really do get by with a little help from your friends.

Given the broad spectrum of project types and the overwhelming number of ways that they can get into trouble, it's unlikely that this (or any) book will effectively resolve all possible problems. Nonetheless, I hope that this book will help you to successfully complete your projects, while retaining some of your sanity in the process.

Good luck!

Tom Kendrick
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San Carlos, CA

1. What personality type fits best into project management?

Depends on:

- ▲ The type and scale of the project
- ▲ Experience of the project team

Understanding Personality Types

There are a large number of models used to describe personalities. One of the most prevalent is the Myers-Briggs Type Indicator (MBTI). One of its factors describes a spectrum between introversion and extroversion. Projects are about people and teams, so good project leaders tend to be at least somewhat extroverted. Introverted project managers may find their projects wandering out of control because they are insufficiently engaged with the people responsible for the work.

A second factor is the dichotomy between a preference for observable data and a preference for intuitive information. Projects are best managed using measurable facts that can be verified and tested. A third factor relates to whether decisions are based on logical objective analysis or on feelings and values. Projects, especially technical projects, proceed most smoothly when decisions are based on consistent, analytical criteria.

The fourth MBTI factor is the one most strongly aligned with project management, and it describes how individuals conduct their affairs. On one extreme is the individual who plans and organizes what must be done, which is what project management is mostly about. On the other extreme is the individual who prefers to be spontaneous and flexible. Projects run by this sort of free spirit tend to be chaotic nightmares, and may never complete.

Considering Other Factors

Project managers need to be “technical enough.” For small, technical projects, it is common for the project leader to be a highly technical subject matter expert. For larger programs, project managers are sel-

dom masters of every technical detail, but generally they are knowledgeable enough to ensure that communications are clear and status can be verified. On small, technical projects, the project manager may be a technical guru, but that becomes much less important as the work grows. Large-scale projects require an effective leader who can motivate people and delegate the work to those who understand the details.

Good project managers are detail oriented, able to organize and keep straight many disparate activities at a time. They are also pragmatic; project management is more about “good enough” than it is about striving for perfection. All of this relates to delivering business value—understanding the trade-offs between time, scope, and cost while delivering the expected value of the project to the organization.

Finally, good project managers are upbeat and optimistic. They need to be liked and trusted by sponsors and upper management to be successful. They communicate progress honestly, even when a project runs into trouble. Retaining the confidence of your stakeholders in times of trouble also requires communicating credible strategies for recovery. Effective leaders meet challenges with an assumption that there is a solution. With a positive attitude, more often than not, they find one.

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Not for Resale,



2. What are the habits of successful project managers?

Effective project leaders have a lot in common with all good managers. In particular, good project managers are people oriented and quickly establish effective working relationships with their team members.

Defining Your Working Style

One of the biggest differences between a project manager and an individual contributor is time fragmentation. People who lead projects must be willing to deal with frequent interruptions. Project problems, requests, and other imperatives never wait for you to become unbusy, so you need to learn how to drop whatever you are doing, good-naturedly, and refocus your attention. Project leaders who hide behind “do not disturb” signs and lock their doors run the risk of seeing trivial, easily addressed situations escalate into unrecoverable crises. Between urgent e-mails, phone calls, frequent meetings, and people dropping in, project managers don’t generally have a lot of uninterrupted time. You may need to schedule work that demands your focus and concentration before the workday begins, or do it after everyone has left for the day.

This is a crucial part of being people oriented. Project leaders who find that they are not naturally comfortable dealing with others tend to avoid this part of the job and as a consequence may not stick with project management very long, by either their own choice or someone else’s. Being people oriented means enjoying interaction with others (while being sensitive to the reality that some of your team members may not relish interaction as much as you do) and having an aptitude for effective written communication and conversations.

Referring to an Old List

As part of a workshop on project management some time ago, I challenged the participants in small groups to brainstorm what they thought made a good project leader. The lists from each group were remarkably

similar, and quite familiar. In summary, what they came up with is that good project managers:

- ▲ Can be counted on to follow through
- ▲ Take care of their teams
- ▲ Willingly assist and mentor others
- ▲ Are sociable and get along with nearly everyone
- ▲ Are respectful and polite
- ▲ Remain even tempered, understanding, and sympathetic
- ▲ Can follow instructions and processes
- ▲ Stay positive and upbeat
- ▲ Understand and manage costs
- ▲ Are willing to “speak truth to power”
- ▲ Act and dress appropriately

Reviewing the results, I realized that the items from the brainstorming closely mirrored those of another list, one familiar to lots of eleven-year-old boys for about a century; that list is “the Scout Law.” The version I’m most familiar with is the one used by the Boy Scouts of America, but worldwide other variants (for Girl Scouts, too) are essentially the same.

Effective project leaders are *trustworthy*; they are honest, can be relied upon, and tell the truth. They are *loyal*, especially to the members of their team. Project managers are *helpful*, pitching in to ensure progress and working to build up favors with others against the inevitable need that they will need a favor in return some time soon. Wise project leaders remain *friendly* even to those who don’t cooperate, and they value diversity. They are also *courteous*, because the cooperation that projects require is built on respect. Project managers are generally *kind*, treating others as they would like to be treated. We are also *obedient*, following rules and abiding by organizational standards. Good project managers are *cheerful*; when we are grumpy no one cooperates or wants to work with us. We are *thrifty*, managing our project budgets. Effective project leaders also need to be *brave*, confronting our management when necessary. Good project managers are also “*clean*.” It is always a lot easier to engender respect and lead people when we are not seen as sloppy or having low standards. (Actually, there is a twelfth item on the Boy Scout list: *Reverent*. Although it did not come up in the brainstorm, praying for miracles is not uncommon on most projects.)

3. I'm an experienced individual contributor but very new to project management. How do I get my new project up and going?

Depends on:

- ▲ Availability of mentoring, training, and other developmental assistance in your organization
- ▲ Your aptitude for leading a team and any applicable previous experience you have
- ▲ The experience of the team you are planning to lead

Getting Started

Initiation into project management often involves becoming an “accidental project manager.” Most of us get into it unexpectedly. One day you are minding our own business and doing a great job as a project contributor. Suddenly, without warning, someone taps you on the shoulder and says, “Surprise! You are now a project manager.”

Working on a project and leading a project would seem to have a lot in common, so selecting the most competent contributors to lead new projects seems fairly logical. Unfortunately, the two jobs are in fact quite different. Project contributors focus on tangible things and their own personal work. Project managers focus primarily on coordinating the work of others. The next two problems discuss the responsibilities and personality traits of an effective project manager, but if you are entirely new to project leadership you will first also need to set up a foundation for project management. Novice project managers will need to invest time gaining the confidence of the team, determining their approach, and then delegating work to others.

Engaging Your Team

Gaining the confidence of your contributors can be a bit of a challenge if you are inexperienced with team leadership. Some people fear dogs,

and dogs seem to know this and unerringly single out those people to bother. Similarly, a project manager who is uncomfortable is instantly obvious to the project team members, who can quickly destroy the confidence of their team leader at the first signs of indecision, hesitancy, or weakness. Although you may have some coverage from any explicit backing and support of sponsors, managers, and influential stakeholders, you need to at least appear to know what you are doing. It's always best to actually know what you are doing, but in a pinch you can get away with a veneer of competence. Your strongest asset for building the needed confidence of your team as a novice project manager is generally your subject matter expertise. You were asked to lead the project, and that was probably a result of someone thinking, probably correctly, that you are very good at something that is important to the project. Work with what you know well, and always lead with your strengths. Remember that "knowledge is power."

Seek a few early wins with your team, doing things like defining requirements, setting up processes, or initial planning. Once the pump is primed, people will start to take for granted that you know what you are doing (and you might also). Establishing and maintaining teamwork is essential to good project management, and there are lots of pointers on this throughout the book.

Choosing Your Approach

For small projects, a stack of yellow sticky notes, a whiteboard to scatter them on, and bravado may get you through. For most projects, though, a more formalized structure will serve you better. If possible, consult with an experienced project manager whom you respect and ask for mentoring and guidance. If training on project management is available, take advantage of it. Even if you are unable to schedule project management training in time for your first project, do it as soon as you can. This training, whenever you can sandwich it in, will help you to put project management processes in context and build valuable skills. Attending training will also show you that all the other new project managers are at least as confused as you are. If neither mentoring nor training is viable, get a good, thin book on project management and read through the basics. (There are a lot of excellent very large books on project management that are useful for reference, but for getting started, a 1,000-page tome or a "body of knowledge" can be overwhelming. Start with a "Tool Kit," "for Dummies" book, "Idiot's Guide," or similarly straightforward book on project management. You may also

want to seek out a book written by someone in your field, to ensure that most of it will make sense and the recommendations will be relevant to your new project.)

Decide how you are going to set up your project, and document the specific steps you will use for initiation and planning. You will find many useful pointers for this throughout the problems discussed in the initiating and planning parts later in this book.

Delegating Work

One of the hardest things for a novice project manager to do is to recognize that project leadership is a full-time job. Leading a project effectively requires you to delegate project work to others—even work that you are personally very good at. Despite the fact that you may be better and faster at completing key activities than any of your team members, you cannot hope to do them all yourself while running a successful project. At first, delegating work to others who are less competent than you are can be quite difficult, even painful. You need to get over it. If you assign significant portions of the project work to yourself, you will end up with two full-time jobs: leading the project by day and working on the project activities you should have delegated at night and on week-ends. This leads to exhaustion, project failure, or both.

4. What are the most important responsibilities of a project manager?

Depends on:

- ▲ Role: Project coordinator, Project leader, Project manager, Program manager
- ▲ Organizational requirements and structure

Overall Responsibilities

The job of a project manager includes three broad areas:

1. Assuming responsibility for the project as a whole
2. Employing relevant project management processes
3. Leading the team

Precisely what these areas entail varies across the spectrum of roles, from the project coordinator, who has mostly administrative responsibilities, to the program manager, who may manage a hierarchy of contributors and leaders with hundreds of people or more. Regardless of any additional responsibilities, though, the following three areas are required: understanding your project, establishing required processes, and leading your team.

Understanding Your Project

In most cases, regardless of your role description, you own the project that has your name on it. The project size and the consequences of not succeeding will vary, but overall the buck stops with you.

It is up to you to validate the project objective and to document the requirements. As part of this, develop a clear idea of what “done” looks like, and document the evaluation and completion criteria that will be used for project closure. A number of the problems in the project initiation part of this book address this concern, but in general it’s essential that you reach out to your sponsor, customer, and other stakeholders and gain agreement on this—and write it down.

You also have primary responsibility for developing and using a realistic plan to track the work through to completion, and for acceptably achieving all requirements in a timely way.

Establishing Required Processes

The processes used for managing projects include any that are mandated by your organization plus any goals that you define for your specific project. Key processes for your project include communications, planning, and execution. For communications, determine how and when you will meet and how often you will collect and send project information and reports. Also determine where and how you will set up your project management information system or archiving project information. For planning, establish processes for thorough and realistic project analysis, including how you will involve your team members. Executing and controlling processes are also essential, but none is more important than how you propose to analyze and manage project changes. There are many pointers on all of this throughout the problems in the project initiation part of this book.

Setting up processes and getting buy-in for them is necessary, but it is never sufficient. You must also educate the members of your team and relevant stakeholders to ensure that everyone understands the processes they have committed to. Also establish appropriate metrics for process control and use them diligently to monitor work throughout your project.

Leading Your Team

The third significant responsibility is leading the team. Leadership rests on a foundation of trust and solid relationships. Effective project managers spend enough time with each team member to establish strong bonds. This is particularly difficult with distributed teams, but if you invest in frequent informal communications and periodic face-to-face interactions you can establish a connection even with distant contributors. You will find many helpful suggestions for dealing with this throughout the part of this book on teamwork.

Projects don't succeed because they are easy. Projects succeed because people care about them. Leadership also entails getting all project contributors to buy in to a vision of the work that matters to them personally. You must find some connection between what the project strives to do and something that each team member cares about. Uncovering the "what's in it for me?" factor for everyone on the team is fundamental to your successful leadership.

5. What is the value of project management certification? What about academic degrees in project management?

Depends on:

- ▲ Age and background
- ▲ Current (or desired future) field or discipline

Considering Project Management Certification

Project management certification has substantially grown in popularity in recent years, and some form of it or another is increasingly encouraged or required for many jobs in project management. The Project Management Professional (PMP®) certification from the Project Management Institute in the United States—and similar credentials from other professional project management societies around the globe—is not too difficult to attain, especially for those with project management experience. For many project managers, it is often a case of “it can’t hurt and it may help” with your career. For those early in their careers, or looking to make a move into project management, or seeking a type of job where certification is mandatory, pursuing certification is not a difficult decision.

Certification in project management is also available from many universities and colleges. Although many of these programs provide excellent project management education, in general this kind of certification rarely carries the weight of certification from a professional society. University certification programs can provide preparation for qualifying for other certifications, though, and certification from well-respected universities may add luster to your resume within the school’s local area.

For those project managers who are in fields where certifications and credentials are not presently seen as having much relevance, the cost and effort of getting certified in project management may not be worthwhile. For some, investing in education in a discipline such as engineering or business could be a better choice, and for others certification in a job-specific specialty will make a bigger career difference.

Even for jobs where project management certification is not presently much of a factor, though, there may be trends in that direction. A decade ago, few IT project management openings required certification of any kind; today for many it's mandatory, and similar trends are visible in other fields.

Considering Project Management Degrees

A related recent movement has been the growth in academic degrees in project management. More and more universities are offering master's degrees in project management, often tied to their business curricula. Such programs may help some people significantly, particularly those who want to move into project management from a job where they feel stuck or wish to transition into a new field. A freshly minted degree can refocus a job interview on academic achievements rather than on the details of prior work experiences.

Embarking on a degree program is a big deal for most people, though. It will cost a lot of money and requires at least a year full-time (or multiple years part-time while continuing to work). Before starting a rigorous academic degree program in project management, carefully balance the trade-offs between the substantial costs and realistically achievable benefits, and consider whether a degree in some other discipline might be a better long-range career choice.

Another factor to consider, as with any academic degree program, is the reputation and quality of the chosen institution. Some hiring managers might select a candidate with a project management certificate from a school that they know and respect over someone who has a master's degree from an institution they have never heard of or do not regard highly.

6. There are many project development methodologies. What should I consider when adopting standards such as the Project Management Institute PMBOK®?

Depends on:

- ▲ Organizational standards and requirements
- ▲ Legal regulations
- ▲ Your industry or discipline

Assessing Project Management Structures

Modern project management has been around for more than a hundred years, with many of the basic techniques tracing back to Fred Taylor, Henry Gantt, and others central to the “scientific management” movement of the early twentieth century. These basic project management processes have survived for so long because they are practical and they work. To the extent that today’s bewildering array of methodologies, standards, and other guidelines for project and program management incorporate the fundamental tried-and-true principles, they can be of great value, particularly to the novice project leader.

Standards and methodologies originate from many sources: some are governmental, others are academic or from commercial enterprises, and many are from professional societies.

For many government projects, application and use of mandated standards—such as PRINCE (PROjects IN a Controlled Environment) for some types of projects in the United Kingdom or the project management portions of the Software Engineering Institute’s Capability Maturity Model Integration (CMMI) for many U.S. defense projects—is not optional. For other project environments, though, the choice to adopt a specific standard is discretionary. In these cases, your choice will ideally be based upon analysis of the trade-offs between the costs and overhead of a given approach and the benefits expected through its use.

Commercial methodologies from consulting firms and vendors of complex software applications can be very beneficial, particularly in

cases where large projects are undertaken to implement something complicated and unlikely to be repeated that is outside of the organization's core expertise. Methodologies that include specific approaches and details about handling particularly difficult aspects of implementation can save a lot of time, effort, and money. More general commercial methodologies available from consulting organizations and from the services branches of product vendors can also have value, but over time most organizations tend to heavily customize their use, abandoning parts that have low added value and modifying or augmenting the rest to better address project needs.

Standards from professional organizations are less parochial and can be useful in a wide variety of project environments. They draw heavily on successful established processes and are revised periodically by knowledgeable practitioners, so they also provide guidance for new and emerging types of projects. This can be both a blessing and a curse, however, because over time these standards tend to become quite bloated, containing much that is of value only in very specific project environments.

The emergence in the recent years of the Project Management Body of Knowledge (PMBOK®) from the Project Management Institute based in the United States as a worldwide standard is an interesting case of this. In fact, the "PMBOK" does not actually exist in any practical sense. The document generally referred to as "the PMBOK" is actually titled *A Guide to the Project Management Body of Knowledge (or PMBOK® Guide)*. It is intended to be neither comprehensive (it's only a "guide") nor a methodology. It tends to expand with each four-year revision cycle a bit like a dirty snowball rolling down a hill, picking up new ideas that are tossed in, some with limited applicability and support, and shedding very little of the content of prior versions. Despite this, the many serious, well-meaning, and generally knowledgeable volunteers (full disclosure: including me) who undertake this gargantuan quadrennial project do as good a job as they're able to ensure that it is as useful as possible to the worldwide project management community. It was never designed, though, as a project management methodology. It lacks specific process information for implementation (again, it's the *PMBOK® Guide*); it does not address many specifics necessary for success for specific projects; and, in attempting to be comprehensive, it includes a good deal that may have little (or no) value for some projects. It also includes some content that contradicts content elsewhere in the guide because it is written, and rewritten, by subcommittees that may not agree all of the time. To use it as a foundation for effective project management in an organization would involve considerable work in docu-

menting the details of relevant included processes, determining which portions are not relevant, and adding needed process content that is not included in the *PMBOK® Guide*.

Choosing Your Approach

In selecting a methodology or standard to use in managing projects, you must distinguish between the necessary and the sufficient. What is necessary includes general practices that are applicable to most types of projects most of the time. Whatever the source of guidance—a book, a training course, a structured methodology—there is likely to be a lot of this content. Standards and bodies of knowledge from academic sources and professional societies are strong in this area, but they often go little further. Successful project management in a particular environment requires a good deal that is unique to the specific project type, and sometimes is even specific to single projects. Commercial methodologies and mandated governmental requirements may flesh out the processes to include all that is needed for a successful project, but if not, the organization or individual project leader will need to consider what else will be needed and include it, to ensure that the approach will be sufficient.

Another consideration in all of this is the list of reasons not to adopt a project management standard. All structured approaches to project management involve overhead, so consider whether the additional effort represented by a given approach will be justified by realistic benefits (including less rework, fewer missed process steps or requirements, and more coherent management of related projects). If a complicated methodology involves filling out a lot of forms and elaborate reporting, estimate the potential value added for this effort before adopting it. Finally, before embarking on a significant effort to adopt a new approach for managing projects, ensure that there is adequate management sponsorship for such an effort. Stealth efforts to establish project management methodologies are easily undermined and tend to be short-lived, especially in organizations that have process-phobic management.

7. What are the key considerations when developing or revising a project life cycle? What should I consider when choosing between “waterfall” and “cyclic” (or “agile”) life cycles?

Depends on:

- ▲ Project novelty
- ▲ Project duration and size
- ▲ Access to users and project information

Considering Life Cycle Types

Like methodologies, there are many types of life cycles, which vary a good deal for different varieties of projects. Life cycles are also often used either with, or even as part of, a project methodology to assist in controlling and coordinating projects. The two most common types of life cycle are “waterfall” and “cyclic.”

A waterfall-type life cycle is an effective option for well-defined projects with clear deliverables. This life cycle has a small number of phases or stages for project work that cascade serially through to project completion. For novel projects that must be started in the face of significant unknowns and uncertainty, however, a cyclic life cycle that provides for incremental delivery of functionality and frequent evaluation feedback may be a better choice.

Assessing Waterfall Life Cycles

Although there are literally hundreds of variations in the naming of the defined segments into which a project is broken, all waterfall life cycles have one or more initiating phases that focus on thinking, analysis, and planning. The stages of the middle portion of a life cycle describe the

heavy lifting—designing, developing, building, creating, and other work necessary to produce the project deliverable. Waterfall life cycles conclude with one or more phases focused on project closure, including testing, defect correction, implementation, and delivery. Whatever the phases or stages of the life cycle may be called, each is separated from the next by reviews or gates where specific process requirements are to be met before commencing with the next portion in the life cycle. Ensuring that projects meet the exit criteria defined within a life cycle is a good way to avoid missing essential steps, particularly for large programs where individually managed projects need to be synchronized and coordinated.

Waterfall-type project life cycles are often more of a management control process than a project management tool, and for this reason they often parallel the central phases in a longer *product development* life cycle that may include subsequent phases for maintenance and obsolescence that follow project work and often have initiation phases that precede the project. Whatever the specifics, when waterfall project life cycles are fine tuned to reflect good project practices, they help ensure that projects will proceed in an orderly manner even in times of stress.

Assessing Cyclic Life Cycles

Cyclic life cycles are useful for projects where the scope is less well defined. In place of a sequence of named phases, cyclic life cycles are set up with a series of similar phases where each contains development and testing. Each cyclic phase is defined to deliver a small additional increment of functionality. As with waterfall life cycles, cyclic life cycles are often set up in connection with a project methodology, commonly an “agile” methodology where the content of each subsequent cycle is defined dynamically as each previous cycle completes. For some cyclic life cycles, the number of defined cycles is set in advance, but whether the number of cycles is well defined or left open, the precise details of the features and functionality to be included in each cycle will evolve throughout the project; only a general description of the final deliverable is set at the beginning of the project. Software development is the most common environment where this sort of life cycle is applied, and on agile software projects each cycle tends to be quite short, between one and three weeks.

Choosing a Life Cycle

For general projects, a waterfall life cycle is typically the best fit. This approach generally provides a context for adequate planning and control with a minimum of overhead. Similar projects undertaken using the two approaches some years ago as a test at Hewlett-Packard showed that the traditional waterfall approach yielded results much more quickly and with less cost (durations were half and total costs were about a third). This was largely because of the start-stop nature of the cyclic method and the additional effort needed for the required periodic testing, evaluation of feedback, and redefinition. Agile methods and cyclic life cycles are effective, however, when the project is urgent and available information for scoping is not available. Using frequent feedback from testing as the project proceeds to iterate a sequence of software deliveries and converge on a good solution can be significantly more effective than starting a waterfall life-cycle project using guesswork. Some criteria to consider when choosing a life cycle are listed in the following table:

	<i>Waterfall</i>	<i>Cyclic</i>
Deliverable(s)	Well defined	Novel
Team size	Medium to large	Small
Project type	Large scale or hardware development, Fee-for-service, Construction, Research and development	Small-scale software development
User involvement	Infrequent	Constant

Establishing Reviews, Change Processes, and Metrics

Whatever your choice of life cycle, you will be most successful with strong and appropriate defined processes. Set up the review points at the conclusion of each phase in a waterfall life cycle to be no farther apart than about three months, and establish stakeholder support for the review process for each in advance. Clearly define the review requirements for the end of each cycle or phase, and use the review process to detect and deal with project issues. If significant changes are needed to the project deliverable, promptly initiate formal evaluation of the changes before initiating the next phase of the project. If the project

objectives are threatened, investigate resetting the project's baseline. Gain stakeholder support at the close of each segment of the project before continuing to the next phase.

Life-cycle metrics are also an important consideration. When planning, estimate the duration and resource requirements for each portion of the life cycle. As each phase completes, determine any variances against expectations and against the results of past projects. Life-cycle metrics over time will enable you to determine the “shape” of projects—how much time and cost is consumed in each portion of a project. If a phase in the life cycle becomes too large, you may want to consider breaking it up into two or more new phases. If late-project phases are chronically longer or more expensive than expected, more analysis and planning in the earlier phases may be necessary. Metrics are also useful with cyclic life cycles. The duration and cost of each cycle should vary little, but you can and should measure the amount of incremental functionality delivered in each cycle. You can also use metrics to determine the number of cycles required to complete a typical project, and to set expectations more realistically.

8. How can I efficiently run mini-projects (less than six months with few dedicated resources)?

For less complex projects, the overall project management process may be streamlined and simplified, but it is still required. Planning, team building, establishment of minimal processes, and closure are all necessary.

Doing Fast-Track Planning

Small, short projects are often very similar to projects you have done before, so one very effective way to ensure a fast start is to develop appropriate templates for project plans and schedules that can be easily modified for use on new projects. If such templates are not available, schedule a fast-track planning session with at least part of the staff likely to be involved with the project, and as you develop the project documents, retain shadow copies that can be used as templates for future similar projects.

Small projects are also often cross functional and may have few, if any, contributors assigned full-time. To be successful with this kind of project, you must involve the sponsor and other key stakeholders with planning. Work to understand the reasons why the project matters, and during the planning communicate why the people who initiated the project think it is important.

Building Your Team

Without a full-time, dedicated staff, you may have some difficulty in getting reliable commitments. Work with each contributor to establish a good working relationship and mutual trust. Identify any aspects of the project that seem to matter to your contributors, including any work that they find desirable or fun, any learning opportunities that they might appreciate, the potential importance of the deliverable, or anything else that each individual might care about. Get commitment for

project work both from your team members and from their direct management. Even on short, small projects, rewards and recognition are useful, so consider any opportunities you have for thanking people, informal recognition, and formal rewards.

Establishing Processes

The processes on small projects can be streamlined, but should not be eliminated. Change control can be relatively informal, and if the project is sufficiently straightforward it may even seem unnecessary. Nonetheless, you will be well served by establishing a process in advance to deal with any requested midproject changes. At least establish some basic requirements for requesting and documenting potential changes. Set up a review process that everyone agrees to in advance, and identify someone (ideally you) who has the authority to say “no.”

Escalation is crucial on short projects where you may not have much authority. If you run into difficulties that you are unable to resolve on your own or require intervention to proceed, promptly involve your sponsor or other stakeholders who can get things unstuck. Problems on short projects can quickly cause schedule slip if not dealt with right away.

Communication may also be minimal on simple projects, but plan for at least weekly status collection and reporting, and conduct short periodic team meetings throughout the project.

Closing a Small Project

Projects without elaborate, complex deliverables are generally not difficult to close. The requirements are usually straightforward, so verifying that they have been met is not complicated. It may be a good idea as the project nears completion to do a “pre-close” with key stakeholders to ensure that the initial requirements remain valid and to avoid surprises. Work to ensure that sign-off at the end of the project is a non-event.

Conclude even small projects with a quick assessment of lessons learned to capture what went well and what should be changed. Adjust the planning and other template information for use on future similar projects. Also, thank all the contributors and close the project with a short final status report.

9. How rigid and formal should I be when running a small project?

Depends on:

- ▲ Past experiences
- ▲ Background of your team
- ▲ All aspects of project size

Determining Formality

The short (and admittedly not very helpful) answer to this question is “formal enough.”

As discussed in Problem 8, overall formality on small projects can be a good deal less than on larger projects, but it should never be none. One important aspect to consider is the complexity of the project, not just its staffing or duration. Even very small projects can be complicated, so establish a level of process formality that is consistent with the most daunting aspects of your project. Work with your team to determine what will be useful and keep you out of trouble, and adopt less formal methods only where your personal knowledge truly justifies it.

It is also best to start a project with a bit more process formality than you think is truly necessary; relaxing your processes during a project is always easier than adding to them once your project is under way.

Establishing the Minimum

Even for short, simple projects, define the objectives and document the requirements in writing. Other aspects of project initiation may be streamlined, but never skip on scoping definition.

Planning may also be simplified, and you may not need to use elaborate (or in some cases any) project management scheduling software to document the project. With sufficiently straightforward projects, even scattered yellow sticky notes set out on a whiteboard might be sufficient. If your team is geographically separated, though, ensure that you have a project plan that can be used effectively by all.

Project monitoring may also be less formal, but collect and distribute status reports at least weekly, and maintain effective ongoing communications with each project contributor. Schedule and be disciplined about both one-on-one communication and periodic team meetings to keep things moving and under control.

Overall, watch for problems and difficulty, and adjust the processes you use for each project and from project to project to balance the trade-off between excessive overhead and insufficient control.

10. How do I handle very repetitive projects, such as product introductions?

Establishing Templates and Plans

As with very small projects, repetitive projects are more easily managed using detailed templates and plans that document the necessary work from past projects. Appropriate work breakdown templates that have been kept up-to-date may include nearly all the activities needed and reduce your planning efforts to minor additions and deletions, small adjustments to estimates, and assignment of ownership. If no templates exist, extract basic planning information from the documentation of past projects or initiate a fast-track planning exercise.

Assessing Project Retrospectives

Consider difficulties encountered by past projects and recommendations for change that came up during previous post-project analyses. Also identify any work that was added or new methods that were successfully employed on recently completed similar projects. Work with your project team to find changes that will improve the planning templates and make adjustments to them.

Incorporating Specific Differences

Finally, seek what is different or missing. All projects are unique, so no template will cover every aspect of a new project completely. Review the specific requirements to detect any that are at variance with those from previous projects. Add any necessary work that these requirements will require. Document completion and evaluation criteria, look for any that are new, and adjust the plans to accommodate them. Review all the work in the adjusted planning templates and verify that it is all actually needed. Delete any work that is unnecessary for this particular project.

Tracking the Work

Throughout the project, scrupulously track the work using your planning documents. Monitor for difficulties and respond to them promptly. When you find missing or inadequately planned work, note the specifics and update the planning templates to improve them for future projects.

11. How should I manage short, complex, dynamic projects?

Depends on:

- ▲ Staff size and commitments
- ▲ Nature of the complexity

Dealing with Complexity Under Pressure

Projects that represent a lot of change in a hurry have a potentially overwhelming number of failure modes. Part of the difficulty is compressed timing, often with a duration set at about ninety days to complete the work. When doing a lot of work in a short time frame, even seemingly trivial problems can trigger other trouble and cause the project to quickly cascade out of control. If the complexity is technical, thorough planning can help. If the complexity is organizational, strong sponsorship and exceptionally effective communications will make a difference. Whatever makes the project complex, a single-minded focus and disciplined project management processes will aid in avoiding disaster.

Maintaining Support

Work with the sponsors and key stakeholders to verify the business reasons for a “crash” approach to the project. Understand what the benefits of the deliverables will be and document a credible case for why they matter. Also determine what the consequences of an unsuccessful project would be. Use the business case for the work to secure adequate staffing and funding for the work, including a budget reserve to cover any contingencies as they arise. Also establish a process for prompt escalation and resolution for issues that are beyond your control, with a commitment for timely response and authority to take action on your own in the absence of a management decision within the defined time window.

Throughout the project, communicate frequently with your sponsor and key stakeholders, delivering both good and bad news without delay

as the project progresses. Never allow small problems to develop into irresolvable quagmires, as they will rapidly become in high-pressure projects. Continuity of staffing is critical on this sort of project, so strongly resist, and enlist support from your sponsor to block, all attempts to change or to reduce the staffing of the project as it proceeds.

Planning the Work

On short projects, planning must be intense and effective. To minimize distractions, consider working off-site, and if you have any geographically distant contributors, do whatever you need to do to enable them to participate in person for project planning.

Engage your core team in gaining a deep understanding of all the project requirements, and work to develop a credible, sufficiently detailed plan for meeting them. One advantage of a short project is that the relatively short time frame restricts the number of options, so it may be possible to develop a solid, detailed plan in a reasonable time (assuming, of course, that the project is in fact possible). As part of the planning exercise, define the specifics of all testing and acceptance evaluation, and verify them with your stakeholders when you baseline the project.

Establishing Processes

On intense, fast-track projects, well-defined and agreed-upon processes are critical. Processes for communication, problem escalation (referenced earlier), risk management, and many other aspects of project management are crucial, but none is more important when executing a highly complex short project than the process for managing scope change. As part of initiation, establish a strong, sufficiently formal process for quickly assessing requested changes. Get buy-in from your project team and key stakeholders for a process that has teeth in it and a default disposition of “reject” for all changes, regardless of who submits them. Identify who has the authority to say “no”—ideally you as the project manager. Establish an expectation that even for changes that have merit, the disposition is more likely to be either “not yet,” to allow the project to complete as defined and to handle the change as part of a subsequent follow-on effort, or “yes with modifications,” to accept only

those parts of the requested change that are truly necessary. Excessive change will guarantee disaster on complex, high-pressure projects.

Monitoring and Communicating

Finally, effective tracking and communication is essential. Aggressive plans must always be tracked with high discipline. Set status cycles to be at least weekly, and increase the frequency whenever things are not proceeding as planned. During times of high stress, schedule short five-to ten-minute stand-up or teleconference status meetings each day to stay on top of evolving progress. Handle problems and variances from plans within your team when possible, but do not hesitate to escalate situations where resolution is beyond your control, especially for any case that could endanger the success of the overall project.

Communicate status clearly and at least weekly, and do it more often when warranted. Use bulleted highlights in an up-front executive summary to emphasize any critical information in your status reports. Use “stoplight indicators” for project activities, and don’t hesitate to name names and color items red or yellow whenever they appear to be headed for trouble. (Always warn people in advance, though, to give them a chance to fix things.)

Overall, strive to remain focused on your project and available to all involved with the work. Never skip status collection or reporting cycles, even when in escalation mode, and delegate responsibility to a capable member of your project team whenever you are not available.



12. How do I balance good project management practices with high pressure to “get it done”? How do I build organizational support for effective project planning and management?

Dealing with Process Phobia

In some environments where projects are undertaken, project management is barely tolerated as “necessary overhead” or, worse, discouraged altogether. Although very small and straightforward projects may be successful with little planning and no structured approach, as projects become larger, longer, and more complex this practice can become very expensive. A manager or project sponsor who prohibits good project practices by asking, “Why are you wasting time with all that planning nonsense? Why aren’t you working?” will soon be inquiring why the project is well past its intended deadline and redoing some of the work for the third or fourth time.

Resistance to the use of good project processes can be from management above you, or from the members of your project team, or even from both. Although you may not be able to completely remove resistance from either source, there are tactics that can help.

Building Sponsor Support

Ultimately, the best tactics to use when approaching management about more formal project management processes depend on financial arguments. Although it may be difficult to “prove” that good project processes will save money, there are always plausible places to start. The best involve credible project metrics, especially those that are already in place, visible, and at adverse variance compared with expectations. If projects are chronically late, over budget, or otherwise causing organizational issues, you can do some root cause analysis to tie the performance metrics to poor project practices such as lax change controls or

insufficient planning. Use what you learn to build a convincing case and negotiate management support for more structured project management.

Even in the absence of established metrics, you may still be able to find sources of pain that are obvious and might be relieved with better project discipline. You may be able to persuade your management with plausible estimates of potential savings or anecdotal evidence based on success stories either within your organization or from outside, similar situations.

When the view that formal project practices are mostly unneeded overhead is deeply entrenched, you may find that progress in gaining support is very slow and difficult. If so, proceed incrementally over time, seeking support for the processes that you believe will make the biggest difference first, and work to add more structure gradually over time.

Building Team Support

When you have difficulty encouraging good practices within your team, the best place to start is by identifying sources of pain and showing how better processes could provide relief. For example, many teams are reluctant to invest time in thorough planning, particularly when the contributors are relatively inexperienced. New project teams often have a strong bias for action, and planning and thinking doesn't seem to be either productive or much fun. The reality, though, is that the most important aspect of planning is ensuring that the next thing chosen to work on is the most important thing to work on, and this is only possible with thorough analysis of project work. Before the project can be completed, all the activities must be identified, and the choice between whether we do this up front and organize the work or do it piece by piece, day by day throughout the project should not be difficult. Thorough up-front planning not only sets up project work in an efficient, effective way, it also provides the project leader and the team with the knowledge (or at least a strong belief) that the project is possible. In the absence of a plan, the best we have are hopes, dreams, and prayers, none of which provides a particularly solid basis for project success.

Although it will appear to some that planning will delay the start of work and ultimately make a project take longer, it is easy to demonstrate that the principle of "Go slow initially to go fast later" is essential to efficient projects that get most things right the first time through.

Ultimately, gaining team cooperation for effective project processes

relies on helpful mentoring and teaching. Good project managers lead by example, modeling the behaviors that they desire of their teams.

Resorting to Stealth-Mode Project Management

Winning the argument about whether project management processes are worthwhile depends on at least some open-mindedness on the part of others. When even your best arguments fall on deaf ears, you may find it necessary to take your processes underground. This is not a desirable way to proceed, but it's better than failing. Some project leaders do their planning, risk management, and other project analysis work at home or outside normal working hours. Over time, you will likely find co-conspirators who will help you, making your efforts both more effective and less lonely.

It is also possible that the obviously more successful management of your projects will be noticed. When you are approached to find out why, you may use this opening to engage in a discussion that can lead to more acceptance and support for better project practices overall, out in the open.

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13. How does project management differ between hardware and software projects?

Depends on:

- ▲ Project size and complexity

Dealing with Tangible and Intangible Deliverables

The basic principles of project management are applicable to projects of any type, but there are some key differences worth noting between hardware development projects having physical deliverables and software projects that generate less tangible results. The specifics of the project life cycle may be dissimilar, and there are often differences in processes, such as those related to testing and scope change control.

Defining Life Cycles

Software projects, especially those with very novel deliverables that are relatively small, may elect to use an “agile” or cyclic life cycle, as discussed in Problem 7.

Hardware projects and larger software projects generally employ a more traditional waterfall-type life cycle, but the names of the life-cycle phases may differ. For product development projects, whether hardware or software, a typical life cycle will begin with one or more phases focused on definition and analysis, with a business decision to carry the project forward at a relatively early process stage. Software development undertaken on a fee-for-service basis, on the other hand, usually has more phases on the front end related to sales and proposal activities necessary to win the business. The business decision in this case is further along the sequence of phases and represents the decision by the customer to agree to the proposal and sign a contract. There may be only one or two phases subsequent to this decision point, to execute the contract work, and then to secure approval and payment.

Establishing Processes and Roles

With a well-defined hardware project, scoping changes are expected to be rare and the process for managing those changes is usually defined quite formally. Software projects also need good scoping management processes, but changes are inevitably more common, and (whether it is actually true or not) changes are considered to be less costly and disruptive to software projects. Particularly early in a software project, the process used to manage changes to the deliverable can be relatively informal, even after the baseline plan has been set.

Testing is another area where there are often differences. Software projects may have multiple interim deliverables that need to be tested and evaluated, so testing may be necessary throughout a software project. Owing to the nature of hardware projects, most testing tends to be scheduled shortly before project closure, including the unit tests of subcomponents of a complex system deliverable. Because hardware components may come together in a testable configuration only near the end, evaluation (except for that done as part of early feasibility investigation) is mostly done fairly late in the project.

For some types of hardware projects, the rate of technological evolution is relatively slow compared to software projects. Because of this, the technical expertise of a project leader of a hardware project tends to be deeper than that of those who lead software projects. For all projects, success depends on the subject matter expertise of the project manager, but software project leaders may be much more dependent on the specialized backgrounds of their team members. Because of this, and the increasingly cross-functional nature of software projects, effective software project leaders need to have especially well-developed people leadership skills.

14. How many projects can a project manager realistically handle simultaneously?

Depends on:

- ▲ Team size(s)
- ▲ Project complexity
- ▲ Project workflow continuity

Understanding Limits on Control

The number of projects that even an experienced, grizzled project manager can effectively manage is usually one. There are exceptions to this, but managing several simultaneous independent projects, where any or all of them might need attention at any time, often results in a loss of visibility and control, serious problems, and probable failure of one or more of them. Managing more than one project well requires either that the projects be small and simple, or that they not require uninterrupted effort.

Project leaders typically spend about 10 percent of their time interacting with each full-time member of their project team (or teams), so projects with about a dozen contributors will account for all the time that's available, and then some. Managing several teams of ten to twelve people working on separate projects can be successful through delegation of responsibility to leaders for each who can manage their assigned projects. Delegation such as this is a key tactic of program management, which focuses on management of multiple related projects.

Managing Very Small Projects

It is possible to manage more than one project if each is relatively small and the number of contributors in total is about twelve or fewer. Even if some of the team members are involved with more than one of the projects, you should be able to keep things in balance as long as cross-project timing and resource contention conflicts are minimal. Regard-

less of how small the projects are, though, for the sake of your sanity keep the total number of simultaneous projects below about a half dozen. You will find some additional suggestions for leading multiple small projects in Problem 81.

Managing Discontinuous Projects

Another case where managing more than one project may be feasible is where there are significant natural gaps in the work. For small projects that have a good deal of inherent “wait time” in their schedules, you can potentially manage a larger number at once. The maximum number depends on the complexity of the work and the proportion of work time to wait time. One very able and experienced project leader that I worked with who managed relatively complicated printing projects typically had between fifteen and thirty projects going at any given time, but of course most of them required only short bursts of attention about once a week.

15. How do I handle my day-to-day tasks along with managing a project?

Depends on:

- ▲ Whether you have a small or a significant number of other responsibilities

Determining Your Available Time

There are two aspects to this issue—the short term and the long term. In the short term, keeping up with your responsibilities starts with preserving at least a little slack time in your schedule. To ensure this, review your daily schedules at least a day or two out and protect a small amount of open time in both the morning and the afternoon for dealing with unanticipated needs. At the end of a day of back-to-back meetings, you will undoubtedly have a number of pending tasks, some of which will be late. Also, always check your schedule to preserve a bit of slack before accepting new meeting requests or other new commitments (or when planning new meetings yourself). When you must, say “no” to requests you cannot meet.

Longer term, balancing your responsibilities with your available time begins with a realistic assessment of your capacity. When your overall responsibilities exceed what you can reasonably get done, you will ultimately need to either delegate or eliminate some of your work.

For most project managers, the number of hours available in a week tends to be flexible, but it is finite. Exactly how you choose to estimate your capacity is up to you, but it is a good idea to begin with a maximum based on a combination of what you generally have done in the past, your personal preferences, and organizational expectations. Having determined your theoretical capacity, you should deduct about 10 percent or so to account for unexpected emergencies and personal time off for vacations and other time away from work. The remaining portion of your time is what is realistically available for formal commitments and responsibilities. (If you determine that fifty hours is your reasonable workload, you will need to reserve an average of an uncommitted hour per day in a five-day week.)