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Agile Project Management

A Mandate for the 21st Century

Karen R.J. White

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Center for Business Practices

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Karen R.J. White, MSc, PMP
August 2008

Preface

All revolutionary changes are unthinkable until they happen—
and then they are understood to be inevitable.

—Theodore Roszak

Goodbye, Bureaucracy—Hello, Agility

If any single word characterizes our culture—inside and outside business—in this first decade of the 21st century, it might be "fast." From time-to-market to download speeds, ours is a world that is in a hurry … for results, for an answer, for the next big thing. Even language has shortened and speeded up: think F2F, B2B, IMHO, Twitter. And, speaking of language, the slow and stately processes of yesteryear went out with the ocean liner. The words *nimble, flexible,* and *agile* once applied more to dancers or athletes: today they fill the columns of business magazines.

Much has been written recently about the need for agility in business, especially when corporations seek to differentiate themselves from the competition through new products, programs or projects. Yet it's questionable whether there is a true understanding or appreciation for what is meant by "agility."

Exploring the word agility in the *Merriam-Webster Online* dictionary enlightens us to the nuances of this quality. Its Latin root, *agere,* means "to drive, act" and is also the root of *agent.* So, agility implies agency: an increased ownership and authority for the individuals involved, along with the commensurate

increased responsibility. The definitions also mention "ready ability to move with quick easy grace" (as in "an *agile* dancer"); nimbleness and dexterity. So it is also associated with the quick and easy changes of direction and form called for by today's business environment. Thirdly, the definition refers to "having a quick, resourceful and adaptable character."

The words "resource," "adaptable," and "character," also point us towards the role of the project manager in project/business agility. Despite the way it has sometimes been interpreted, agility does not mean unmanaged or undocumented: it isn't the lazy person's approach to project or business management. Rather, agility means the ability to quickly adjust and respond to changing business needs. This kind of agility requires practitioners who are keenly aware of changes in the business and external environment, and who are paying attention at all times to factors that may influence the direction of the project, and communicating openly about them. This "adaptive management" style isn't for the faint of heart or sloppy or unskilled. But, when practiced adeptly, it is applicable to all business processes, not just software development or product development groups, and is especially needed today on mission-critical projects.

Mandate? Yes, and Here's Why

Society underwent a paradigm shift in the latter part of the 20th century with the emergence and acceptance of Internet technologies. Consequently, we are truly approaching the state of a single global society and a single global economy or, as Thomas Friedman calls it, "a flattened world" (Friedman, 2005). This shift has had an impact on how businesses approach the management of projects. Projects in the 21st century will be accomplished in an environment unlike any seen before: already we see "permeable" organizations operating

as networks of contractual relationships, on a 24-hour workday, with distributed resources around the globe. Technology products cycle through their useful lives in months, not years. Natural resources that we have long taken for granted have become scarce, and organizations as well as government institutions are confronted by unprecedented security considerations. Organizations and the project managers who lead their projects need to be ready to respond with new and better tools and techniques.

Agile project management is just one manifestation of the response to this pressure; the others—just-in-time manufacturing, lean product development, agile software development—are familiar to anyone who reads the business press. As a leader in the field of project management, you are now challenged to realize that the problems being addressed by project management are almost always *adaptive problems*. That is, they are problems beyond the reach of our traditional problem-solving methods: the scope, plan, schedule and so on that are set in place and remain relatively static through the execution of a project. In fact, the time has come when we need to admit we (the program/project manager, business customer, product architect/designer, other stakeholders) *do not know the solutions to the problems* … and indeed, that "we"—our methods, our habits, our leadership styles, our assumptions—are *part* of the problem. We may then be willing to learn what we need from one another in order to begin to solve our problems. If this state can be achieved, an adaptive style of project management that embodies the work of energizing, enabling and empowering a project team composed of all the stakeholders, including the technical team, can proceed by continuously learning what next steps should be while adapting to the changing requirements. The focus of agile project management is then on *leadership, teamwork and throughput*.

The flattening of the world has also made for rather complex and dynamic organizational structures and project teams. Organizations are becoming more fluid in their structures, adding and removing business partners, supply chain partners, and other providers. These external entities are often project team participants, providing project resources or participating as project stakeholders or clients. Therefore, fluctuation in these business relationships creates disruption in projects over time unless iterative, just-in-time approaches are in place. At the same time, corporate strategies often focus on beating the competition to market. A recent example might be the competition between Google and Microsoft to develop personal health records capability. When the stakes are high, and a company's reputation is on the line, can they execute the projects to support that strategy? Research from the Center for Business Practices (CBP, 2005) has shown that top-performing organizations link corporate strategy to project management; if project management isn't agile, can strategy management be any better?

How to Use this Book

This slim volume is not intended as a full primer on the agile philosophy or on adaptive leadership. In-depth texts exist elsewhere, and some are listed in the References at the end of this book. Much has been written about agile practices within information technology organizations, but the focus of these efforts has been primarily on agile software development projects. As this exciting method has become familiar to software developers and others in IT, many project management experts have wondered: shouldn't agile methods be applied to the management of other kinds of projects? The mission of this book is to connect the dots between agile practices, proj-

ect management practices, and those drivers in the business world that make it likely that all projects of all types are going to need the benefits that agile project managers can bring.

Going Forward

One of the fascinating things about agile methodology has been the extent to which it exists, and has grown, as a conversation among practitioners—a kind of virtual community of practice spanning organizations and the globe. As the application areas for agile expand, and practitioners develop new agile approaches to various business problems, this conversation will remain important. Not only should those interested in applying agile to their projects join the various online mailing lists and publications listed in the References, but they should mentor each other. To that end: Keep in touch! The author can be reached via authors@cbponline.com.

Chapter 1

Agile Project Management ... Agile Project Managers

You've been reading about agile methods; you may have even tested some out on an IT project. But how do you begin to instill agile methodology into all your project management practices? How can you gain support for your activities? Aren't there valid objections to running projects on the agile model in some cases?

Traditional Project Management

Before we describe agile project management, let's recap what we will call "traditional project management." Traditional project management (TPM) is good at addressing technical or linear problem solutions. It's focused on a linear approach to mostly "technical" problems; that is, problems that have finite solutions that can be relatively defined, scoped and estimated (in both time and cost), and placed under centralized control within a hierarchical structure.

TPM requires that at the least high-level customer requirements be defined completely before planning is initiated. The trouble, many project managers suggest, is that it is nearly impossible to completely and clearly document all requirements, even at a high level, at the beginning of any project these days, given the speed of economic dynamics.

The consequence is continuous scope creep and inevitable change requests that have significant impact on project management processes.

What is finally emerging from the erroneous belief that "product development, especially of technology-based products, is really just an engineering activity" is a broad realization that most project customers are simply not able to differentiate between their wants and needs. In the typical TPM environment, customers have frequently not dug deeply into a problem. They haven't sorted out the issue of "wants" vs. "needs." Solution "wants" are thus perceived by the project team to contain customer requirements. Unfortunately, early in the project, analysis is not even strong enough to break through to what is truly *needed*. Only after product development commences does the customer quickly begin to realize that what they really *needed* is not exactly what they *requested*. The cost to business and consumers for these shortcuts is immense when projects are not completed satisfactorily, with missed schedules and cost over-runs. An approach that deals with the reality of change, which is always changing, needs to be utilized—incorporating discovery and learning throughout the project life cycle.

Agile Project Management

In contrast, agile project management allows for direct customer inclusion, adjustments and even redirection utilizing a type of iterative approach that deals with the level of uncertainty encountered. Introducing agility into your projects does not mean replacing your current processes. Agile techniques *supplement* the traditional project management principles the organization already uses.

Agile project management is based on several key concepts:

- Adaptive leadership
- Close interaction between the customer/user and developers
- Less time dedicated to planning at the beginning of the project
- Smaller teams and more highly skilled team members
- Delayed decision making
- Elimination of waste
- Integrated quality activities.

These concepts should be considered when adapting existing project management techniques for agility, since they truly represent the difference between traditional project management and agile project management.

Adaptive Leadership

Agile project management requires leadership; what has in recent years been identified as "adaptive leadership." That is, a leader in the agile environment needs to be sensitive to the changes occurring in the business and adapt leadership styles, tools and skills to be responsive. This concept is so essential to the successful implementation of agile project management that some time must be taken to clearly describe what adaptive leadership is and how it relates to agile project management.

Ronald A. Heifetz of Harvard University, director of the Leadership Education Project, fully delineated the concept of adaptive leadership in his book *Leadership Without Easy Answers* (Heifetz, 1994). Heifetz focuses on the delicate bal-

let to lead change in our pluralistic society where authority is strictly limited and goals are often murky. Using cases from well-known leaders, Heifetz defines leadership along two lines: the difference between technical answers and adaptive work, and between leadership and authority.

As mentioned in the preface, a major "Aha!" experience in the project leader's life is the realization that—in the words of cartoon character Pogo—"We have met the enemy, and he is us." Many of the problems addressed by project management are self-created by poor communication between stakeholders, or by processes that require us to know things that we cannot know yet. Thus, they are "adaptive" problems: problems that, if we are willing to remain open and flexible, we may learn what we need to know to solve them. That's why an adaptive style of project management that embodies the work of energizing, enabling and empowering a project team composed of all the stakeholders. Knowing we don't know the way forward, we can still proceed by continuously learning what next steps should be, while adapting to the changing requirements, and remaining in constant collaborative communication.

Close Interaction between the Customer/User and the Developers

The implications are clear: project scope can no longer be locked up but must be allowed to be variable, while each iteration must work within a specified time and cost framework for the project. The customer is involved in each step in the process and is the final decision maker. Adaptive leadership allows for the entire team to contribute to achieving the maximum business value by adjusting the scope at each iteration. The customer then can change the project direction based on

what has been learned with previous iterations. The adjustments are continuous fine tuning of the project course to deliver maximum customer value. "Customer value is the right product, at the right time, for the right price. The right product is the product with exactly the features that the customer wants. The right price is the price that customer believes is a fair deal. The right time is when the customer wants it" (Augustine, 2006).

Less Time Dedicated to Planning at the Beginning of the Project

While agile project management embraces rather than avoids change, it also incorporates selected tools and processes from traditional project management based upon the specific approach being used for the project. Planning in an agile project takes on a new meaning, albeit not drastically different from what is typically done in a project initiation phase. It is component or functionally based, with only enough information to create a related WBS framework, while TPM planning is task and activity based. When following agile project management principles sufficient planning is performed at the beginning of the project to ensure the project's vision and goals are understood, to establish key project milestones or product release dates, to know which product features are of urgency. Then each iteration of the project is planned in further detail as the project unfolds. That is, the detailed planning of a task-based WBS is left for each iteration. This helps prevent speculation about the future and supports focused energy on the immediate activities. Therefore, each iteration has activity that will only take several weeks to complete and includes only what is known to be of value.

Smaller Teams and More Highly Skilled Team Members

The 21st century is often considered the "century of the knowledge workers." The generation of workers entering the workforce these days has grown up comfortable with PDAs, PCs, continuous and multiple information feeds. As a result, they are comfortable in a faster-paced business environment where results are desired almost immediately. As this generation enters the management ranks, they will not have patience for the multi-year projects. They will want answers now. Customers can be expected to demand similar speed and flexibility.

To provide these "instantaneous" solutions, project organizations will need to become complex adaptive systems with self-control at the core and governed by simple local rules (processes). There will be neither time nor tolerance for lengthy approval processes such as is typical in today's procurement business. Decisions will need to be made much more quickly so action can be initiated.

Agile project teams work better as small groups of dedicated resources intensely focused on the activities needed to accomplish the goals of the iteration at hand and of the project overall. They need to be empowered to make decisions quickly and collaboratively. Collocation of all project team members, including the project manager, contributes to this sense of unity and further fosters sharing and collaboration, but the reality is that many teams no longer share a continent, much less office space. In distributed team situations, project managers must commit to the process of creating virtual community, using all the power of modern telecommunications, plus their interpersonal skills, to connect people and facilitate the work.

Decision Making

Speaking of decisions, in an agile project, it is beneficial for decisions to be delayed as late as possible, to remove risks

associated with making a decision with less than complete information. This might seem contrary to the principles of agility, yet, when you think about rework and how it comes to be, you will see that it is often related to a premature decision. NASA practices this principle every time they delay a launch of a rocket during countdown; they wait until the last possible minute to ensure the weather is supportive of a successful launch. Imagine the rework (and catastrophe!) that would ensue if they made a definitive decision to launch on such-and-such a day and didn't continue to monitor the risks.

Elimination of "Waste" — Activities that Don't Contribute Value

Agile project management borrows the concept of waste elimination from the lean manufacturing concept. Any activity that does not contribute directly to the value of the end product needs to be questioned.

We live in a time of great transition and great opportunity. As a result people and businesses ask the questions of fundamental interest: What's essential? and, What's expendable? These are the essential questions of adaptive work, according to Heifetz, and permeate every project undertaken (Flower, 1995). They have to be resolved to take advantage of opportunities to engage with new cultural directions, changing values and emerging economic prospects to move through this transition period into the future. It often requires having to move out of comfort zones and having to release elements that seem to be cherished. This in turn leads to strong resistance to change from the way things have "always been done," especially as related to reports and other forms of documentation. It's often heard that "We're not going to have change just for change's sake." This is then perhaps the most difficult hurdle agile project management encounters since it is perceived to be

so different and uncontrolled from what we have been doing in traditional project management.

Testing of Product Integrated into Product Development Activities

Quality is designed and built into products in agile environments. Post-development quality control is viewed as one of those "wasteful" activities. In agile project management, quality control is a specific responsibility of each team member.

- *Customers/users*: Requirements are complete and that he knows how he will validate that a requirement was addressed.
- *Product architects*: Requirements are comprehensive and addressed in the final product.
- *Product developers*: Ensuring their products function as expected before they "release" them to the team.

Good quality analysis and quality control help assure the customer that they are getting the quality product for which they are paying and have the right to expect. Facilitating this ideal even farther, as a result of the tight integration and collaboration, the customer is constantly informed and involved in the decision making during an agile project.

Drivers for the Adoption of Agile Project Management

Now that we understand how agile methods differ from traditional project management, the next question becomes: why should we consider adopting it? Like any profession, project management continues to evolve, and professional practitio-

ners must always be watching the horizon for new developments in the discipline. Agile project management is one of the emerging techniques with which the 21st century project manager needs to be adept, if he is to keep pace with the demands of the marketplace. The successful project manager will recognize the situation in which his traditional project management techniques might need to be modified and adapted to be more nimble, and will have skills in successfully effecting such adaptations without discarding the disciplines associated with traditional project management.

Economic Pressures

As anyone who reads the business news knows, there is definitely increased pressure from the financial markets to be competitive in the global economy. This often translates into being the "first to market" with a product, a service, an idea; thereby, gaining significant market share.

Consider the case of Progressive Insurance, one of the first insurance companies to leverage the Internet. They launched an informational web site in 1995, and then added the capability to compare rates. In 1997, they expanded that web presence to permit the consumer purchase of auto insurance policies in real-time. As stated in a May 2005 article in *Intelligent Enterprise,* "By setting the pace of innovation, Progressive grew from a $1.3 billion company in 1991 to a $13.4 billion company in 2004. Just as *price* elasticity measures the limits of customer demand, Progressive learned that the limits of *time* elasticity helped it steal customers from slower competitors in what was otherwise a mature market. By saving customers time, Progressive also builds on and reinforces another competitive variable: trust, the foundation for building valuable relationships" (Fingar, 2005).

Another example of "first to market" is Dell's ability to sell laptops directly to the consumer, thereby claiming ownership of the personal use market. So, a consideration for our 21st century project manager is "how important is to get the project's deliverables to market this quarter?" And then to use the answer to that question to influence how he plans out the project's overarching life cycle model.

High-profile projects are often key players in today's corporate strategies; they are not just visible, but high-value and often high-risk, representing immense investments of resources, both human and financial. And, at the same time, the external environment has never been more challenging—or more present. As organizations become more fluid in their structures, business partners, supply chain partners, vendors and customers are often project team participants. With so many relationships feeding into the project, the need for agility—to respond to issues or input from many sources—becomes crucial.

Business and Technology Uncertainties

In addition to the turmoil that market pressures and organizational changes cause in the project team, these changes introduce uncertainty into the business dynamics. Consider the number of times global organizations have shifted direction in the recent years, entering or departing markets, selling off entire product lines, or acquiring new product lines and businesses. CEO tenures have also shortened. These shifts often mean new projects entering into the organization's portfolio, often times at a higher priority than those already underway. The organization needs to be agile and adept in the manner in which it shifts resources to and from projects, to ensure the organization continues to effectively leverage the right resources on the more strategic efforts.

The impact this shift in the importance of agility has had on the public's perception of the value of quality is interesting. While there is a desire to "have it now," there is an increasing sense of higher quality demands. The global supply chain and its associated business models have complicated quality control management processes within a business. Multiple layers of government regulations need to be reviewed and understood. The project team needs to worry about the quality of offshore components that are integrated into the final products, and yet deliver that product to the market in a timely fashion. Any agile project management life cycle model needs to address these concerns.

Communications technology, especially Internet-based, continues to be increasingly pervasive. Technologies developed for personal use and communication have quickly become assessed for business usage—the iPod, social networking sites like MySpace and Facebook, instant messaging, wikis and blogs have become accepted features of business communication in many companies. As Alan Levine, CIO of the Kennedy Center in Washington, DC, noted in a recent presentation on the topic, as agents of sweeping change, these technologies are on a par with the invention of the printing press (Levine, 2008). The ability of a consumer and a business to enter into a transaction while ten thousand miles apart was not economically possible even as recently as the past decade. Yes, most consumers could conduct a mail order or telephone order transaction, during business hours, but only if they knew of the business. With the emergence and acceptance of Google and other global search engines, the consumer can now search out businesses, engage in chats with customer service representatives, compare prices and quality of items and vendors with other customers—all online, at any hour. All these technologies add the potential of agility to the management of our

lives, projects, and businesses—if the organization has prepared itself appropriately.

Complex Program Life Cycle Models

Much has been written about agile practices within information technology organizations, but the focus of these efforts has been primarily on agile software development projects. Many software development organizations are embracing agile techniques including SCRUM, XP (Extreme Programming) and DSDM (Dynamic Systems Development Method). These techniques, practiced on their own, do not necessarily result in a more agile overall project. An information technology project often includes activities that are not related to software development, activities such as business process modifications and user training. If these activities are not performed with agility, can you really say you have an "agile project?" According to an article in the *Agile Journal*, "Today's IT solutions are complex integrations of custom developed components, business products such as CRM and ERP systems, and technical products such as networks, databases, and messaging stacks. *Given this complexity, maximizing the responsiveness of application development is potentially futile if the rest of IT doesn't follow suit.* For example, if environments can't be rapidly instantiated, databases rapidly refactored, code integrated with commercial-off-the-shelf platforms, and testing parallelized, injecting agile practices simply creates an application development capability that is hindered by, and potentially arrogant and demeaning toward, its IT peers" (Pettit, 2007; italics mine).

Complex projects and programs are not found only in information technology. The development of new production capabilities, the re-fitting of a production line to support a new market initiative, the development and marketing of a new

product are examples of complex programs that non-information technology organizations lead and that often have a "need to get to market" urgency associated with them. Agile project management principles and techniques should be considered when managing these projects.

The preceding discussion will, we hope, clarify the need for agile project management which in turn requires adaptive leadership. For some projects, that means being able to envision how the project deliverables might be developed in usable pieces, in increments over short periods of time. This approach to planning and executing a project provides the organization with periodic checkpoints, where decisions about continuing on the project can be made. If the decision to not continue is made, perhaps because the market is not responding to the initial product, the organization has the benefit of some completed product—not just a stack of requirements documentation.

Now, let's look at some specific techniques project managers will need to create agility in project management.

CHAPTER 2

Leading Agile Projects

Tools and Techniques for the Project Manager

Leadership is influence—nothing more, nothing less.

—John Maxwell

Agile Project Management and Leadership

AGILE PROJECT MANAGEMENT is all about sharing the ownership of a project vision, and then influencing, motivating and enabling others to be successful. The contributions of a project manager in an agile project are more akin to those of a team leader or facilitator, than a manager. With an increased emphasis on the team (which includes the project's customers), we find the project manager's role becomes one of "roadblock removal," as the self-managing team generates the necessary information to move the project forward, and makes decisions on that information.

Thus, agile project management calls for more leadership … and less dictatorship.

When managing the agile project, the project manager needs to adapt and modify his approach. Exhibit 2.1 highlights where those adaptations are likely to be required.

Not all project managers are able to adapt successfully. It the responsibility of management, especially the project's sponsor, to ensure that the project manager assigned to an agile

Management	Leadership
Perspective: Short range	Perspective: Long range
Focuses on systems and structures	Focuses on people and relationships
Asks employees: "When" and "how" (work will be done)	Asks employees: "Why" (should we do this work)
Core tasks: Planning the work Organizing the work Implementing the plan Controlling results	Core tasks: Developing people Forming strategic partnerships Creatively challenging the system Inspiring others to act

Exhibit 2.1. Management versus Leadership.

project possesses the skill set and temperament for this very special role. The use of competency assessments, 360-degree evaluations, and peer interviews are just some of the tools we recommend. In addition, we have advocated—and *The State of the PMO* study by the CBP confirms that companies are implementing—splitting apart the technical and the leadership aspects of project management into separate roles, allowing skilled technologists to excel in what they do best—the science of project management—while skilled leaders, boundary spanners, and facilitators take on the "art" side of the role (Crawford, 2005; Center for Business Practices, 2007).

These skills and traits should be hired for, and developed consciously, by organizations. Just as the old habit of crowning technical personnel as "project managers" without the requisite background or skills often led to project failure, the assumption that any project manager can be an agile project manager is a dangerous one.

For the organization that wants to plan for agility—rather than just lucking into it in a ad hoc manner—the role played by a project management office can be key.

The PMO—An Agile Advocate

Organizations that have installed project management offices were faced with a major decision at the onset of the PMO implementation process: "What kind of PMO do we want?" Who knew that there were so many different kinds of PMOs, with assorted levels of power and influence? There are various categories of PMOs that range from fairly low key providers of tools and infrastructure all the way up to Centers of Excellence that are involved with aligning business goals with your project goals and making strategic plans and decisions.

However, no matter the depth or breadth of responsibility and influence a PMO may have on an organization, there are some basic functions that all PMOs must perform in order to justify their existence:

- They must provide value to the organization.
- They must make projects run better than before they came on the scene.
- They must provide communication, facilitation and coordination services for and between project managers and corporate executives.
- They must provide value-added services to project management practitioners.
- They must become the knowledge center, the subject matter expert (SME), of project management.

As new tools, methods and processes come into play, any PMO worth its salt must take the leadership role in learning about these developments and deciding whether they would provide enough value to the organization to be adopted and incorporated into the project management "bag of tricks." Certainly agile project management is one of those processes. As a new and better way to handle the old problem of "I will know

it when I see it" associated with defining project deliverables, Agile project management can and should be incorporated into a PMO's repertoire of processes.

It is the duty of all PMOs to pursue project management standardization and efficiency where it makes sense; on the other hand when new and better methods come along, it is also the PMO's duty to seek them out and encourage their use, making exceptions to the existing standards where practicable. After all, the purpose of methodology is not to create a new bureaucracy, but to respond effectively to business needs. Keeping that in mind, there are naturally times and situations where traditional project management is best suited for delivery; and situations where a "fast and furious" delivery methodology is warranted. The PMO needs to act as the guide for the project managers and sponsors, as they determine when to use a certain methodology for delivery, establishing boundaries and a structure for all projects, no matter what the delivery process.

In addition, the PMO can play an important role in hiring, assessing, and developing the types of project managers who will excel at agile project management. As recent research has shown, the majority of successful enterprise-level PMOs today consist of project managers, planners and controllers who report to the PMO, with the PMO taking the lead in their competency assessment, performance evaluation, and professional development (Center for Business Practices, 2007). The organization that requires agility does not need to wait for just the right project manager to come along by luck when they can "grow their own" within the PMO, by conducting competency assessments and doing leadership development work within their group.

Making the Choice

As previously mentioned, agile project management is not suitable for all projects. Agile project management reflects

"just enough" project management discipline to ensure the project will achieve its stated goals with minimal risks. It tailors the traditional approach to project management with an approach that meets the needs of the project, while still relying on the same *PMBOK® Guide* processes and disciplines, implemented with different practices and tools. Projects that are being executed in dynamic environments (rapidly changing marketplace, fuzzy concept of product features, unstable internal organization) are perhaps better suited for agile project management because the benefits associated with nimbleness would outweigh the associated project risks.

The decision to apply agile project management methods is not one that the project manager or project sponsor should make in a vacuum. It is a collaborative decision, the outcome of which all must assume responsibility. The associated benefits and risks need to be clearly understood by all project stakeholders, and organizational management needs to be supportive of the decision.

Agile Project Management Tools and Techniques

We have developed the Agile Project Management Questionnaire (Exhibit 2.2) as a tool to assist in determining whether to use traditional project management techniques or agile techniques on a project. It is provided here for your consideration. Meant to be a tool to facilitate discussion, it highlights questions the project manager, project sponsor and PMO should consider when deciding on the project management techniques to use on a particular project—whether to use traditional techniques or agile techniques.

Should it be determined that agile project management is indeed the appropriate approach to a project, there are tools

AGILE PROJECT MANAGEMENT QUESTIONNAIRE		
Project Identification - Project Specifics		
Project Name	Project Number	Date Completed
Project Manager	Project Sponsor	

Use this questionnaire to determine if an agile project management approach is best suited for the project. If there are more then four "yes" questions, an agile approach is recommended.		
Are product features unclear, changing, or poorly defined?	Yes ❑	No ❑
Does the project sponsor have a highly innovative approach to work?	Yes ❑	No ❑
Is new technology involved?	Yes ❑	No ❑
Are there project-related factors, including business drivers and organizational structures, that are likely to be dynamic in nature during the project?	Yes ❑	No ❑
Is a high-degree of risk anticipated?	Yes ❑	No ❑
Is the anticipated project team size small?	Yes ❑	No ❑
Are there experienced technical resources available for the project?	Yes ❑	No ❑
Is it important that some functionality be delivered early in the project lifecycle?	Yes ❑	No ❑
Does the product development support automated quality control activities such as testing?	Yes ❑	No ❑
Is the product intended to deliver non-critical functionality?	Yes ❑	No ❑

Exhibit 2.2. Agile Project Management Questionnaire. This questionnaire can be used to determine if the project should be completed using an agile project management approach. The questions are designed to help identify if conditions exist that would make an agile approach successful. Source: PM Solutions.

and techniques the PMO can provide and the project manager can adapt to apply on the project. Some of these have been "bundled" as agile methodologies, especially in the software development community.[1] The purpose of this text is to *not* be a tutorial on those, rather to be a generic guide, supplying tools and techniques that can be applied to *any* type of agile project. Some of the tools and techniques referenced in the following sections can also be found in these bundled solutions. Now, let's walk—or dance, keeping in mind our dictionary definition—through the project life cycle, with agility.

Project Initiation

On an agile project, project initiation activities are completed with a different focus from what is normally seen on a project managed with traditional project management (see Exhibit 2.3). Care should still be given, when developing the business case, to carefully describe the product along with the quality criteria that will be applied to verify when it has been completed. Nonetheless, there is the conscious realization that, while high-level feature requirements with a rough order of magnitude for major deliverables may be able to be defined, by no means will all of the project requirements be visible and able to be defined at the beginning. Therefore, in preparation for the volatility that will come, the focus of initiation in an agile project is less on the "what," than it is on the organizational aspects that will be directing and supporting the project.

One of the first steps in project initiation on a project should be the determination if agile project management will be a suitable technique to apply, or if the project is better

[1] There are many more techniques and methodologies available to support information technology projects. Among these are SCRUM, XP, DSDM, TDD, to name a few. For those of you that are interested in the IT processes, references can be found at the end of this book.

Traditional PM	Agile PM
Develop Project Charter and Scope Statement	Confirm agile project management is appropriate for project and acceptable to Sponsor(s); consider use of an Agile Project Questionnaire to assist with this decision Develop Project Vision Statement Develop Project Charter

Exhibit 2.3. Initiation Activities.

suited for traditional project management. Using the Agile Project Management Questionnaire, the project manager, project sponsor and PMO should make that decision.

Stakeholder Education

Should the determination be made to move forward under agile project management, the project manager needs to provide the stakeholders with some education of what that means for the project. While all project teams should have some training for newly introduced technologies and certainly always a "Kick-Off" to communicate high-level plans, expectations, rules of engagement and to get all participants focused and headed in the right direction, introducing an agile process adds a totally new wrinkle for most stakeholders.

Agile project management introduces many new ways of operating and communicating. From a new vocabulary, (i.e. sprints, velocity, stand-ups, etc.) to daily status meetings, to multiple releases of functioning products (software or physical), an agile project operates quite differently from most traditional projects, and this impacts all the stakeholders in various ways.

Sponsors need to understand that status will be made available to them at a certain location (portal) and in different formats than before. The traditional weekly status report is not effective or efficient with agile projects.

The *project management team* must be comfortable with the new product development process, with the new tools and techniques.

The *project team* needs to understand that while agile product development is known for quick periods of development, unburdened by all but the most necessary documentation, this exact reason calls for a disciplined process with strict time-boxing and mandatory, daily meetings.

Users will receive bits of functioning product to validate and use while further product advancement continues, instead of one big acceptance period at the end.

An agile project brings with it a new way of doing business that affects every level. All stakeholders, not just the primary project team, need to be educated as to what agile project management is and is not and what is expected of their respective roles. It is only logical that this education of the agile method happen as part of the Initiating phase of a project. Once an agile project is underway, things will happen too quickly to stop for training, and so differently as to overwhelm those who are untrained.

Communications

During project initiation, the project manager should also determine the level of interaction and collaboration that can be expected from each group. The level of interaction is descriptive of the frequency with which a stakeholder is likely to be involved with the project (daily, weekly, monthly). The level of

collaboration expresses the stakeholder's level of participation on the project team: are they on the core team, or on the extended team? These expectations should be clearly communicated and documented; one tool we have seen used here are signed "personal commitment statements."

Over most of the last century, the Boy Scouts learned that the most effective and efficient size for a particular task group was from eight to twelve, with one of the members being the lead. They call these units patrols. Patrols define what their purpose, structure, objective and goals will be, and then go about the activities to bring them to fruition. In a like manner, stakeholders need to be organized into units that can quickly describe the purpose, objectives and goals that reflect their understanding and interests in project deliverables.

Product Vision Statement

At this point in project initiation, it is important for stakeholders to participate in the creation of the product definition, so that the definition created is customer focused and sufficient to accomplish preliminary budget activities. Rather than saying "add a clustered index for prescriptions," which would not mean much to customers, the statement "Improve the speed with which patient prescription history can be retrieved" captures the same information and can be understood by the entire team. During the initiation process, it is not as important to give detailed specifications as it is to indicate a few important things the project team will need to ferret out and detail later.

The initiation process is now at a juncture where a vision statement can be created. Often the product definition statements leave too many choices for the product development team to consider, with regards to implementation. To remove

PROJECT CHARTER (extract)
Product Vision
Customers
< Describe the users of the product. >
Business Needs
< Document the business needs that the project will address. This may be in the form of a problem that the project will solve or an opportunity. This should provide justification for undertaking the project. >
Key Benefits
< Describe the key benefits the product will deliver. >
Metaphor
< A metaphor is a sentence that describes the product in non-technical/non-business terms. >

Exhibit 2.4. Project Charter Template Extract. You can use a project charter template to craft the vision statement. Source: PM Solutions.

confusion, a vision statement can help point in a general direction for the team to go (see Exhibit 2.4 for an example of a tool that assists with drafting a vision statement). The product manager or funding stakeholder probably will have provided a baseline product vision. Now stakeholders can be brought together to brainstorm on a statement that gathers up many of the hopes and needs they have for the project. The result should be a concise vision statement that idealizes the desired project outcome in a verbal image that inspires and energizes the team and stakeholders.

Project Chartering

When the vision is completed, the focus of the project manager and project sponsor then moves to the next step of defining the team makeup; discussion of the goals/objectives that will

Traditional PM	Agile PM
All project planning up front Strong change control process established Requirements defined	Planning continuous throughout the project, at the appropriate level of detail Project scope, schedule and budget changes are expected and are part of the plan Use a Project Data Sheet to determine the information that will influence agile decision making

Exhibit 2.5. Planning Activities.

make up the program scope; definition of constraints, risks and assumptions; sharpening the view of success; and, refining expectations.

Things are now in place to create the program/project charter. The sponsor is confirmed and stakeholders along with their roles can be accurately stated. The charter will elaborate on the vision statement, to clearly describe the goals and objectives for the project, in addition to the product. It will also define the final deliverables and their acceptance criteria as succinctly as possible at this stage. The resulting statement of scope will allow the project manager to provide control and a basis for change as the project winds its way through the multiple iterations that will deliver a timely product.

Project Planning

Agile project management does not mean "no planning." It means planning at one level for the project's anticipated life cycle, and planning at a more in depth level for the immediate activities (see Exhibit 2.5).

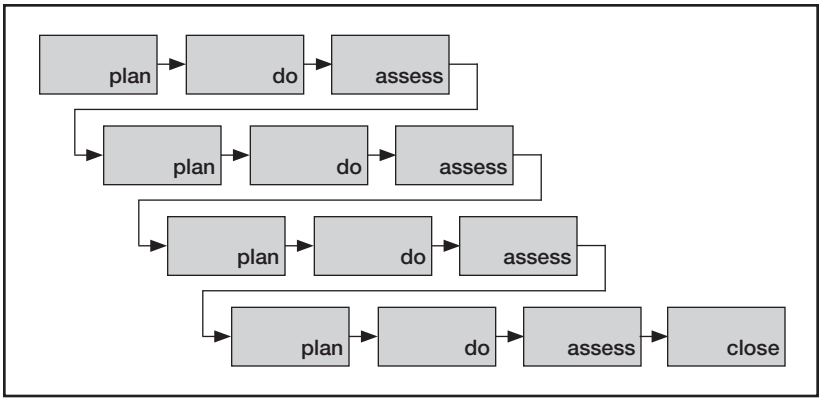

Exhibit 2.6. Continuous Planning.

Continuous Visual Planning

An attribute of all agile projects is continuous planning (see Exhibit 2.6). There is daily planning, as part of the daily stand-up meetings discussed in a later section. There is the planning of the next iteration of the project. There is the planning associated with assigning deferred features to later iterations.

Visual planning and the establishment of a project workroom facilitates this continuous planning. Visual planning involves placement of planning documents in such a manner that all stakeholders (team members, customers, management) can at any time determine the status of the project. If you are in a physical environment that supports the assignment of a conference room or a designated project workroom, invest in white boards and lots of thumbtacks. Display the project schedule on the wall, and have a place underneath it where team members can write the status of assigned activities for all to see. Use this wall as the backdrop for daily status meetings, updating the wall as you talk. This then allows the team

to look at the activities in front of them for the next 24 to 48 hours, and plan the work that needs to be accomplished.

If a physical workspace is not feasible, then consider the use of technology to establish a "virtual" workroom. Again, keep it simple and easy for all team members and stakeholders to access and to update.

Product Requirements Definition

An activity often performed as part of project planning is the definition of the "product shall" statements, the requirements of the project's deliverables, be it documentation, software or a physical product such as the prototype for a new automobile. As stated earlier, it is important to capture these requirements in customer terms. However, if the project is indeed a technology-based project, such as a new application, it is equally important to capture the technical requirements related to business continuity, system availability, and so on, remembering that the data center and operations staffs are customers of the project.

Another important element of a requirement is that quality test criteria are indicated. "Design a new motorcycle similar to last year's model, only faster" is likely not quite enough criteria. Better wording might be "Design a motorcycle that reuses 80% of last year's components and improves speed performance by 25%." Still a somewhat questionable criteria, but it is something on which the design architect can facilitate discussions and further refine during each iteration, in collaboration with the project sponsor and customers. During the *initial* project planning of an agile project, the need is to establish an understanding of the business requirements and provide the decision-makers with information they require to further define the project solution as iterations are planned.

We recommend minimal formality in capturing these statements (sometimes called "stories" in software development projects) when applying agile project management. The use of sticky notes or index cards, sequenced on a wall, or pictures drawn on flip charts are an effective way of capturing these statements in a visual manner. The sticky notes or index cards then further support visual planning because they are easily moved from one release plan to another. This also eliminates waste associated with formally documenting features that are then not implemented or modified as the product developed, and with multiple versions of the requirements documents. The capturing of these requirements in formal documentation, as needed for continued product sustainability and maintainability, can then be an activity that is completed by a resource during the project execution activities.

Reuse to be Agile

One approach an agile project team can leverage is the concept of reuse. What existing assets can be leveraged to expedite delivery of this project's deliverables? What previous project schedules, plans, and deliverables can be integrated into this project? What lessons learned from past projects can be applied? Consideration of these opportunities during the initial planning of an agile project, the project team might be able to eliminate or minimize certain iterations or risks.

Additionally, agile practices encourage modularity – design, build and delivery only that which is needed at this time; additional features can be added when the business deems them required. When planning an agile project, the project team should consider where modularity might increase the ability to deliver product and associated features earlier.

Manufacturing organizations have been applying the concepts of reuse and modularity in their product planning ef-

forts since the early 20th century. IT organizations are starting to implement these types of approaches. However, these are not yet universal business practices considered during project planning. This can be attributed to a variety of reasons, a key one being the upfront investment and culture change that is needed to establish a knowledge repository. There is a corporate investment needed to ensure the organization has access to the knowledge of these past projects and assets. Also, the desire and motivation to share knowledge needs to be present. "Knowledge is power" in many organizations and project teams. The agile project team will seek out others that have insights that can assist with introduction of reuse into their project plans.

How Much Planning?

As consultants, we are often asked "How much planning is enough?" This question becomes particularly important when applying agile project management techniques. In response, we developed the Project Data Sheet (Exhibit 2.7) and the associated Exploration Factor Worksheet (Exhibit 2.8). The Project Data Sheet asks some pertinent questions about the project. One in particular, the Trade-off Matrix, explores the relative importance of four typical project constraints (scope, schedule, budget, and quality). When completing this section of the data sheet, the project manager, the project sponsor and other stakeholders need to select the most important of these factors for the project. This factor becomes fixed, meaning any decisions about the direction of the project cannot impact this factor. The second most important factor becomes flexible. This means the factor can change, but the tolerance for change is still tight. The remaining factors are considered acceptable to change and therefore typically require less planning.

PROJECT DATA SHEET		
Project Name	Project Number	Date Completed
Project Manager	Project Sponsor	
Clients	Client Benefits	
Project Objective	Performance Attributes	

Trade-Off Matrix					Product Architecture
	Fixed	Flexible	Accept	Target	
Scope					
Schedule					
Resource					
Stability					Exploration Factor
Project Delay Cost:					
Features					
Issues and Risks					

Exhibit 2.7. Project Data Sheet. The purpose of this document is to summarize key business objectives, product specifications, and project management information for a project being developed using agile project management techniques. Source: PM Solutions.

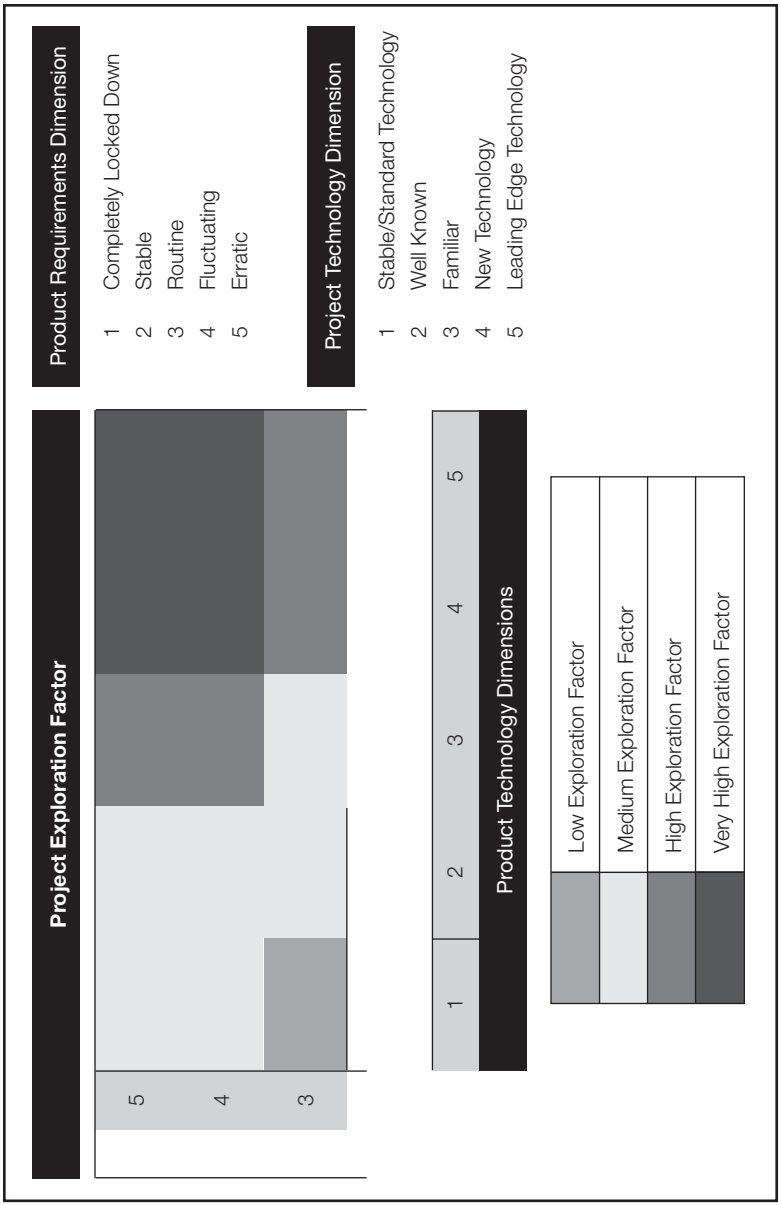

Exhibit 2.8. Project Exploration Worksheet.

Another question in the data sheet addresses what we call the "exploration factor." This factor is intended to foster dialogue amongst the same group that addressed the Trade-off factor, relative to the project's overall stability. This factor benchmarks the level of "exploration" (unknown adventure) that exists in the project. We recommend use of the Exploration Factor Worksheet while conducting this discussion and considering the product features and project environment. For example, a project that is facing erratic requirements and is using leading edge technology would be given a "very high" exploration factor. A project that is rated "high" or "very high" would typically have a high risk profile; the project manager should consider a project life cycle model that includes short iterations and significant customer interaction. A project that is rated "low" or "medium" probably has a lower risk profile, so consider doing more up-front planning, since there is a higher degree of stability and exposure to change. In fact, these projects may actually be more suitable for a standard project approach rather then agile.

Defining the Schedule and Budget

One of the unique challenges associated with agile project management is how to estimate an overall project budget and schedule, especially when there is "exploration" to be performed.

One method we have seen successfully used is to "box in" the exploration activities, and then estimate the non-exploratory activities as you normally would. Establish a finite budget and schedule for the exploratory activities, based on past experiences and knowledge, and when that is consumed, determine overall progress, and engage the team and project sponsor into a determination as to how to proceed. If more exploration is

warranted, if possible seek additional funding and schedule time, and/or adjust the estimates associated with the rest of the project, based on the knowledge gained through the exploration. If it is not possible to obtain additional funds or delivery date relief, then use the knowledge from the exploration to adjust the scope of the final product—again, in collaboration with the project sponsor, using the Trade-off Matrix to guide the decisions.

This method can be effective in organizations where budgeting and resource allocation are performed as part of an overall annual portfolio management process. If you are in an organization not constrained by annual planning, then you might consider "rolling wave planning," where the estimates are provided only for the next iteration through the project. At the end of each cycle, there is a determination, made in collaboration with the project team and project sponsor, if the next cycle is viable, and to request funding and resources and develop the detailed schedule and budget at that time.

Neither of these approaches is for the timid or inexperienced project team. The team needs to be able to draw on past experience to speak with confidence about what is needed to adequately explore a new technology, or a new product approach. They then need to be able to visualize how the end product(s) could be delivered in smaller pieces, with each piece building on a prior one.

Regardless of the approach used in this planning, in an agile project, the project manager and team are continuously planning the next set of activities, the next iteration of the project. This concept is one of the largest challenges a project manager will face when adopting agile project management in an organization where the culture is more comfortable with, and policies and processes are aligned with, traditional project management.

Traditional PM	Agile PM
Project team performs project work and delivers results to user community Users accept or reject deliverables	User community fully integrated into the project team Users participate in project work, generating deliverables with IT associates

Exhibit 2.9. Execution Activities.

Project Execution

During the execution of an agile project, the project manager needs to recall his role as a facilitator and leader, not controller or manager. There needs to be a continuous, concentrated, deliberate emphasis on team collaboration and team decision making. The project manager needs to remember that the project sponsor is part of the team. The sponsor should attend the daily status meetings, to obtain updates on status and to participate in discussion and resolution of issues and questions that might arise.

There needs to be a concerted effort to ensure the customer (user) community also continues to be integrated into the overall project team. The project management needs to actively encourage their participation and contributions in the daily decision making that will occur, that they actively participate in all project discussions and events.

Deferring Decisions

Since much of agile is founded on just-in-time delivery of products, deferring decisions until as much information as can be gleaned through the various iterations is desirable. Indeed, this is a major component of the agile methodology: decisions

are withheld until they are required. By deferring decisions until we have the best information available, we reduce the chance of rework. This results in greater throughput, reduced investment and reduced expense. For example, we may recognize that the tax tables of a payroll application will need to frequently change; however, we may not know the tax rates up front. One solution is to code what is known, a more sound solution would be to build tables without the tax rates until they are known and then populate the tables with the proper data. The code is then there when it is required (increased throughput), investment is reduced by building the bulk of the code as related sections are completed, and, expense is reduced by using only data that is known to be correct eliminating the potential of rework.

Another reason that decisions are deferred in agile processes is that the approach uses quality-driven development. This allows the design of a product to be deferred and created on the fly as components are tested. The testing allows product developers to know when they are completed with certainty, rather than trying to determine ahead of time when the product development will be done. If fact no decision is really required, when all of the tests are green, product development stops. While stated over-simplistically, this provides tremendous flexibility to learn about and apply the minutia that is so critical to delivery of a product that totally meets the customers' needs and requirements.

However, there can be initial cost related to deferring decisions. One example recognizable to any homeowner would be this: Assume the entire family is not available to decide on kitchen fixtures. However, my project manager (general contractor) and I had decided at the beginning of the project that occupancy date was a fixed factor.

Therefore, I make the decision to give him permission to construct a temporary kitchen with temporary fixtures installed, recognizing that will increase costs, and I will accept that until such time as I can select the permanent fixtures. The alert project sponsor will consider the "cost of not making a decision" when these situations arise. The assumption is that the cost of not making a decision would increase the total cost of the project.

What is frequently not understood is that temporary solutions often help keep revenue flowing and employees productive. This is especially true when the temporary solution puts into place any permanent structures that are known upon which hooks can be placed. In this case the recognition that there are three decision categories available is recognized, namely a "wrong decision," a "right decision" or "no decision". Most people have been trained in terms of making right or wrong decisions. In fact, the optimal decision is frequently "no decision." The prudent action taken in the example above is that no attempt was made to make a decision about unknown options. The decision was deferred until real options were revealed. When considering psychological and financial cost, the total cost of the completed product is far less than creating something that has to be reworked to meet real and ultimate requirements.

Deferring Features

Occasionally, deferring a decision results in deferring a product feature. In these scenarios, an interim product may be approved for development as a temporary solution, to get something to market, until such time as the desired resources are available or full requirements can be defined. At which point,

the final product can be developed, which is rework for the project. This transpires quite a bit in the new product market, where oftentimes a beta release becomes the de facto primary release of a product, with the promise that the next release will be leaps and bounds better.

Another example of deferring features would be that of a customer who requests a 3,000 square foot home to be built. The house is built as a 3,000 square foot ranch on a slab foundation. As the final home inspection takes place, the customer asks about now adding a finished basement. Work begins to construct the basement, work that now includes elevating the house and working underneath it, a much more costly proposition. As change is introduced later in the lifecycle, cost is exponentially increased. Had the desired feature (in this case, a finished basement) been made known earlier and included in the initial architectural papers, at least in draft form, the contractor could have made provisions for this feature to be added at a later time, thereby minimizing the overall cost. Change noted on paper is inexpensive; change to the final product is expensive.

Because agile projects are intended to be executed in iterations, more decisions relative to the details of the product may be deferred. However, the key to the deferral must be open communication with the customer, to manage expectations regarding the impact of the deferred decision. In the case of a deferred decision, continuing development needs to take the element into consideration to assure the design architecture accounts for the possible later addition. This is where trust between customer and project team comes into play. The customer needs to trust that the team will not lose sight of that deferred feature and that, if still desired at that later time, they will develop it.

A potential disadvantage of feature deferral is that we can experience inaccurate process reporting and scope creep in projects. The work that is deferred must be on the project schedule and task list to ensure it is properly scheduled and visible. In information technology projects, the term "Technical Debt" is used to describe work not directly related to new functionality that is deferred but is necessary for the overall quality of the system. Database and software upgrades fall into this category.

In the 1980s, Barry Boehm (1981) published data showing how the cost of change and rework seems to increase approximately tenfold for each software development phase requiring rework activities as a result of change. Using extreme programming techniques, Kent Beck (2004) proposed that the change could be flattened and speculated how different software development would be if changes could be made inexpensively without compromising quality. Agile methods, according to Alistair Cockburn (2000) and Scott Ambler (2004), further flatten the cost of change on the curve. The differences in the cost of rework using each method are plotted in Exhibit 2.10.

Project Monitoring and Controlling

The whole premise of agile project management is to facilitate "rapid" delivery of the project's products. This means the project is going to be progressing at a fast pace, so during the multiple execution phases, the project manager needs to maintain a daily pulse of the project (see Exhibit 2.11). Because the project is unfolding in iterations, in addition to monitoring schedule and budget, the project management team needs to stay on top of deferred items—be they features to be considered in a later iteration, or a decision that is being deferred to

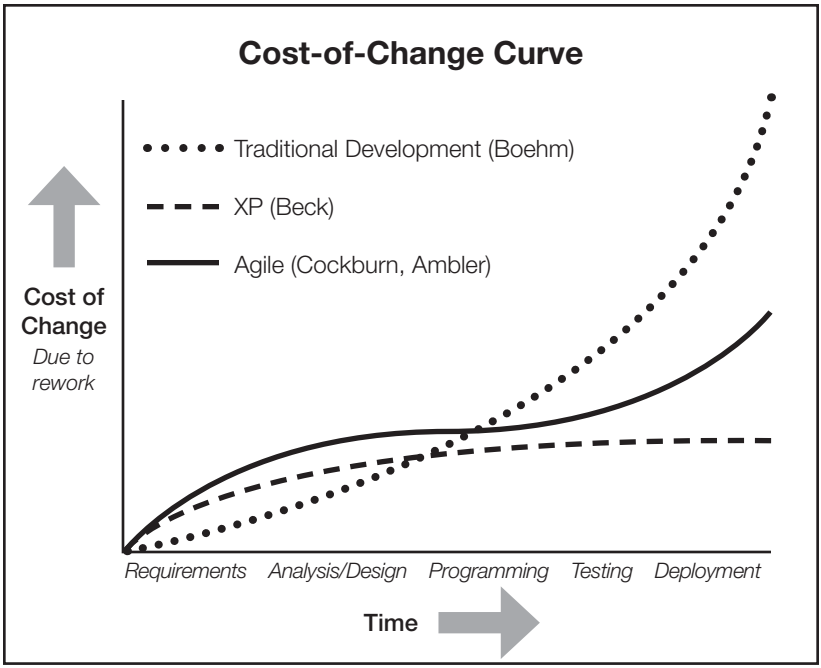

Exhibit 2.10. The Cost of Rework. While research on which this figure is based was done in software development, the principle is identical in any project or product development endeavor. In construction, filmmaking, event planning ... the further along in the process you get, the more expensive it becomes to make changes or course corrections. Adapted from Szalvay, 2004.

a later point in time. Issue and action tracking logs are crucial tools to the agile project manager, and for the overall project team. As with all working project documentation, these tools should be easy to access and to use. The most effective means that we have seen for managing these is a running list on a whiteboard in the team's workspace, where all have access to update, and where it can be easily reviewed during the daily status sessions.

Traditional PM	Agile PM
Weekly written status reports Published schedule and budget reports Formal stage gate reviews and deliverables acceptance	Daily stand-up meetings with appropriate participation Status reporting Issues resolution Handwritten visual, daily schedule and budget updates with monthly formal publishing Formal stage gate reviews and final deliverables acceptance

Exhibit 2.11. Control Activities.

Daily Status Meetings

Status needs to be monitored daily in an agile project. We recommend the use of a concept borrowed from the military: the daily situation briefing, or stand-up meeting. The team, including the project sponsor, congregates in front of the team's status board, where the schedule, issues and action logs, and risk log are on display. It is called a stand-up meeting because the meeting is conducted while standing, thereby ensuring discussions are brief and to the point. Each team member reports against their items. The team then determines the priorities for that day, assignments are made, and the team goes off to engage.

If the team is not collocated, then the virtual status board comes into play, and a short teleconference is conducted, with a well-defined script. As with the stand-up, each team member reports in on actions and assignments are made.

In either case, meeting minutes are not taken, as agile practice regards this as waste. Rather the actions are captured real-time in the documentation on the status board, so they can

be checked against during the day, and be ready for the next day's meeting. At some point in the project schedule, as determined by the organization's processes but hopefully no more frequently than monthly, a project scheduler and/or coordinator would be assigned the action of transcribing whiteboard contents into the required formal organization documentation for distribution beyond the immediate project team.

Just-in-Time Scheduling

A primary way in which agile project management works is through feedback loops that result from the focus on iterative implementations. These iterations, in turn, help provide constraints that prevent effort on wasted or unnecessary features and over-engineered solutions. This results in line-of-sight activities that make overall business goals visible and achievable.

From this perspective it is easy to see why many people consider agile project management to be based on Just-In-Time scheduling principles. In reality, what is happening is that, after the Initiation Process and Initial Planning, iterative project phases begin. In simple terms, it is comprised of 1: Creating an iteration plan; 2: Resolving specific issues (Just-In-Time); and, 3: Test Driven Development (TDD) or Quality-Driver Development. The process then repeats itself as the feedback loop shown in Exhibit 2.12.

What drives this Just-In-Time model is that product requirements are defined at a high level and are not fully analyzed or defined *until they are needed*. Product development is allowed to begin with these incomplete requirements so that detailed analysis and requirements definition are continuously refined as the project proceeds. This concept supports some of the premises from lean development, in that wasted require-

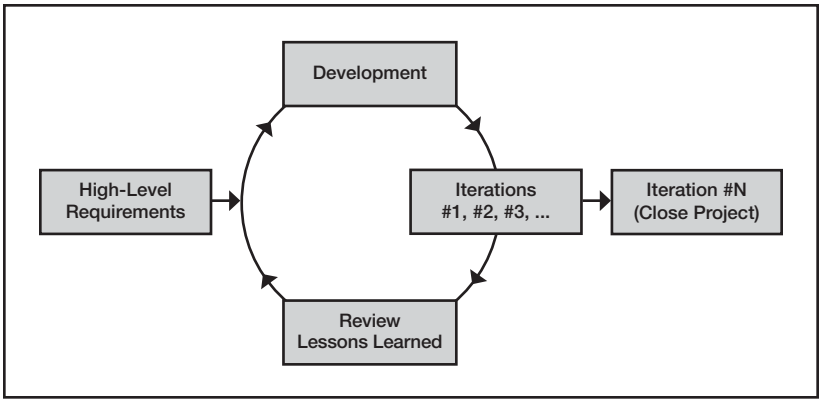

Exhibit 2.12. Iterative Agile Project Life Cycle.

ments definition activities are avoided; after all, why define it if it is no longer needed in the final product solution? This approach of delaying requirements detailing until it is absolutely needed has three distinct advantages:

- Requirements that are defined closer to implementation are better requirements.
- Requirements that have not been defined can not change.
- Requirements can change incrementally as needed.

Change is then expected and easy to incorporate into deliverables that meet the customer's requirements as they evolve. In other words, through product development we are learning more about the solution and what is required to resolve the anticipated and encountered problems. With the line-of-sight making the overall business goals visible, each day's priorities and assignments become clear as requirements are refined based on what has been previously attained in the project.

Traditional PM	Agile PM
Conduct Lessons Learned Close project budget and files	Document desired features not implemented in this project's iterations Conduct Lessons Learned and consolidate with iteration's Lessons Learned reports Close project budget and files

Exhibit 2.13. Closing Activities

Project Close

Agile projects have a unique feature that traditional projects do not have, and that is the concept of iterations (see Exhibit 2.13). Project close in an agile project is often the phase in which an iteration is closed. The project team should perform the same activities they would perform in a project close—lessons learned, closing of financials, etc.—but what is being closed is only that iteration. When, and only when, the final iteration is completed, does the agile project team close out the full project, applying the same techniques that are applied in traditional project management.

One additional item that is crucial to address within phase closing activities in an agile project is the review of any deferred decisions or features, to ensure that they are properly closed or brought into the next iterations consideration. Because, while closing the iteration at hand, the project team should finalize the planning for the next iteration: opening up those financials, establishing that iteration's status board, etc.

There is a large repository of tools and techniques available to the project manager leading an agile project, and to the

PMO supporting that project manager. It behooves the project manager, in collaboration with the PMO and the extended project team, to select those that best support the needs of the project at hand, recognizing that not all approaches will work universally well. The references at the end of this book should help to familiarize the practitioner with the existing tools, techniques and research.

Chapter 3

The Culture Change

From a very early age, we are taught to break apart problems, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole. When we try "to see the big picture," we try to reassemble the pieces in our minds, to list and organize all the pieces.

—Peter Senge

Industry spent most of the latter part of the 20th century developing and applying formal predictive methodologies to managing projects. We became accustomed to using those approaches to remove uncertainty in the project and to prevent changes in the project's scope. With agile project management, change and uncertainty become the norm and the project team must have the ability to adapt to ensure project success. Predicting the content of the next product release is not entirely possible, because it may contain modifications to previous product features, in addition to introducing new features.

As with any organizational change, the resistance to agile methodology is related to the individual's perceived threat to their position, authority or compensation (Mar, 2006).

A survey conducted by the Agile Project Leadership Network in 2006 asked about the challenges organizations faced when implementing agile software development techniques (Barnett, 2007). The greatest concerns expressed related to

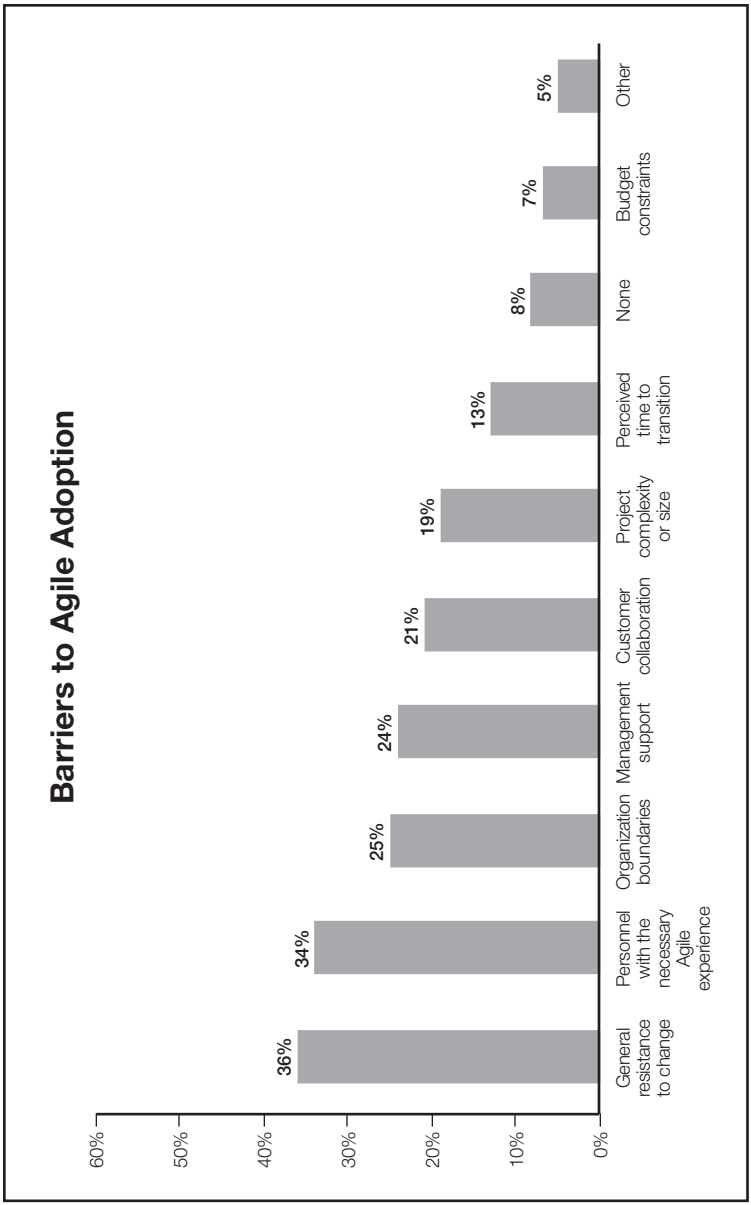

Exhibit 3.1. Barriers to Agile Adoption. In answer to the survey question "What are the barriers to further adoption of Agile in your current organization? (Select all that apply)." Adapted from Barnett, 2007.

implementing agile techniques centered around "soft" issues—issues related to people and the organization, not to the methodology or the tools (see Exhibit 3.1). These observations are equally pertinent to organizations adopting agile project management.

Business is typically comfortable with solutions to technical problems that can be handled by a pre-planned linear approach of some kind. And, business associates often resist doing non-linear, or adaptive, work. The resistance takes forms with which program and project managers are all too familiar, and which they may understand and have learned how to counteract. Often times this resistance is demonstrated through actions such as scapegoating, projection of negative claims on a process, or killing off the leader in the hopes that if only we had the right leader our problems would be solved.

Where resistance to adaptive change hits the fan is in the reality that project managers are frequently not in positions of real authority to drive organizational change. They, nonetheless, are in the strategically challenging and personally risky position relative to communicating the new approaches to project team members and sponsors, approaches that will require a change in their thinking, attitude and perceptions of how things were going to be. At this point the project manager must clearly engage the stakeholders in a cost/benefit analysis to ensure they fully understand their options, thereby leading them to select a solution that is plainly in their best interest (Flower, 1995).

Identify the Common Challenges

Obstacles to acceptance of the new processes are frequently demonstrated in forms of resistance. The project manager who desires to implement the new processes should recognize

these resistances for what they are and develop techniques to overcome them. Understanding the source of resistance can also sometimes point towards very real issues that may have been overlooked by the project manager.

Management Resistance

Management resistance to change manifests itself in several particular ways. One is a focus on short term results. Implementing a new approach, or a supplemental approach, to managing projects is not something accomplished in a short time. Rather, research supports, eighteen to twenty-four months is often needed before results are achieved. Therefore, when adapting agile project management methods into your organization, resist the natural desire to declare victory and success when the first project is completed. Rather, recognize the need to provide continued change management support as additional projects and business units attempt to adapt these methods.

Before embarking on the implementation of agile project management methods, the project manager overseeing such an effort should understand the risk profile of the organization. Organizations that tend to be risk-averse, that have a high need for centralized control and decision-making, and where management traditionally determines progress based on completion of documents and deliverables, will be harder environments in which to introduce agile project management, because the concepts of agile project management do not align with the principles of the business.

Oftentimes, a risk-averse organization will have a preponderance of importance on time and status reporting, an attribute of a false sense of control. There will be well-defined processes associated with procurement activities and acquisi-

tions will require multiple levels of signature. Non-compliance with these processes is discouraged, and will be seen as subjecting the organization to undue risk.

In such an environment, the implementation manager should clearly communicate the benefits of agility in terms the company will accept and openly address any risks that might be seen. He or she should plan on an extended period of communications, awareness and education, highlighting how agile project management techniques supplement traditional project management techniques. He or she will need to have an implementation plan that embraces business functions such as finance and procurement, that brings them into the "agile team" so that they understand (1) how they can contribute to agility and (2) why agility is not a threat to the controls they have in place to protect the organization.

Team Resistance

Organizations can anticipate resistance from project teams that are comfortable with a highly structured, black-and-white culture. One key principle in agile project management is that of the self-directed and self-initiated team, comfortable in making decisions without much direction. In this model, the project manager role is one of a facilitator, not as a controller. When I have assumed this role in agile projects, I have likened my role to the bull-dozer; it was my role to ensure roadblocks that might interfere with my team's progress were obliterated before the team reached them. I truly was there to support the project team, not to manage them; they managed themselves within agreed upon boundaries.

And that is an important point to make. When initiating an agile project, the project manager needs to ensure the project team clearly knows, understands and accepts the boundaries

of their authorities as related to decision-making, communications and work distribution. The project sponsors and functional management also need to understand these boundaries as related to the project team. If a project team is empowered to determine what product features best fit the current product release, corporate management should not anticipate they can brow-beat the team into including other features. That would be a violation of the pact being made and would result in project chaos.

Effective team building is crucial to agile projects. The project team members, project manager, project sponsor all need to be able to trust each other. The culture and environment in which the team is operating absolutely must be one that accepts "bad news" as a chance to further expand knowledge, to understand what is "broken" and to make the corrections needed to prevent recurrences. Team members need to be able to call on each other, to assist one another achieve the project's overall goals without fear of competition or statements in the form of "you should know that…" While individualism is still encouraged, it is not to be at the expense of the project team and its collective goal of project success.

Because the project manager is not the controller, the project team members (including user and customer representatives) must become more interdependent and communicative with each other. This can be facilitated by establishing a common project work area, with all team members in the same space. Some of the aspects of "visual project management" can then be applied: project status updates can then be made daily on copies of the project schedule hanging on a wall, messages to each other can be left on a white-board, product design and other considerations can be posted. If this is not able to be accomplished physically, then leverage technology and establish a "virtual project room" within which the team can collaborate and share.

Bureaucratic Policies and Structures

One challenge that is presented frequently when implementing agile project management is the perceived lack of predictability. This challenge totally overlooks the fact that in traditional project management, many times the original project schedule and budget were *not* representative of the final budget! As is frequently stated, "Stuff happens." An unforeseen ledge requires a general contractor to do some blasting before pouring a foundation; an unexpected test result entices a product developer to explore an additional use for the product. Applying agile planning techniques, the organization, or the customer, would be in a position to react to these "surprises." As mentioned earlier in this text, agile project management does not mean "no planning"; it means frequent planning. Therefore, the short term activities actually have increased predictability, and there is more opportunity to consider the unknowns and to integrate them into the project plan.

Traditional policies and supporting processes have been developed by organizations as a means towards minimizing organizational risk and exposure, and to ensure compliance with a pre-determine way of conducting business. For instance, centralized procurement processes are often times enforced to ensure best pricing is obtained; the need to move fast to get a product to market is seldom a consideration in these processes. When adopting agile project management, the organization needs to be willing to modify other business processes to be equally agile and nimble.

Another process often cited as not responsive to agile projects is the corporate budget process. Many organizations conduct annual strategic planning and associated budget planning once a year, in preparation for the upcoming year. At that time, all anticipated funding requests, including those

required to support projects, are required. So, business sponsors and project managers typically work together to develop an estimate of the funding needed for a project that is really and truly not yet defined. And that budget is "cast in stone." When the project is initiated, a refinement of that budget number is often put forward and funds reallocated from other projects, if the project is sufficiently significant. Again, however, the project's deliverables are still not really understood, therefore that revised budget number is still an educated guess at best. With agile projects, a number would be provided with the clear expectation that as product features are defined, as the project continues to take shape, that budget number (and associated effort estimates) will be refined. This means the corporate budget processes need to accommodate out-of-budget-cycle adjustments.

This is oftentimes part of the organization's overall project portfolio management practices. An organization that is embracing agile project management needs to review its project governance model, to ensure alignment with expectations associated with agile project management. Questions to be considered include: "If not planning the entire project, what data is used when to make portfolio funding and resource allocation decisions?" and "How will portfolio data be collected if there are no written status reports?" The organization also needs to consider performance measurements and ensure they have measurements in place that recognize the inherent value of exploration and of lessons learned from "failures."

Finally, there are often expressed fears that an agile project will not generate the documentation required for future product supportability or maintainability. To the contrary, an agile project team will indeed generate documentation *if* the documentation is identified as a valuable deliverable with a true

business requirement. Just as an agile project does *not* mean "no planning," it also does *not* mean "no documentation."

Lack of Experienced Resources

Agile project teams are best staffed with seasoned team members, both technically and behaviorally, capable of working in a less structured environment. If less experienced resources are assigned to agile project teams, the more experienced team members need to recognize and accept the teaching, mentoring and guiding that will be asked of them. Project plans should reflect this additional effort on the part of the seasoned team members, perhaps through decreased allocation of their available project hours.

Not all employees are suitable for these types of project teams. The successful team will also hold themselves accountable for results and will be willing to be part of a collaborative team decision-making process, where individual egos and agendas are not present. One of the unspoken side effects of agile project management is that it will increase the visibility of performers and potentially highlight slackers and non team-players. The presence of perceived slackers will serve as a demoralizing factor on the team and will erode trust. Therefore, the project manager needs to have the authority to refuse or remove any team members that cannot function effectively in this agile environment.

Lack of Business Support

Agile project management is *not* just a tool for the IT department, or the product engineering department, or the construction department; it is a *business* tool. The introduction of agility in projects needs to be a message communicated and accepted

in the executive offices, through the management team, to all associates. If there is resistance to create and effectively communicate a corporate vision related to the importance of agility to the business, the initiative will most likely fail. Management will not see the effort as strategic and will fail to commit the necessary resources to the change effort, which in turn results in an incomplete and potentially ineffective implementation of the agile methods. For example, some of the most effective applications of agile project management are the result of dedicated project teams. If business functional managers are not provided the resources to provide the level of business resources required, then most likely the project team will lose its ability to be agile. If stakeholders can not find the time in their calendars to participate in more frequent (but shorter) project reviews, then most likely the project team will lose its ability to be agile.

The project manager should be able to solicit the support of the organization's PMO to ensure business engagement in agile projects. Especially when a strategic, or enterprise-level PMO is in place, the PMO Vice President or Director can leverage his relative position in the organization to assist in carrying the agile message to the various functional units. A deliberate organizational awareness program, based on a vision of integrated project management techniques, should be initiated when agile project management enters the PMO's project manager toolbox.

Overcome the Challenges

Plan to Overcome the Obstacles

Successful introduction of new ways of thinking and of new processes is not insurmountable. Consider how we might approach a change in our personal habits, say, tackling a weight

problem. Most doctors advise us to conduct a self-assessment, to determine what is preventing us from losing the weight and then develop a personal plan to overcome those barriers. Introducing change in an organization's processes is similar. John Kotter identifies eight steps to accomplishing organizational change (Kotter, 1996). While this text is not meant to be a tutorial on the topic, it is worth spending some time discussing it, since introducing agile project management into an organization is indeed an organizational change effort (see Exhibit 3.2).

Conduct a Culture Change Readiness Survey

Begin the process by determining the barriers to acceptance of the changes. This can be accomplished by conducting a Culture Change Readiness Survey. Exhibit 3.3 depicts a typical output from such a survey. The survey, usually administered by an external independent party, prepares the organization for a successful transformation effort. It helps identify areas of concern and to structure specific actions to support the change process. These actions are designed to help overcome resistance, reduce the impact of past history, and align the improvement initiatives with the current business culture. It is also used to understand the commitment and ability of the individuals in the change management roles to lead effective change in the organization

An effective survey involves all level of an organization and evaluates an organization's commitment, readiness, and ability to change. The survey uses a series of questions to help understand the current state of readiness and change management issues and concerns in an organization. It documents the organizational climate in terms of its culture, its history with change/transformation initiatives, and its resistance to change.

Kotter's Eight Steps for Change

1. Create the vision
Create the agile business vision through engaging the organization in development of that vision to achieve business results.

2. Form a powerful guiding coalition
Develop a broader team to help implement agile project management. (Management and key players; leadership and management skills; developed as a team with a common goal).

3. Establish a sense of urgency
Middle and senior management must be convinced of the need and the benefits related to the change initiative. (Discussion of current environment, issues, and benefits/case for change, determine how it will achieve business results).

4. Communicate the vision
Communicate the vision through different forums, lead by example; address inconsistencies. The more members of the organization are engaged in developing the vision, the easier it will be to communicate and implement.

5. Empower others to act on the vision
Remove any barriers, provide training, and begin to align organizational processes

6. Plan for and creating short term wins
Generate some short-term wins; select some areas for quick improvement; demonstrate value on selected projects; provide recognition and rewards; show appreciation.

7. Consolidate improvements and producing still more change
Build on initial wins/selected projects. Incorporate agile project management in more and varied projects. Include more project teams in training, mentoring and applying agile practices.

8. Institutionalize new approaches
Continue to measure and communicate successes. Modify organizational processes to support organizational agility.

Exhibit 3.2. Kotter's Eight Steps for Change. While by no means the only useful model for managing organizational change, Kotter's eight steps help you organize your thoughts and approach to a change initiative such as implementing agile project management. Source: Kotter, 1996.

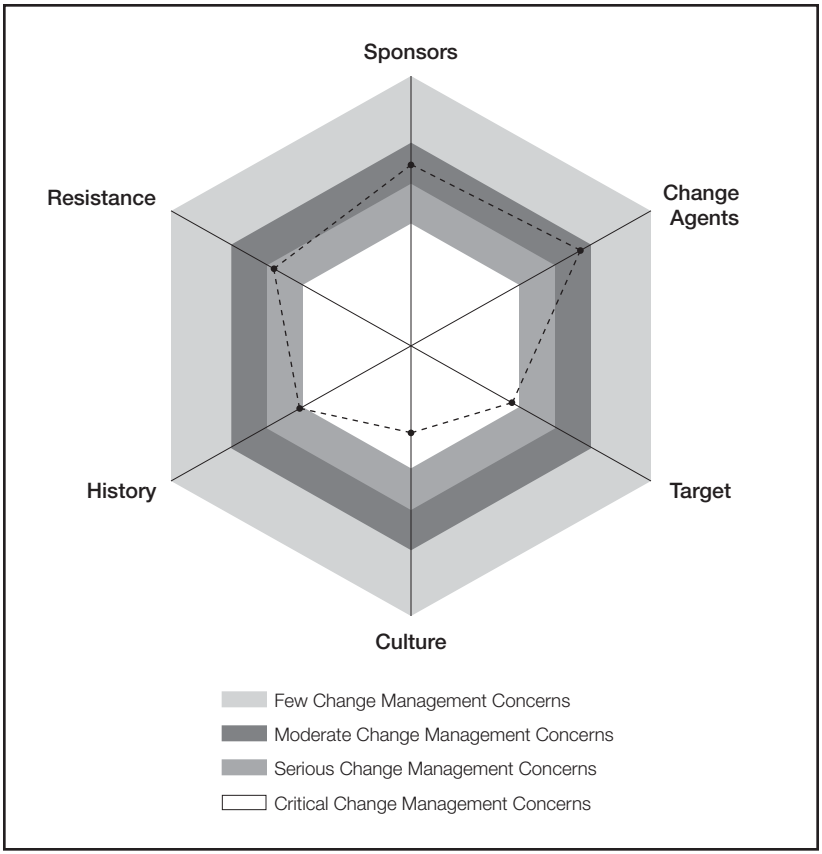

Exhibit 3.3. Change Readiness Graph.

Exhibit 3.3 depicts how the analysis of change resistance might be portrayed out of such a survey. The data points in this survey indicated a need to address the organization's past history and culture, especially in the minds of the targeted community. The answers that the community provided about past experiences indicates those experiences were perceived as negative. They will need to be convinced that this change will be different.

Develop a Change Management Action Plan

For each area of concern identified in the survey, specific action steps are then developed to help mitigate the impact of the change management issues and concerns. These improvement action steps are used to develop recommendations for implementing the improvement initiative in an effective manner. Consider the development of a change management plan such as the one depicted in Exhibit 3.4 as a means of documenting the actions to be undertaken and the responsible associated parties. Once the plan is developed, it in turn becomes the basis for the implementation project.

One action overlooked frequently in the development of change management action plans is the development of the performance measurements that will be used to determine the impact the changes are having on the organization's strategic performance. After all, the change is being introduced in response to some identified challenge in that performance—either increased throughput, decreased time to market, and so on. Thus, in the following chapter, we will explore the question of measuring project performance in an agile environment.

Monitor and Reinforce the Change

When reading about organizational change, you will often encounter two terms: change and transition. It is important to recognize the difference between these terms and approach the change with these areas in mind. Change is more readily understood and relatively easy to document, plan, and implement; it is the "just do it" mode of introducing a new process. Transition is the more gradual approach to adopting the change. Completing the transition associated with the change is necessary before the change can be institutionalized. While

CHANGE MANAGEMENT ACTION PLAN

1.0 Purpose

Tip: "Change" is understood, but not enough emphasis is put on the "transition." This section sets the tone that a change effort must take both into account.

The change effort and its supporting transition must be carefully planned and managed. This ***Organizational Change Management Action Plan*** will define the plan for the change effort and the approach to manage that effort. It will focus on the following two change effort aspects:

- **Change**
  The change target must be clearly identified. The change target is defined in terms of key tangibles that will be implemented to arrive at the defined vision or future state.
- **Transition**
  Every change requires a transition — the process individuals go through to arrive at the successful change. The action plan must define the transition path from the old way of doing business to the new.

2.0 Change Target

Tip: This section gets the organization to describe what success looks like in the future. Together with Section 3.0, it gives the team specifics to plan and manage to as well as criteria to determine success. It helps avoid going after a nebulous target and never really knowing where you're gong and when you've successfully arrived.

Describe future; the Change Target

3.0 Goals

Tip: Tangible "From" and "To" (e.g. From: inadequate project planning To: Standardized approach to project planning). Consider adding a column to address actions that are being implemented to address each area, but there could be redundancy with the "Actions Steps" listed in the table in Section 5.0. This section assumes that a "Current State" analysis has been completed — an accurate description of the current state is necessary to effectively identify the road to the future state. Metrics/measures should be developed for each shift to determine when you've successfully achieved each goal.

The goals to achieve the Change Target are specifically defined in organizational shifts required to achieve the defined future. The following table contains a description of those shifts.

Organizational Shifts

From	To

Exhibit 3.4. Change Management Action Plan. Source: PM Solutions.

4.0 Key Participants

Change Management Key Participants

Role	Description	Names
Sponsors		
Change Agents		
Target Population		

5.0 Change Management Approach

Tip: The following table helps the team define the approach within the context of six key areas. One important focus that is often minimized is Transition Leadership. Even with SPI, there are many action steps that could address that area, but I don't see a specific documentation of the behavior shifts that are required by the employees to successfully support the change.

Planning and execution of the Change Management Approach will be addressed within the framework of six key areas.

Change Management Approach

Key Area	Actions	Responsible Roles
Appropriate Level of Sponsorship		
Organizational Alignment		
Effective Communication Planning and Execution		
Effective Leadership of Employee Transition		
Timely Training		
Clearly Defined Performance Management Criteria		

Exhibit 3.4 (continued). Change Management Action Plan.

monitoring the introduction of agile project management, you should be sure to be aware of which approach to the change is in process at that point in time (Bridges 1991).

Monitoring how the application of the agile project management practices is proceeding entails both objective and subjective activities. Objective activities include reviewing and discussing the performances measurements identified in the Change Management Action Plan. If these measurements indicate something is going awry, it behooves the sponsor of the agile project management implementation activity to immediately initiate actions required to address the problems. If not addressed, the problems will become evidence to support the various positions of the change resistors and the adoption of agile project management will falter, if not cease entirely.

Likewise the subjective activities need to be performed. These include activities such as employee surveys of the resources associated with the agile projects, to pulse how things are going from their perspectives, and active management participation. For instance, the sponsor of the agile project management initiative might attend an agile project daily meeting, to observe the application of the agile principles.

TO BRING IT all together, to introduce agile project management into an organization is to make a change in the processes and culture of that organization. The introduction should be planned as a project, with carefully selected pilot projects to work with the PMO on adoption. The introduction needs to be recognized as crucial to the business's performance in the global economy and given the appropriate management attention and importance.

Chapter 4

Performance Measurement in the Agile Environment

While there is general agreement that "you can't manage what you can't measure," the actual measurements themselves usually prove to be a source of conflict. What are we measuring, and why? What should we be measuring? What's the connection between the performance metrics we collect regarding individuals and their tasks and the ultimate performance of the organization—if any? And what, in reality, does "performance" mean, on an organization-wide scale?

Whether organizations are measuring the performance of projects or the performance of the processes in place that enable projects to be completed successfully, the following are the primary reasons for measuring performance:

- To inform: measurement provides decision-makers the information needed to make effective decisions regarding the progress of projects and their likelihood of success as well as information about how well their organizational processes are working at delivering the results needed for organizational success
- To benchmark: measurement provides information needed to compare to other organizations, to see how well the organization is performing relative to the industry as well as to competitors

- To motivate: measurement provides information to help motivate stakeholders to change behavior to improve the likelihood of project and organizational success
- To improve: measurement provides information pinpoint areas that are in particular need of improvement
- To achieve goals: measurement provides information that will demonstrate whether or not specific goals have been met—organization-driven goals (alignment to strategy), government-driven goals (e.g., Sarbanes-Oxley), certification-driven goals (e.g., CMMI).

Performance

Organizations measure two things relevant to projects: the performance of the project and/or the performance of project management processes.

Project performance is an indicator of how well a specific project is doing while the project is being executed. Measuring project performance provides information to make short-term decisions to affect the outcome of the project. Measures have traditionally included schedule variance to plan, cost variance to plan, earned value, etc.

Project management performance is an indicator of how well the organization's project management processes and practices are working. Measures are aggregated and averaged over the portfolio of projects over a period of time and compared to a baseline of averages. Measuring project management performance provides information to make short-term and/or long-term management decisions to change project management processes and/or practices. Measures might include average schedule performance, average budget performance, average internal customer satisfaction, average number of projects with documented scope statements, etc.

Agile Measurement

The reasons for measuring in agile project management environments are the same as those listed above for traditional project management. But because agile projects are different from traditional projects, the emphasis of measurement changes somewhat. In agile environments you measure either to determine how well the project delivers value (the objective of agile work) or to justify the agile approach in the wider world of methodologies (Hartmann & Dymond, 2006).

In fact, formal measurement and reporting of project performance is not as critical with agile projects, since daily status meetings (which include the project sponsor) keep everyone abreast of performance. However, measurement of the project's process performance is even more important.

Measuring Agile Performance

In traditional project management, project plans are executed and progress is measured along the way. The traditional means of objectively measuring that progress is earned value management. Progress is measured by comparing the earned value to the planned value, thus determining whether or not work is being accomplished as planned at any given point in time, as well as providing an early warning of potential performance problems. This method of measurement is primarily focused on cost and schedule variance.

But earned value does not work well on agile projects, primarily because projects are determined to be agile because, at the beginning of the project, there is not enough information to accurately estimate cost and schedule. For agile projects, instead of measuring progress against the plan you need to focus on ensuring ROI and product quality, insuring the project delivers value to the organization. That's why, with agile project

management, requirements evolve throughout the project lifecycle (implementing them in priority order) — to ensure greater ROI. And agile practices such as test-driven development and refactoring promote greater quality (Ambler, 2008).

A key concept to bear in mind when developing measures for agile projects is that of "waste." As mentioned in an earlier chapter, agile project teams abhor wasteful activities. The astute organization measuring agile project performance will ensure:

- Measures that are taken are seen of "value" by the project team, and should actually be suggested by the team;
- Measures are created as a natural by-product of the team's core activities, not as a "bolt-on."

A prime example of an agile project measure, then, is Running Tested Features (RTF). This is a measure of how many things of real business value get done, ("done" meaning that they actually work and are ready for deployment). The output—at least one—of each iteration, is a quick way to see the state of the project. Any slowdown would reveal warning signs of problems, leaving enough time to react and address project problems before they impact the business (Ambler, 2008). Some additional agile measures (from Hartmann & Dymond, 2006) include:

- Business value delivered
- Software delivered per iteration
- Agile practice maturity
- Obstacles cleared per iteration
- Team member loading
- Obstacles carried over into next iteration
- User Stories carried over into next iteration
- Iteration id-point inspection

- Unit tests per user story
- Functional tests per user story
- Builds per iteration
- Defects carried over to next iteration.

Determining Value

In order for agile methods to transform not only software projects, but also the way businesses implement change across their organization, teams using agile methods must align their work with higher-level business goals and measure their results with respect to helping organizations achieve their goals (Gilb, 2008).

A process developed by Mel Schnapper, cofounder of PMI's Metrics SIG, asks those developing project and program metrics to respond to the following questions and answer them based on mutual agreement and alignment:

- What are our major contributions to the strategy? (Key Result Areas)
- What is the proportionate value of these contributions? (%)
- By what metrics and objectives are our contributions going to be judged?
- How will we determine the standards for our individual and collective performance objectives?
- What is the proportionate value of each performance objective? (%)
- How will we know, in advance, what kind of reward our performance will bring?
- How do we get agreement about all the above within our corporate hierarchy?

This process, says Schnapper, offers a way to align strategic, annual, functional, and departmental objectives, creating a context in which the effectiveness of project management can be judged. It also offers an internal monitoring system to initiate when these objectives need to be fine-tuned, a methodology to align all project management/functional objectives across the top of the organization, and a process of getting executives to commit to teamwork, interdependencies and proper allocation of project management resources.

At the project level, this approach offers the ability to measurably define what constitutes "value" and "priorities." It sets up a reward system that makes sense and is based on predefined standards of results. It bolsters teamwork, thanks to well-defined objectives that are interdependent both within and between departments and functions. And it results in empowered individual and project team efforts because management's support for accountabilities and results are also clear. With clear goals to strive for, employees can realize their potential for achieving standards that are greater than "satisfactory."

How to Do It

We have accumulated lessons learned associated with measuring agile projects and agile process performances. In analyzing those lessons, we have discovered that the process of effectively measuring the performance of agile projects and agile processes really doesn't differ all that much.

Establish the Measurement Program

Organizational strategies and objectives set the foundation for effective measurement programs. It's essential to understand how the critical elements of the organization's strategies and

objectives are linked to the measures of performance. In most best-in-class organizations, measurement initiatives are introduced and continually championed and promoted by top executives. When measurement initiatives are introduced from the bottom up, obtaining senior management buy-in is crucial and may take significant effort. Be prepared to make that effort. The driving force to create a new or improved measurement program is usually a threat to the organization (often a crisis or strong competition). For organizations that are strategically developing measurement programs to enhance their competitive advantage, rather than reacting to their business environment, a sense of urgency must be nurtured and driven by individuals who understand the value of measurement and can evangelize the need for developing a measurement culture. Again, this takes enormous effort and communication. Identify a central area of responsibility for the performance measurement program.

You need to have a very clear idea of who the measurement stakeholders are and what their needs and expectations are regarding measurement (there are often huge differences in expectation among stakeholders — setting those expectations through clear communication of program goals is a key to success).

Successful deployment of a measurement program requires a successful system of accountability; that is, all stakeholders need to buy into measurement by assuming responsibility for some part of the measurement process (sponsorship, analysis, data collection and monitoring, evangelism, etc.).

What to Measure

Clearly identify performance measurement goals and objectives. Without this clarity, selecting the right set of critical few measures will be difficult. Develop a clear understanding of

measurement terminology, which tends to be confusing and inconsistent, but needs to be understood and agreed upon by measurement stakeholders.

Communication is crucial for establishing and maintaining a successful measurement program. It should be multidirectional, running top-down, bottom-up, and horizontally within and across the organization.

It's critical, and very difficult, to limit the number of measures in a performance measurement scorecard. Selecting those critical few measures sharpens the stakeholders' understanding of the issues. Too many measures confuse and complicate (the measurement team can't try to please everyone—selecting too many measures will ultimately kill the program).

You need to determine what counts as a project (what exactly will be measured).

Reinforce the fact that agile project management performance measurement is measuring performance change due to agile project management. Measures, therefore, are process-focused, not project-focused (you are not trying to measure the progress of a particular project).

Pilot and Communicate the Results

Pilot the performance measurement program before full implementation. And implementation should come in phases — implement a critical few high-value measures at first and identify more detailed measures when the organization has developed a measurement culture is ready to collect and analyze more complex measures. Because you are measuring the performance of agile project management, be sure to include in your pilot group a similar project being managed using your traditional project management approaches

Analysis is one of the most important steps in performance measurement, yet it is often one that is neglected. The insight gained from effective analysis (particularly determining root causes of the results measured) is what makes measurement a valuable business tool. Benchmark the results against industry standards if possible. But, definitely benchmark these results against your organization's results applying traditional project management processes. Understand what the measures are telling you. For instance, improved feature implementation rates, but higher defect rates, would tell you that the project team was perhaps moving too fast, not fully understanding or heeding product quality criteria.

Finally, remember that measurement—like the agile method itself—is an iterative process. The set of measures selected for your organization will—and must—change with circumstances and over time, and be refined in the fires of business realities. Feedback is one of the best assets for continuous improvement. Seek it and use it.

Chapter 5

Our Agile Future

Traditional management methods, including project management, came of age over the course of the 20th century, evolving hand in hand with certain bureaucratic assumptions—assumptions about power, control, centralization, and linear problem solving—most of which do not work very well anymore. To predict how agile methods may be used in organizations in the next few decades from our vantage point in 2008 is perilous: it's unlikely that we can actually foresee how business will alter. (Imagine yourself back in 1980 for a moment: could you have predicted Facebook as a business tool?) Yet certain trends are clear:

- Agile methods will somewhat clash with currently-existing standards in project management, as well as standards in many application areas of project management.
- Implementing agile processes in a multicultural, distributed environment will test the cultural sensitivity of the best project managers.
- The project manager role will morph as it takes on features of adaptive management.
- Environmental and political stresses will create a groundswell of demand for processes like agile that can help us respond to global problems nimbly.

- Once out of the software development box, agile methods will be found to resonate in many, if not all, areas of the business—most importantly, in helping corporate leaders to do strategic planning under conditions of uncertainty.

Implications of Standards and Compliance

The very notion of industry and professional standards—particularly where compliance with those standards is backed up by formal regulation, as with the project manager qualification in Australia, or in the practice of medicine worldwide—presents a formidable hurdle to the adoption of agile methods in management. Wherever governments or professional organizations have striven to guarantee consumer and worker safety and/or best-practice governance of organizations, those regulations and standards act to eliminate exactly the sort of creative, flexible behaviors that agile methods seek to capitalize upon. Is it, in fact, even possible to use agile methods within best-practice frameworks of this type? At the present stage of development, this question remains unanswered, yet there are some indications that, where there is a necessity for agile project management, there is a way to adapt the practices and still remain in sync with accepted standards.

For example, at a recent meeting of the National Nuclear Security Agency, presenters reporting on the results of a massive construction project—precisely the sort of high-security, low-risk-tolerance project that has previously been a beneficiary of linear project management practices—noted in their lessons learned that "when you include equipment that isn't well understood in the scope, it creates problems," and that a more agile approach to planning would have alleviated the

17-month schedule overrun the plant experienced. (Zimmerman and Thomas, 2008) Their observation is certainly applicable to any industry or government project that uses cutting-edge technology. When following accepted practice becomes a financial burden, can the adaptation of more realistic agile methods be far behind?

Likewise in the pharmaceuticals industry, the processes and standards for drug development and manufacture are heavy with bureaucratic redundancies designed to ensure patient safety—yet there is pressure on the industry to bring life-saving medications to market more quickly. A child dying of AIDS doesn't have the five to seven years that it can take to bring a new drug over the hurdles. As the global village grows smaller, the ability to treat new diseases—or diseases spreading from the tropics as a result of climate change and global travel—will at some point make agility more desirable both from a bottom-line standpoint and from the doctors' and patients' standpoint.

One area that some agile gurus are already addressing is the way that agility can actually support, rather than conflict with, such drivers of corporate transparency and risk management as the Sarbanes-Oxley Act (Pettit, 2007). Ross Pettit points out that factors outside the control of a company's internal operations often impair execution of even the best-laid plans. The ability to forecast and respond to change in a timely fashion will go a long way to meeting revenue targets and goals, reducing risk. Instead of forecasts based on "the pursuit of a mythical number given at the beginning of a quarter," agile practices such as decomposing deliverables into smaller components, each with an associated revenue amount, gives the company a granular unit of work with economic properties. Further, companies could define the fiscal quarter as an

agile "release" divided into 13 iterations of one week each, giving time-boxes around which to construct a plan, and the flexibility to respond to customer and business environment changes.

"Vendor is agile, I am not!"

Globalization, Relationships, and Making it Work

With today's business climate being driven more and more by a global economy and becoming more challenged by the broad implications of energy cost, the demand to achieve more from less is increasing exponentially. Investors demand higher returns on investment, shorter time to market with fewer resources, and improved quality within collapsing timelines. The result in developed nations is more and more headlines about companies reducing human resources and reorganizing to in attempts to locate less costly means to get their product to market. The impact has been to look offshore to emerging nations that still have low wages but the skills to meet increasing productivity demands. The consequences have been mixed, at best. It is becoming more apparent that the solution to simply move work offshore to realize lower costs is not the panacea many thought and proclaimed. To leverage the lower cost and resource scalability for an offshore solution, the strategy must include the cultural implications, the quality of the communications and physical infrastructures, the availability of qualified human resources, and the development of structures that will facilitate getting product to market faster.

Offshore product development deals embody a broad range of engagement types, from hiring a small job shop for a focused project, to expansive deals worth hundreds of millions with corporations that have global subsidiaries. Not infrequently these deals are designed in such a manner to preclude

the possibility of an agile development process, even if one of the sides would like to use it. As indicated elsewhere, the agile process requires collaboration and open communication, assumes flexibility that accommodates change, and has an iterative architecture with evolving deliverables and frequent replanning. These requirements virtually fly in the face of critical pricing models which rely heavily on predictable results. It nearly goes without saying that predictive processes are needed to produce predictable results. Agile, being an adaptive process, lies at the opposite end of the development methodology spectrum.

Corporations tend to want firm-fixed price contracts to remove developmental risk from them and help to budget and control cost. This is especially true where the company considers itself to be vulnerable, as is frequently perceived for offshore agreements. Outsourcing engagements that fit agile development must have pricing models such as time and material that provide the required flexibility for both the client and vendor. Agile practices require open environments, shared goals, common vision of the business product, collaboration, strong team integration, and constant communication. Barriers between customers, developers and other stakeholders have to be removed to provide maximum transparency for the teams to be integrated. This requires that the client and provider share risk in the pricing agreements.

Consequently, a frequently heard question is "Will agile practices work on projects with physically distributed resources?" Given the project change dynamics, cost and speed to market forces, the obvious, if simplistic, answer is: "They must!" With that, however, when carefully assessed, one must again recognize that the contributors to offshore effectiveness remain basically the same as they are locally: communication, collaboration, feedback loops and visibility.

Communicate, Communicate, Communicate

Fortunately, new tools and techniques are enabling even very traditional or geographically dispersed corporations adopt agile practices for management of a wide range of projects. These rapidly developing technology trends are greatly facilitating the capability for immediate communication and collaboration, even for those that have not encouraged open communications across, or even within, their various organizational units. Usable voice over Internet protocol (VoIP) software, instant messengers, e-mail clients and wikis have made online communications easier and offshore outsourcing possible (Filev, 2008). In fact, it has become preferable to use wikis and similar online tools since these tools can be used to structure and store it in addition to transmitting information to a distributed network.

As it becomes more and more apparent that agile practices may be the most expedient way to ensure a positive return on project investment companies are almost lining up to embrace rather than resist change, according to Doug Mow, senior vice president of marketing at Exigen (Fagnani, 2008).

Nonetheless, despite the tremendous advances being made with electronic communication tools, agile practices and methods cannot work for companies that will not remake their corporate culture to encourage open and regular communication, truly empower employees to make decisions, and embrace the reality of constant change. It is imperative that people know what is happening today and what is planned for tomorrow and next week. A good agile project manager will work to ensure this kind of communication practice exists in his project.

The importance of communication and collaboration along with a high comfort level with change cannot be over-em-

phasized relative to utilizing agile practices across time zones and cultures. Companies must insist, train, emphasize and enforce over and again these critical elements until "the level at which the momentum for change becomes unstoppable." (Walsh, 2008). In effect a global virus to communicate has to take control to create a tipping point that enables agile project management to operate as it must to be successful. "Marketplace agility requires that employees at all levels engage in proactive, adaptive, and generative behaviors, bolstered by a supportive mindset." (Dyer and Schafer, 2004). Indeed those companies that are first to ensure operational mastery of the agile archetype throughout their global organizations will win most of the competitive wars in which they are engaged.

Organizations, companies and corporations that are learning the ability to address continuous change with use of agile practices and processes are finding that organizations, as social scientists have long maintained, are living organisms that make decisions based on their best available information. Often this information is obtained through an information technologies organization takes in data from many sources and transforms it in ways that helps its host organizations continually adapt, and sometimes thrive, in today's dynamic world environment. As in the natural world, those organizations that are most adept at responding to change to meet the volatile market environment, those that can to anticipate possible results early, and those that have the capability to accelerate their decision-making are those that have the agile attributes to succeed. Agile practices allow managers to align what has been gleaned from technology with business strategy. With this knowledge, more and more are able to successfully address the myriad issues involved with a global venture.

Cultural Implications for a Communication-Intensive Process

Global distribution of projects can raise cultural issues that make implementation of agile principles and practices more or less difficult depending upon the location. For instance, we have seen European colleagues and clients understand the benefits of agility completely, yet still insist on creating extremely detailed product specifications at project initiation. They have internalized the scientific approach, making it more difficult to embrace the experience of an evolving project. We have also experienced implementation of self-organizing teams to be much more difficult in India, where there is sometimes a hierarchical and bureaucratic mindset. Cultural beliefs and habits from China to Brazil, and everywhere in between, impact the interpretations and applications of agile processes differently. As teams are distributed in multiple countries, it is imperative that project teams, including all stakeholders, are culturally sophisticated enough to work respectfully and thoughtfully with their offshore members and onshore nationals. Additionally, the unique cultural perspectives of each offshore team must be thoroughly understood by the program manager for each situation. This includes being aware of and adjusting schedules for holiday observances at each location. It is only when cultural norms are completely understood that they can be addressed through ground rules and processes that are clearly delineated and methods established to account for and meld all the differences into a viable approach that produces project deliverables in a timely manner. The bottom line is that it is imperative that cultural sensitivity be applied in project management and, in the case of agile, anticipated, with clearly defined and strategic procedures in place by the time project initiation is completed!

Emerging: Agile Project Teams

The importance of communication between people involved in agile projects has already been noted in the preceding pages. Agile practices place a premium on face-to-face communication. In fact the Agile Manifesto states "The most efficient and effective method of conveying information to and within a development team is face-to-face conversation." As a result, it is not at all unusual for an agile team to be located in an open space where the members are in physical proximity and able to work closely with one another. Therefore, sourcing project teams with resources from multiple locations diverges somewhat from agile's core methods. Such projects are already rife with potential pitfalls: there is the questionable cost effectiveness of working in geographical regions with low wages, lack of experience or required skills, lack of team and stakeholder propinquity, the need for detailed requirements at project inception, and a comprehensive project plan-driven approach to development—any of which could be a show-stopper. For those who think agility in project development best serves their interests, adapting agile processes to the global project adds an additional layer of uncertainty.

One of the first issues that must be addressed when considering a dispersed team, no matter where the project is being taken, is to ensure the assignment of an experienced team, with experience with agile projects, to the degree possible. The reality in many parts of the globe is that the majority of the team is likely to be junior staff, perhaps straight out of school, with little or no work experience. Therefore, great care must be given to assuring the best qualified people are hired. This is often complicated since a local provider is being used. It is important that a way is found to sanction everyone that is assigned to the project. It will more than likely be desirable to

have several well known experienced personnel from similar kinds of agile projects mentor the newer team members.

Over the recent years, the global business community has learned the importance of having emissaries moving back and forth between locations. Typically several people with analytical, technical and business orientations are relocated from the home location. They have contacts that can help everyone communicate. In like manner, it has been found very beneficial to have people from the remote locations come to the primary project location. This is one of the means to not only accommodate the important face to face communication agile requires but resulted in proven improved communication. While some highly skilled people may be required to stay with a remote team throughout most, if not all, of the project, emissaries have normally stayed abroad a few weeks with frequent rotations. It is important to also note that project managers should visit all of the project locations at a regular interval. This makes the project manager visible to the entire project team and provides visibility to what is actually occurring and better enables opportunities to help with conflicts and problems both on location or from home. Such contact for both the emissaries and project manager is an important ingredient for building trust and collaboration through the ether.

One of the significant factors that will test trust and positive collaboration is the variations in time zones. There are a couple of strategies being used that have been developed to handle time zone differences. One that we have used successfully is to divide the teams by activity. We had our product managers and quality assurance testers on site and product engineers offshore. There were several hours that would overlap at the beginning or end of each day, as the team determined which was best for them. Product engineers would

work on new specifications, changes and fixes while the other part of the team was sleeping. They would then set up communications for short status meetings using wiki documentation, Web-ex, conference calls, etc. at the intersection point to collaborate on what had been done and was ready for review. Another approach is to group similar tasks into blocks with the intent being to assign each block to a location. This approach may force better communication and collaboration to facilitate the possibility of using agile methods.

With either strategy it is important to have regular product integration points that allow the customer to review the previous night's work and determine its acceptability. This allows the feedback loop to the product manager to work more effectively to correct any misunderstandings quickly and make adjustments as a result of being able to refine their thinking about the product. In any case, both strategies work.

Another aspect of distributed agile projects is that more documentation is required than in the collocated agile project. Agile teams have typically maintained much of the project knowledge such as detailed specifications, product structure and behavior in their minds. When product development is defined while that development evolves, thereby leveraging agile processes, any documentation is quickly out of date. Handoffs are then difficult to accommodate. With a distributed project team, however, some documentation is necessary. It will usually consist of what is scheduled for the next iteration with a minimal level of that meets only the need of the global team to understand features enough to develop and estimate tasks. This documentation can then be adapted to be provided to the customer when the iteration is implemented so they will understand what has been completed and which of their expectations had not yet been launched. The key to agile project

documentation is generating just enough. The documentation, as implied above, is created to serve a specific purpose which after that is served the documentation is stored.

To date there are few examples of companies successfully employing agile project management with a distributed-team model. The strongest efforts have been with those companies that have offshore software development facilities where they can deploy their own teams to software development projects using agile processes. Trying to implement agile distributed project teams is still laden with risk and hidden cost associated with the intense communication requirements. Additionally, the lack of continuous face-to-face contact, the cultural and language differences, the time zone variations require additional human and financial investment and attention to glean the desired results. Nonetheless, with the modern communication infrastructure and collaborative tools, collocation and ease of travel globally there can be little question that hurtles that limit agility will be cleared for the future of all forms of development to enter an agile era.

Project Managers Called to be Agile Adaptive Leaders

The foregoing discussion clearly points to the need for not only strong management but necessity of strong *creative* leadership. Over the last couple of decades in the 20th century, management moved away more and more from authoritative directive management to more open management styles to accommodate a more educated employment pool. Coaching and mentoring have become dominate leadership techniques that are widely held in traditional organizational management today. As leadership continues to evolve a distinct developmental process seems to be demonstrated. In an article in the

Agile Journal, Bill Joiner observes that "new, in-depth research shows that people move through (three) distinct stages or levels as they become more agile leaders … Expert, Achiever, and Catalyst" (Joiner, 2007). The Catalyst leadership role exercises a broad range of leadership skills and neatly utilizes adaptive leadership where the focus is on how to get others in an organization to address and solve a problem. It is here, however, that the adaptive catalyst leader's unique skills become invaluable for distributed organizations. They will typically present their own views and then immediately request feedback or inquire about others' views. They can be accommodating, when that appears to be the best choice, or assertive when the situation requires definite leadership and control. But since adaptive catalyst leaders have a genuine interest in others and a genuine interest in learning from sundry points of view, their balanced style stimulates feedback that can be utilized for problem resolution and/or forward progress on a project. As trust among project and team leaders in built through this process, collaboration advances an interest in feedback of all kinds that sets a tone within the project that encourages and reinforces agile practices at and across all the distributed locations, onshore and offshore. A calm acceptance of change is imbued that facilitates quick and accurate course adjustments as an agile project proceeds.

The normal search for a problem solution makes it clear that solutions are rarely self-evident, but must be cooperatively dug out by multiple knowledgeable people. The adaptive leader recognizes that the real support for change that problem solutions bring will come from those who create the solutions. It is here that it is made clear to stakeholders that they are the only ones who can resolve a problem and then only through their joint effort. As a catalyst, the adaptive leader promotes creative thinking, mediates between opposing views

and ensures that important stakeholders are heard. In this way solutions are generated and everyone who has an interest in the project is incentivized to support implementation.

Planet at the Tipping Point: Agile Saves the Day?

In 2006, Sir Nicholas Stern, addressing the British Cabinet, told them that the world would have to pay one percent of its annual GDP to avert catastrophe due to climate change, but that doing nothing could cost five to twenty times that amount. He told them: "Business- as-usual will derail growth." Stern, a former chief economist of the World Bank, Head of the U.K. Government Economics Service and Adviser to the Government on the economics of climate change and development, had just completed *The Stern Review,* a comprehensive analysis of the economic impacts of global warming, at the request of Gordon Brown, Chancellor of the Exchequer. Among other findings, The Stern Review examined how rapid innovation would be required to supply power generation, transportation, pollution control, clean agriculture, and other new technologies, and warned that incremental changes based on time-tested historical successes would fall far short of delivering the kind of radical innovation that will be necessary (Stern, 2006). It's our opinion that delivering these radical results will not be possible by using the same old linear processes and methods. Radical innovation will call for agile management.

Strategic Planning under Uncertainty

As long ago as 1988, management thinkers noticed that accepted practices for formulating corporate strategy were becoming inadequate for the modern business environment.

A collection of articles from the *Harvard Business Review* shows experts from McKinsey & Co., Royal Dutch/Shell, and from Wharton, Yale, Columbia and Harvard business schools struggling to describe and name processes that work for doing strategic planning under conditions of uncertainty. At the root of the traditional approach to strategic planning, the McKinsey authors noted, lies an assumption that applying a set of analytic tools allows executives to predict the future of a business. However, this system only works in a relatively stable environment. What's needed, they say, is a way to reserve "the right to play" while avoiding high-risk postures, and keeping your options open as the situation unfolds. The word "agile" does not appear in this article—or anywhere in the book—and yet it is written between every line. When another author discusses "Discovery-Driven Planning" we know the techniques he is searching for are comprised within the agile portfolio (Harvard Business Review, 1999).

The emerging world of business, characterized by uncertainty, resource shortages, the global village, and dynamic markets, cries out for planning and management processes that can help businesses and people tame the sense of chaos. Within chaos is always the promise of creative change and a new order. By becoming adept in agile methodologies and in managing our projects with agility, we can learn to ride the wave instead of being swamped by it.

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Glossary

Adaptive leadership—Sending changes occurring in the business and appropriately adapting one's leadership styles, tools and skills to be responsive.

Agile Manifesto—A statement of the principles that underpin agile software development practices; for more information, go to agilemanifesto.org.

Agile project management—The practice of project management in such a manner as to be nimble and quick in response to business changes.

Agile software development—Software development approaches that encourage iterative development, collaboration, and adaptability throughout the project, encouraging planning throughout the project as opposed to doing all planning at the beginning.

Box in—Establishing fixed constraints, usually budget and schedule, within which a piece of work will be accomplished. Determination as to continuing the work or cancelling it will be made when the constraints are achieved.

Builds—The process of assembling disparate product components into a cohesive single product.

CMMI—Capability Maturity Model® Integration; refers to a systems development framework developed by the Software Engineering Institute.

Complex adaptive systems—Systems that are diverse collections of multiple interconnected elements with the capacity to change and learn from experience.

Continuous planning—The process of planning a project throughout the project lifecycle, by planning only the next iteration of work.

Cost of change—The costs associated with addressing a change in requirements. Typically these costs increase the closer the project is to achieving its final product.

Daily status meetings (situation briefing, stand-up meeting)—The practice within agile project management of conducting brief daily project status reviews, usually with review participants standing, to encourage brevity and focus during the review.

Deferring decisions—The practice of delaying decisions until the absolute last possible chance to make them. This permits the gathering of as much information as possible prior to making the decision, thereby decreasing the chance of an incorrect decision resulting in re-work.

Deferring features—The practice in agile project management of scheduling the implementation of product features into later iterations. This practice can be used to minimize re-work by supporting implementation when more requirement definition is viable, or when instability around a requirement is removed. Caution is needed when deferring features to ensure sufficient funding remains in those later iterations to address critical features.

Distributed agile projects—Projects that are applying agile project management techniques with geographically dispersed team members.

DSDM (Dynamic Systems Development Method)—A UK-developed approach to system development that leverages concepts from Rapid Application Development. One of a number of agile approaches to systems development, it emphasizes an iterative and incremental approach, with continuous user involvement.

Exploration factor worksheet—One of several tools used to facilitate discussion when making the decision to use agile methods (or not). See page 46 for an example.

Functional tests—Product tests that validate the proper implementation of product functions.

Iteration plan—The plan developed at the beginning of an agile project that describes to project stakeholders how the various product features will be addressed and the number of iterations expected to complete the full product. Each iteration is then treated as a project, with more planning done at the inception of each iteration.

Just-in-time approach—Scheduling work as the schedules are needed. Applying the same principles as the "just in time" inventory processes in business, Just-in-time scheduling relies on signals of what is going on elsewhere within the project to know when to finalize the schedule.

Lean product development, manufacturing—Developing products by breaking the work into small pieces, managing capacity, measuring flow, and delivering value incrementally, eliminating waste in the process.

Life cycle model—A representation of the interrelationships between project phases.

Modularity—Refers to the practice of defining a system's as individual unique components may be separated and recombined to create a new whole.

Product vision statement—A step in agile project initiation. See page 39 for a worksheet that facilitates the development of such a statement.

Refactoring—The process of changing, or "cleaning up," software to better support future changes, improve its readability, or simplify its structure, while preserving its existing functionality.

Reuse—Using an item more than once. In product and system development, it typically means designing a product's components so that the component can be integrated into multiple end products.

Running list—A list of open items, to which items are removed and new ones added. Often used in agile project management to track outstanding issues, action items, or deferred features.

Running tested features—A metric that shows, at every moment in the project, how many features are passing acceptance tests. In other words, a metric reflecting features ready for production deployment. This number should be measurable in the first week or two of a project, and should steadily increase throughout the project's lifecycle.

SCRUM—Derived from the rugby term, SCRUM is an iterative incremental process of software development. It is one of a number of agile approaches to developing software. Numerous books have been published on this increasingly popular approach to software development projects.

Sprint—A period of time during which a pre-identified list of product features are implemented. A sprint is usually a 15–30 day period, with the actual length determine by the project team.

Stand-ups—An abbreviated form of "daily status meetings," referring to daily status reviews that are conducted with participants standing up. In the SCRUM methodology, these are the daily project team meetings, focused on three questions: (1) What have you done since yesterday?, (2) What are you planning to do by tomorrow?, (3) Do you have any problems preventing you from accomplishing your goal?

Stories—A means by which to capture user requirements. Typically these are written in one or two succinct sentences, or no more content than can be legible on a 3x5 index card.

TDD (Test-Driven Development)—An agile approach to software development that relies on test cases covering the desired improvement or new functionality to be written before the software is, and then the production software necessary to pass the tests is implemented. That production software then goes through a refactoring to accommodate changes. This approach emphasizes short iterations.

Technical Debt—A term from the agile software development community used to describe a situation when a product is designed and developed in such a manner that there will be extreme maintenance efforts required once the system is in production—"pay me now or pay me later" is another term that describes the situation.

Unit tests—A testing method that verifies the smallest testable part of an application are working properly

User stories—See "Stories."

Velocity—The rate at which a project team completes development of some agreed-upon number of product features.

XP (Extreme Programming)—A popular approach to agile software development prescribing a set of daily stakeholder practices that embody and encourage particular values, including frequency of communications, simplicity, and rapid feedback. Numerous books have been published on this increasingly popular approach to software development projects.

About the Author

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Karen holds an MS in Information Systems from Northeastern University's College of Engineering. Active in the system engineering and project management communities, Karen has chaired and spoken at numerous workshops and conferences, plus contributed to various books and bodies of knowledge, including *The AMA Handbook of Project Management.*

A former international Director of the Project Management Institute (PMI) and Immediate Past Chairperson of PMI's Ethics Review Committee, Karen is the Chair of the PMI Educational Foundation Board of Directors. She is an active member of IEEE's Technical Council on Software Engineering, having served on its Executive Advisory Board. Karen has been continuously listed in *Who's Who of America* and *Who's Who of the World* since 1998. She is also active in local civic organizations, introducing the project management discipline to their activities.

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Agile Project Management

A Mandate for the 21st Century

This slim volume is not intended as a full primer on the agile philosophy or on adaptive leadership. In-depth texts exist elsewhere, and some are listed at the end of this book. Much has been written about agile practices within information technology organizations, but the focus of these efforts has been primarily on agile software development projects. As this exciting method has become familiar to software developers and others in IT, many project management experts have wondered: shouldn't agile methods be applied to the management of other kinds of projects?

The mission of this book is to connect the dots between agile practices, project management practices, and those drivers in the business world that make it likely that all projects of all types are going to need the benefits that agile project managers can bring.

— Karen R.J. White

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