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Building the Problem Solving Machine: Team Building Guidelines for IT Project Managers

Successful Information Technology projects may depend on using a specific technology, but when projects require more than one person to complete they also require teamwork. This article will provide a vision of a high-performance team guidelines every project leader can follow to improve team performance.

How big a difference does successful teamwork make? Read just the opening lines from one of the classic books written on IT management, first released in 1987 and updated again in 1999, *Peopleware: Productive Projects and Teams*, by Tom DeMarco and Timothy Lister. Chapter One, entitled "Somewhere today, a project is failing," says it all: "Since the days when computers first came into common use, there must have been tens of thousands of accounts receivable programs written. There are probably a dozen or more accounts receivable projects underway as you read these words. And somewhere today, one of them is failing. Imagine that! A project requiring no real technical innovation is going down the tubes. An accounts receivable program is a wheel that's been reinvented so often that many veteran developers could stumble through such projects with their eyes closed. Yet these efforts sometimes still fail. "

DeMarco and Lister coined the term "peopleware" to analyze an often-ignored dimension of Information Technology management: the human beings who develop and maintain the IT infrastructure. Routinely referred to as "our most important asset" and at other times merely as "resources," the individuals who make up IT project teams are more often than not the primary determining factor in a project success or failure.

Use your own experience to test this hypothesis. Think of the projects that stumbled along with interminable meetings that mercilessly beat the same immobile horse; the paralysis associated with consensus; designs where every ounce of innovation was sacrificed to the lowest common denominator among the stakeholders — finally leading to a completion that should have taken six weeks, but actually took a full year. Over and over again it becomes clear that our biggest obstacle often isn't technology — it is the way in which we work together.

A high-performance project team — a team that accomplishes much and enjoys the process — has many attributes, many more than can be fully addressed in a single article. In this article, the second in a four-part series on the art and science of project management, we will focus on the capabilities that enable a team to quickly, confidently, and consistently produce high-quality solutions to complex problems. I refer to such a team as a "Problem Solving Machine" and this article will reveal the three characteristics that you can develop to unleash the productivity of your own PSM. We'll finish with specific steps you can take to build one yourself.

The Problem Solving Machine

What is this machine and how does it relate to project management? Think of IT projects as essentially a series of problems to be solved. This is the difficult part of IT projects — solving problems — and this is the

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part that can slow our progress to an imperceptible crawl. What problems? Start with the business need for the project. That's usually a problem or an opportunity that we need to understand before the IT requirements can be clarified. Then comes the problem of defining the IT requirements, the problem of selecting the solution, the problems associated with detailed design, etc., — one long series of problems. To make matters worse, most of these problems require group solutions. The more abstract the problem and the larger the group of people that influence the decision, the less likely any progress will be made. This is why we need the PSM. The PSM is the kind of team that can take on problem after problem, working through each one in a steady, predictable manner, producing realistic decisions in a timely manner and, most amazingly of all, emerging from each problem stronger, more energized, and excited to take on the next challenge.

Most of us have been part of these teams and we would love to repeat the experience. If you are a project manager, creating a PSM is the greatest gift you can give your team members and yourself.

Characteristic 1: A Positive Environment

Project work can be hard work. The problems that we try to solve in IT projects can be difficult, and the process of solving them can be draining to team members. It is no wonder IT workers continue to report a high degree of "burnout." That is why a positive team environment is so important, because it acts as a source of energy for the team. There are at least four components that are necessary for a positive environment:

1. **Trust among team members.** Trust is the foundation of productive team relationships. Teamwork is highly interdependent work. When you can trust that I will keep my commitments and my word can be taken at face value then you can begin to rely on me.
2. **Open communication characterized by effective listening.** Effective communication is necessary to discuss and analyze problems and solutions. More than any other communication skill, the ability to listen well — to truly understand the meaning and intent of another person — will enable the group to work together successfully. An often-recommended listening skill is to be able to paraphrase and summarize what another person said to ensure we understand the meaning. Equally important is the ability to suspend our own judgments and abandon our own argument while we try to understand the ideas of our teammates. As the team exhibits this skill it increases its ability to explore complex ideas and, consequently, it strengthens its ability to disagree on a subject without threatening team relationships.
3. **Value people for their individuality.** Each team member brings a unique set of skills, style, and experience — make use of it. This is easy to say, but in practice many of us would rather surround ourselves with team members whose skills or style of problem solving resembles our own. However, mature teams recognize that diversity strengthens the team in the way that biodiversity strengthens a forest. Mature teams seek out members whose participation will broaden the skills and perspectives of the group, and accept the reality that some members will see the forest, some the trees, and others the leaves. Valuing the individual also means actively drawing out all team members, and asking each of them to play to his or her strengths.
4. **Acknowledge the need to make mistakes.** A PSM knows that the journey will contain twists and turns. Solving tough problems requires tenacity and creativity. If we are afraid of making mistakes we are likely to miss opportunities as well. A healthy PSM does not avoid admitting a mistake, but they do avoid repeating it.

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Another component that exists on many PSMs is a sense of humor. These teams can poke fun at themselves and often laugh together. This is exactly the type of attitude that allowed the term "Problem Solving Machine" to be coined in a playful, upbeat, confident conversation about why a team was working so well.

A positive environment makes it safe to challenge ideas and each other. That's vital because if we are to innovate, to be creative, we must take risks. If I am afraid to suggest a novel approach or take a contrary stand then the team loses the one unique advantage humans will always have over computers and machines: our imagination.

Characteristic 2: A Conscious Collaborative Process

When a group of individuals tries to understand and solve a complex problem, one of the challenges they face is that each member has a unique method and speed for working through the facts and testing ideas. The detail-oriented team member may want to check some facts while the big-picture thinker is already choosing a solution. At the same time, a conflict can emerge over what, exactly, is the problem we are trying to solve? A PSM avoids this frustration by having explicitly-defined methods of working together through these decisions. There are essentially three categories of processes for which the PSM has defined practices:

- 1. Decisions.** Teams make decisions in several ways, including voting, consensus, in a subgroup, or autocratically. Each approach has its advantages and drawbacks. For example, consensus decisions offer the greatest participation of the group and therefore tend to be both thorough and well-supported. But consensus decision-making is time consuming and laborious and not always warranted. The PSM understands that there are different methods for making a decision and will shift among them, according to the importance, complexity and speed required.
- 2. Conflict.** Disagreements arise among the closest of friends, so it is also natural to find them on a project team. Choosing a vendor, a technology tool, a risk mitigation strategy, etc., can all generate conflict between team members as each strives for the best solution. This kind of conflict, while natural, is an obvious threat to team relationships. Immature teams often respond to conflict with unproductive behaviors; one member may try to aggressively push his solution on the group while another may have a pattern of acquiescing at the first sign of disagreement to avoid any damage to relationships. The PSM, because it knows conflict is inherent, even healthy, also knows how to acknowledge conflict and respect relationships while systematically working through problems.
- 3. Problem Solving.** It is relatively easy to state the steps of problem solving, but it is a rare team that can follow them. Though there have been many books and seminars devoted to this important process, they all have in common these general steps:
 - Clearly understand the problem.
 - Clearly describe the criteria for the solution, i.e., "What will the situation look like when the problem is solved?"
 - Seek many possible solutions.
 - Compare the benefits, costs, and limitations of the possible solutions.
 - Choose the best one given the cost, schedule, and environmental constraints.

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The reason so many books and seminars have been devoted to these steps is that they each require skill. A PSM has a problem-solving method understood by all team members — so well understood that team members use the same terms to describe it, even going so far as to have it documented with specific steps and outcomes. The structure of the process gives focus to each activity and clarity to the group about where they are in the decision. It also prevents them from making the simple but common-place errors humans seem so prone to, such as prematurely jumping to solutions and making decisions based on assumptions.

The benefit of a conscious collaborative process is that the team awareness of how things are done enables them to analyze their effectiveness and improve; the more complex the activity, the greater the value of this consciousness. This is true whether managing an automobile assembly line or hitting a baseball. In addition, it provides a framework for analyzing the effectiveness of the team's behaviors, giving them language to express frustration or dissatisfaction with some aspect of their process. When a team has developed strong collaboration skills they move through both simple and complex problems with speed and superior results.

Characteristic 3: Goal Clarity

Why is the project worthwhile? What are we really trying to accomplish? The answer to these simple, fundamental questions will influence nearly every decision the team makes and can even influence how the team makes decisions. Again, this is pretty obvious: effective teams have clear goals. The difference between most teams and a PSM is that the PSM has over learned the goal. Many teams take the time to clarify their goal and write it down, usually in a charter or statement of work. But they also forget the goal soon afterward. Think of it as crossing a desert and using your compass only once to start the journey, then carefully packing the compass away. You are likely to lose direction. The PSM, usually thanks to the efforts of the project manager, uses the compass constantly.

As meetings begin, they remind themselves of the project's purpose. When a problem is identified, part of the problem statement describes how the problem relates to the project goal. Whether it is risk management, allocating people to the team, technical decisions or communicating with customers, the team is conscious of the overall project goal.

The benefit of goal clarity is that the PSM keeps their energy focused on the primary goal. Every action is a step toward that goal. The team is energized through their unity of purpose.

Build Your Own Problem Solving Machine

When you belong to a PSM you have a sense of unity, effectiveness, and accomplishment. For IT professionals whose job it is to implement new technology and new business processes, the power of the PSM can change your work attitude 180 degrees — from frustration to a sense of achievement. Now that you know the characteristics of a PSM, you can build one for yourself by following these guidelines.

- **Focus on team building activities early in the project.** Project teams, like projects, have a beginning. The often-cited team cycle of "form, storm, norm, perform" describes the evolution of a team from a disparate group of individuals to a cohesive, functioning unit. The project leader can assist the team to move through these phases. Build time into the project plan specifically for team building activities such as those described below. Be aware of the characteristics you are trying to foster and look for opportunities to build or model these characteristics during every team meeting.

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- **Use a kickoff meeting to model the characteristics of your ideal team.** Find a way to begin introducing team members to each other, helping them understand the skills and experience of the group. Whether you make the introductions based on your own pre-meeting investigation or allow them to introduce themselves, realize that this is an important component of your first meeting and give it due time. The kickoff is also the time to begin goal immersion. Give the team the background to thoroughly understand the purpose of the project. Finally, show them the right way to run a meeting. Have an agenda, use it, and follow other good meeting management tactics. At your first meeting people will be on their best behavior, so with proper planning this meeting will set a positive precedent, a momentum you can build on in future meetings.
- **Set "Ground Rules" early in the project.** These set expectations for behaviors that build the positive environment. It may go without saying that team members should show up at meetings on time, prepared and ready to cooperate with the group. But when we specifically list those expectations it is more likely to happen. What other behaviors would the team like? Let them tell you and each other. Devote twenty minutes of one of your early meetings to creating this list, then bring it to the next few meetings and post it in a visible place until you no longer need to reference it during a meeting.
- **Focus on communication skills.** We have already discussed the importance of listening skills. Learn them yourself and find a way to teach the team. Personality and behavior style inventories are another way many teams develop their communication skills. In my company's team leadership course, we use a simple, easy to administer tool that helps people recognize various styles of problem solving and working in groups. As a result of these insights, team members have greater appreciation for other's strengths and they begin to develop tolerance and patience for alternate styles. There are many such personality assessment tools. Invest in one and you will see the advantages of knowing your team members.
- **Make your collaborative process conscious.** As the team begins to work you will see what types of problem solving skills and work habits each person brings. If necessary, use training to build team awareness of the options for decision-making and conflict resolution. Like any skill, these improve through use, but only if the team is aware of what they are doing. After initial training in these skills, use a "plus/delta" exercise to wrap up meetings. Simply make two lists, the plus list should contain effective behaviors; the delta list recognizes what should be done differently in future meetings.

These guidelines are not meant to oversimplify the challenge of building a PSM. It takes consistent effort as the team's leader to build the key characteristics. And while your team is developing, it also needs to be making progress against the project schedule. The trick is to work these activities into routine project meetings and the team's work processes. If you invest at least 10 minutes at each project meeting for the team to address some aspect of its effectiveness, you will make steady progress on the road to becoming a PSM.

Summary

IT project teams are formed to face technical challenges, yet their success often relies as much on the team's ability to work together as their technical capability. This article, the second in a four-part series on project management, describes three characteristics of a high-performing team that is able to smoothly and efficiently work through complex group decisions. The characteristics of a Problem Solving Machine are a positive environment, a conscious collaborative process, and goal clarity.

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The primary ingredient for turning your team into a Problem Solving Machine is your leadership and a focus on developing the key PSM characteristics. Team members and the project leader must commit their energy and purpose to achieving this goal. This requires the team to be able to communicate effectively, appreciate individuality, and work cohesively, but the payoff in productivity is worth the effort in building the PSM.

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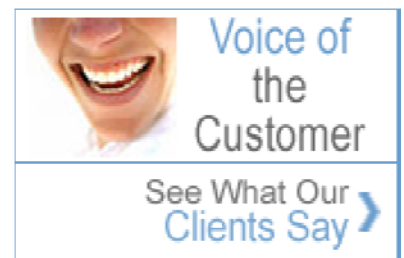
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