

## **IT Project Teams and Their Leaders: Interaction Expectations**

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**Abstract**

Information Technology projects, such as developing new information systems, or transforming existing systems, are expensive and risky. The cost of failure is high. These projects are usually accomplished through the efforts of teams. The success of these teams is vital, in order to mitigate the risks. This paper addresses the dynamics between team leaders and teams, and how this may affect project success. We develop a model (T/LEM) that uses the expectations that teams have about their leaders, and the expectations that leaders have about their teams, to predict team and project success. We include as parts of our model the concepts of transformational leadership, and how this affects team success.

## Introduction

Information Technology projects are expensive and complex. They often fail. In 2004, KPMG's international survey of 600 organizations reported that more than half had at least one project failure in the past year. In 2003, the reported failures were 57% for at least one project (Ewusi-Mensah, MIT 2003). Applegate, *et. al.*, (2007), estimate that the failure rate for IT development projects at 50%.

The cost of failure is high, since many IT projects today have costs that exceed many millions of dollars. The Gartner Group reported in 2006 that there was \$3.7B spent worldwide on application development tools. This was up 5% from 2003. KPMG International, for example, noted that a quarter of the benefits of IT projects are being lost by organizations across the globe because of failures (Hollaway, 2005). These failures and reasons for them have been going on for decades.

Some of the reasons cited by various researchers are: poor planning, weak project management, inadequate resources allocated to the project, and people problems (Mochal, 2005). A common thread over time appears to be the human aspect of project management and implementation, rather than technology.

As far back as 1988, Bull, the French computer manufacturer and systems integrator, requested an independent research company, Spikes Cavell, to conduct a survey in the UK to identify the major causes of IT project failure in the finance sector. As a result, the major causes of project failure were determined to be: breakdown in communication (57%), lack of planning (39%), and poor quality control (35%). Seven years later the OASIG Study (1995) cited similar reasons for project failure: 1) lack of attention to the human and organizational aspects of IT; 2) poor project management; 3) poor articulation of user requirements. Wixom (2001) cites lack of communication is a major factor in a large number of failed projects.

David Yardley (2002) analyzed international case histories of failed IT projects. Many of the case histories reveal issues that focus attention on the management of projects, rather than the technical aspects of the projects.

Ewusi-Mensah (2003) has produced a partial inventory of projects that have failed, and has analyzed them for commonalities. He suggests that issues of management and organization are at the core of any failed project. He cites socio-organizational factors for

project failures and notes the importance of the composition of project teams, and effects on project outcomes. It is clear that *people*, not technologies, are the critical components of IT projects.

IT projects are not individual efforts. It is usually teams of IT professionals that are assembled to design, build, and implement projects. Increasingly, because IT projects are complex, technical professionals are being called upon to lead peers in information systems projects because of their superior technical competence and not necessarily their interpersonal skills (Rosenbaum, 1991). These individual contributors often have very little formal training in management and leadership skills. When leading such teams, technical professionals may encounter issues related to leadership, group composition, power bases, and skills or competencies required for the success of projects.

Project managers do need to be very effective at the technical aspects of their jobs as well as leading teams to accomplish results (Barber & Warn, 2005). Sumner, *et. al.*, (2006) discuss the importance of “soft skills,” which includes communication skills, and how to manage people. An effective project manager has business, political and interpersonal skills and also personal characteristics which include adaptability, flexibility, being proactive, forward thinking, understanding complexity and the ability to generate creative solutions (Leban & Zulauf, 2004).

It is the purpose of this paper to discuss how project management teams are formed. What are leaders’ expectations about leading teams? What are members’ expectations for participating on a team? We examine the dynamics that may exist between groups and their leaders, and how these dynamics can affect the content of their interaction. This is of interest because dysfunction in a team will affect the outcome of the project in which the team participates (Wilson, 1998).

Despite the frequent use of teams in organizations, little research has been conducted on the skill sets required for leaders managing different types of teams. There is a need to define a team leader’s power, influence, and skills, and match it with team characteristics for greatest chance of success. A project team’s composition, experience, and members’ ability to work cooperatively is increasingly becoming the focus of research on project success. In the following sections we will address the characteristics of IT projects, team characteristics, leadership characteristics, and develop a model that helps us analyze and predict how teams

and their leaders are likely to interact: a Team/Leader Expectations Model. We will also include a discussion and ideas about future work.

### **Characteristics of Information Technology Projects**

Most information technology (IT) projects share certain characteristics. They are *challenging*, in that a new IT project involves innovations that may not have been used before, and may include some measure of invention and creativity. This often requires flexibility and false-steps. In the context of project cost and time estimation, this may be very difficult to accomplish. There is always the temptation to cut short the experimentation necessary.

IT projects *require a high level of skill*. The skills for developing or changing a technological system are complex and may span several different disciplines. For example, a new accounting system would require not only the technical knowledge of how to design and build software to create such systems, but would also require knowledge of processes that exist in the organization to support that function.

IT projects may be *high risk*, since they may be strategically important to the organization, or even important for pure survival. IT projects tend also to be *expensive*, and thus may be high risk for the organization. Typical projects for large organizations cost many multiples of millions. The *outcomes are stated before the task* of developing an IT project begins, though the *goals change* as the project proceeds. As the goals change, the scope may change.

The *tasks* associated with the projects are non-repetitive and non-routine in nature and involve considerable application of knowledge, judgment, and expertise. This makes estimates for completion times difficult. Most project teams are time-limited. They produce one-time outputs, such as a new product or service to be marketed by the company, or a new information system (Bikson, Cohen & Mankin, 1996). The work that a project team performs represents either an incremental improvement over an existing concept or a radically different new idea. Frequently, project teams draw their members from different disciplines and functional units, so that specialized expertise can be applied to the project at hand. Because of the nature of the projects, IT teams are dependent on high quality leadership (Levi, 2001).

## Characteristics of Effective Teams

Group performance will be higher if certain variables are evident. Team members must have shared goals, an understanding of why they are important, and commitment to achieving them. Members need the knowledge and skills necessary for task accomplishment, and are willing to share work. Some characteristics of effective team interaction are mutual trust, respect and cooperation, positive norms and cohesion, willingness for constructive reciprocal feedback, for perspective change, for conflict resolution, and for the development of creative solutions. An effective leader has a shared vision and is willing to distribute responsibilities and credit. Tasks and activities are well defined and organized. (Larson & LaFasto, 1989, Hackman, 1990; Lawler, 1992)

These factors affect the likelihood of success in several ways:

*Shared goals* -- A team that shares the same goals will be more likely to work toward those goals. These goals may be the explicitly stated goals of the project, but may also include other, intrinsic, goals.

*Shared work* – Team members may share work, thus providing cross-functional skills that can be applied to the tasks at hand. This adds to the cohesiveness of the team.

*Positive norms* – Teams that share positive norms encourage their members in promoting those norms. Examples of positive norms are: being on time for meetings, listening to each other, and respectful behavior to others on the team.

*Team Cohesion* - A cohesive team overcomes some of the issues surrounding collaboration, communication, and cooperation. Time is not wasted on infighting or internal competition.

*Constructive reciprocal feedback* – Members who provide constructive criticism and feedback to their colleagues contribute to the final goals in a positive way, without damaging each others' efforts.

*Willingness to change viewpoints* – Team members who are willing to change their minds, and be convinced by others when a change in direction is necessary provide flexibility to the team effort and reduce friction within the team.

*Conflict resolution* – Skills in reducing the conflict inherent in multiple individuals' goals, approaches to work, and personalities allow the team members to work together to develop solutions.

*Development of creative solutions* – There is no clear-cut methodology to elicit creativity in every individual in a team. But if individual idea generation is greeted with only constructive criticism and respect, the likelihood increases. Team members will be more likely to perceive the introduction of new ideas as less risky.

*Distributed leadership responsibilities* – Team leaders who delegate some responsibility to members of the team allow those team members to ‘own’ parts of the project, thus increasing commitment to the success of the project.

Leadership styles and roles for each type of team may vary. While there are many, some leadership models are discussed, which we find applicable to a model of effectiveness of the team and its leader.

### **Leadership Style Characteristics**

Researchers have focused on and identified characteristics of successful team leaders in general. (Cohen & Bailey 1997; Bass, 1990; Boyatzis, 1982, Mann, 1965, Katz, 1955) A leader must have vision and the ability to inspire commitment, effective interpersonal communication and influencing skills, technical expertise, and a willingness to share responsibility and build trust. However, research is limited regarding the requirements and challenges of leading technical teams and individuals. Thite (1999) states that successful IT projects have managers who exhibit transformational and technical leadership behaviors.

Transformational leadership has emerged as an important and popular approach (Bass, *et al.*, 2003; Marta, *et al.*, 2005, Zaccaro & Horn, 2003; Hunt, 1999). Two models are presented. In one model, Bass and Avolio (1990) identify four components of transformational leadership as: 1) *idealized influence* occurs because team members trust and identify with the leader and want to emulate his/her behavior. The leader acts as a role model and is viewed as having high moral standards. The leader provides a vision and sense of mission; 2) *inspirational motivation* represents the leader communicating high expectations for team members and inspiring and motivating them to be committed to the shared vision, and as a result, team spirit is enhanced; 3) through *intellectual stimulation* the leader increases team members’ ability to think in new ways and view problems from different perspectives, and 4) *individualized consideration* includes providing support, encouragement,

coaching and teaching while treating each team member as an individual. Leaders attempt to move team members to higher levels of self-actualization through delegation and creating new learning opportunities. Bass *et al.* (2003) found in a study of military platoon leaders that transformational leadership raised group cohesiveness and improved their team's effectiveness.

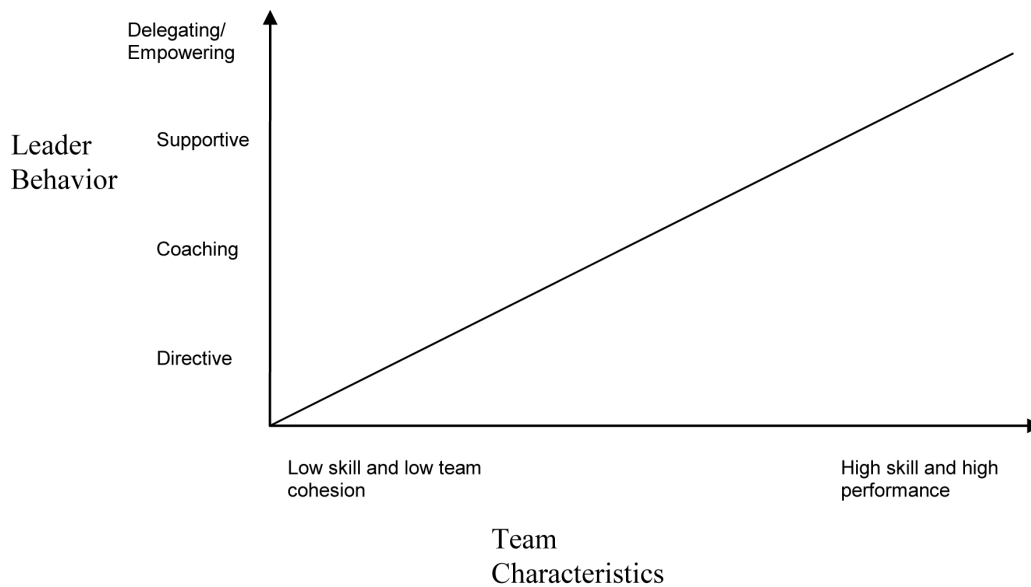
In a second model of transformational leadership, Kouzes & Posner (2002) identified five practices that enable leaders to achieve extraordinary accomplishments and transform their teams and organizations. These practices are: 1) *model the way* represents the leaders' behavior of "practicing what they preach"; leaders need to be clear about their own values and follow through on their commitments; 2) leaders who *inspire a shared vision* challenge others to imagine exciting possibilities and transcend the status quo; 3) to *challenge the process*, leaders are willing to take risks to innovate and grow; 4) by *enabling others to act*, leaders build trust and promote collaboration and create a learning environment where members feel good about their contributions; and 5) leaders *encourage the heart* by praise and recognize individual and group contributions and create a spirit of community. Sumner *et al.* (2006) collected data about the leadership practices of IT managers and found that managers of more successful projects exhibited these skills and were significant predictors of project success. The authors concluded that these leadership skills are as important as project management skills.

Although there has not been much conclusive research supporting the *Situational Leadership Model* (Hersey & Blanchard, 1993), it is important because it is an evolutionary model and it is related to the theory of group development. In this model, as teams develop and mature, they require different types of leader styles. Team leaders need to be flexible and willing to adjust their style based on the needs of the people involved and the task at hand. The leader may use a directive style for a new group or one that has low skills and motivation. As the group works together and becomes more skilled and motivated, the leader moves to a coaching style where the leader involves the group in decision making but still makes the final decision. In the third style, supporting, the group has seasoned and matured, and the leader engages in consensus decision making. Lastly, as the team becomes high-performing, the leader delegates authority to the team, thus empowering the team. This model assumes a progression from one style of leadership to another over time. A leader's



involvement should decrease as teams develop higher skills. This model is important because a leader's behavior is based on the characteristics of the team and the task at hand.

Exhibit 1 displays the changes in the leader's and team's behavior that may be observed over time, as a continuum of interaction between team leader involvement and the team's skill and cohesion development.



*Exhibit 1: Interaction of leaders' behavior and team characteristics.*

We can assume that some groups can start higher on the curve if they have several characteristics. If motivation already exists in a cohesive, self-selected group, or in a group that has worked together in the past, then the group is functioning at a higher level. If, at the outset, skills are known and acknowledged by the rest of the group and the leader, again, the group moves along the curve to high-performance, with no time lost for this discovery.

The same kind of analysis can be applied to leaders. If a leader is chosen because he/she is a known quantity to the group, and is trusted, then the first leader behavior need not be directive, but can begin at the next level, coaching, or even further along the curve for leader behavior. In this fashion, we see the interaction models of groups and leaders as 'snapshot versions' of Hersey and Blanchard's Situational Model. Another important leadership characteristic is the team leader's power.

Team leaders get their power from different sources (French and Raven, 1960). They may have *legitimate power* by virtue of their position, in which case they have *reward* and *coercive power*. Access to information gives people *information power*. *Personal power* is derived from referent and expert power. Individuals have *referent power* because they are respected by others. Referent power thus depends on an individual's character and integrity. *Expert power* is gained by an individual who has knowledge and skill related to the task, and is perceived to be valuable to the team. The relationship between the team and leader will determine the effectiveness of the team.

### **Team and leadership characteristics**

Little research has been done on the interaction of teams and leaders. There have been some studies that have suggested a few interaction theories. Ford and Seers (2006), note that within-group agreement is predictive of positive work outcomes. We view within-group agreement as team cohesiveness.

Cohen and Bailey (1997) suggest that group psychosocial traits such as cohesiveness, norms, and group personality traits directly influence outcomes, and indirectly influence outcomes through shaping internal and external processes. These effects were also noted in Erickson and Dyer (2004). We are interested in how those psychosocial traits affect the interaction between the leaders and teams, and how that ultimately is likely to affect the project outcome. Specifically, what mental models are leaders using, and how do those mental models fit with the mental models that the teams use?

Certainly, the leader is a member of the team as well, and agreement would also be necessary for the desired outcomes. The relationship between teams and their leaders is also a topic in social network theory, and Balkundi and Kilduff (2005) suggest that the patterns of ties that are formed between leaders and their teams contribute to leaders' effectiveness. Multiple social ties between leaders and their team members contribute to greater group effectiveness. Leaders that have a personal social relationship with individuals in the group create a stronger connection with those individuals. The impressions that group members have about their leader are more strongly affected by the group norm as they feel more affinity with their group and have similar norms (Hogg, 2006). Leaders who have many

different strands of connections with their teams are more likely to have positive outcomes of joint efforts.

Much literature has been devoted to the appropriate kinds of group formation and leadership. (Lewis, et. Al., 2002; Ericksen & Dyer, 2004).

These theories suggest that we can begin to be able to predict some outcomes when different kinds of leaders and groups work together.

### **The Team/Leader Expectations Model (T/LEM )**

To predict project team requirements for leadership matches, we have developed a framework called the **Team/Leader Expectations Model (T/LEM)**. It is based on the concept that teams and leaders must have common expectations about the team's functions and about the leader's responsibilities. We classify leaders primarily based on how the leaders are chosen, and we classify teams by how the teams are formed. Leaders can be "assigned" by management or "chosen" by team members. Teams can be formed by individuals 'volunteering' or being 'drafted'. Teams can also be leaderless; however, this will not be addressed in this paper.

The primary interest and purpose of this model is to analyze the interaction between different kinds of leaders and different kinds of teams, and what the likely outcomes will be with each combination, based on the expectations that the leaders may have about their teams, and the expectations that the teams are likely to have about their leaders. Our theory is that if the expectations coincide, the team will be more effective. If the expectations of the two parties do not coincide, we anticipate that the teams are likely to be less effective. Effectiveness is defined as the team's ability to accomplish its tasks and goals.

The framework is designed to help team leaders understand the dynamics of the groups that they lead, and understand how to manage the groups for successful outcomes. The framework can be used to identify the kinds of groups that have been formed, the type of leader appropriate for the group, what kinds of power that leader may have as a result of the group formation, and the corresponding skills or competencies that the leader must have. The framework will allow managers who appoint team leaders to help them develop the appropriate set of skills, and institute the correct techniques to utilize to ensure team success. If a team leader is selected, by either the team or the managers, the fit between leader and

team should be the prime consideration. Managers should understand the importance of the fit, and implications when the fit is not appropriate. In the next sections, we will discuss the components and the implications of the T/LEM.

We examine how team members become part of the development teams, and we extend the same kind of analysis to the processes that determine how team leaders obtain their posts.

### **Assigned Leaders**

These leaders are assigned by management, and thus they have formal position power. This may entitle them to hold reward power because they may have input to performance appraisals, potentially influencing compensation. Because they are a surrogate for management, assigned leaders have coercive power because they could remove members from the team. Lastly, they have information power or access to information from many sources because of their relationship to management. These leaders are often autocratic (Stewart & Manz, 1995). Since these leaders are new to the team, they often use a more directive approach.

### **Chosen Leaders**

When the leader is chosen by the team or evolves to team leadership, he/she has no organizational authority. These leaders make decisions by consensus (Stewart & Manz, 1995). They have personal power that may have evolved from different sources. The leader may have *expert power*. This kind of leader is perceived to be the most technically knowledgeable member of the team. A typical example of such teams may be found in teams of researchers, where the team leader is the lead researcher, and the acknowledged expert on the topic of interest. Another base of power is *referent power* which derives from others' desire to be close to and be like the leader. With referent power, leaders are admired by others and as a result they may know influential people. One of the ways to gain referent power is having a charismatic personality.

Research suggests that personal bases of power are the most effective because they influence team members' performance, satisfaction, and commitment (Yukl, 2006).

**Team Members: Volunteers and Draftees**

Individuals may become team members in different ways. They may volunteer. Volunteering may be done because of interest in the project. The project may be perceived to be high-status, thus with good visibility, and an opportunity to demonstrate an individual's value. The project may be perceived to be fun, and thus desirable. Other reasons for volunteering may be that the team member knows other team members, or the team member may already know the team leader, and wants to work with those individuals. In these cases, there are already ties to members and the team leader, thus promoting team cohesiveness. One form of volunteering may also be a consent to recruitment efforts by a team leader or other team members.

When volunteering is not an option, team members may be 'drafted,' or assigned, by either the team leader or management. In these cases, the project itself may hold no special interest for the team individual. The team member may not know or like the other members of the team, but considers the team membership as part of their work duty.

Once the team and leaders are in place, the various interactions begin. Our model is a way of predicting the kinds of interactions that may occur.

## Team/Leader Expectations Model

### Grid of Interaction Probabilities

Leaders		
Teams	Appointed/Assigned Leader : has position power, expectations are about leader's ability to control group by rewards or coercion; style is directive;	Chosen Leader: Leader has personal and position power, leader expects large amount of interaction with group members; has trust in members; style is participative and consensus-building;
Volunteers : members expect autonomy and distributed leadership; transparency in communications and interaction	1	2
Draftees: members expect to be directed, and not fully participate in decision making; success or failure responsibility is perceived to be the leader's	3	4

The numbered portions of the grid represent various possibilities for interactions between the leaders and the teams.

### The Possible T/LEM Grid Outcomes

#### Outcome 1: Appointed Leader, Volunteers

In this scenario, we assume that once a project is scheduled to be developed, a leader is appointed by management, and the leader then recruits volunteers for the project. The volunteers participate because of their own interest in the project, relationship with the leader, and perhaps relationships with other team members. The appointed leader may find that volunteers, who have self-selected, may have difficulties if he or she attempts to explicitly control the team, and issues about team opinions versus leader directions may

arise. The team leader may use a transactional approach, exchanging rewards for performance. The leader may also use negative reinforcement for non-performance or noncompliance. However, the team may rebel, or refuse to cooperate if the leader is too heavy-handed. If the leader has a directive style, it may be unwelcome in a team whose members believe that they understand the issues, and may have differing ideas about solutions to be developed. Team members in this instance may choose to defect from the team before the project is complete. If the leader uses coaching techniques, such as consulting team members with expertise, and taking different points of view into consideration before making decisions about the project plan, the leader may meet with more success.

### **Outcome 2: Chosen Leader, Volunteer Team**

The sequence we assume here is that the project is scheduled, and team members volunteer to participate. A leader is then chosen from the team by the team members themselves, based on whatever criteria they feel are appropriate. A chosen leader who leads a volunteer team may find greater success because of the autonomy that volunteer team members may expect, and are more likely to achieve with such a leader. There is a match between the expectations of the leader and the team with respect to responsibilities and ownership of the project. The volunteer team is more likely to have richer exchanges of information and constructive debate (Gibson and Vermeulen, 2003), and the leader is more likely to support or encourage this behavior. Groups perform better when they know a member's competence and have worked together for a longer period of time. (Bunderson, 2003). This is not to say that this type of team will always succeed. Dangers in this environment include the problems associated with a team of peers: possible power grabs, lack of direction, and inability to come to consensus when decisions must be made. However, the likelihood of defection from such teams may be smaller. We expect this type of team to be the most high-performing team of the four different team types. They have worked together before, they know each others' skills and capabilities, and have better understanding of each others' personality quirks and differences. They may be more likely to have group consensus. The leader is well understood by the team members, and, in turn, understands the team. The leader steps back to allow the team to self-govern. The leader models behavior,

and may end up as a boundary scanner, liaison to management and regulator of environmental factors. Leaders of this type are often practicing transformational leadership. Because the team respects and trusts the leader, they value the goals for the project, are willing to transcend their own interests for the sake of the team and organization and are more motivated to perform at a higher level (Bass, 1985; Bass & Avolio, 1990, Bass *et. al.*, 2003).

### **Outcome 3: Appointed Leader, Draftee Team**

In this scenario, a project leader is appointed by management, and the team is also assigned by management. Leaders who draw their leadership power from the fact that they have been appointed by a higher level of management have position power. Their mental model of team behavior may be that teams are supposed to take direction, and the leader defines the goals and the methods of achieving the goals. The leader's behavior is likely to include some coercion, and to be directive. This type of leader will expect the members of the team to 'obey' his/her directions, and may not welcome dissent or digression from a preset course of action. The appointed leader will likely see his/her role as one of control as well. This leader may find that the most comfortable situation may be in leading a group of draftees. Draftees, because they have had no choice in team assignment, are more likely to accept a directive type of leader, and to comply with the directions, because they see no other options. Creativity may be reduced, since there may be no rewards associated with it. The members of this group, led by an appointed leader, will have less ownership of the project itself, and may defect from the project effort at some stage. The team members may compete with each other to gain the favor of the team leader, rather than cooperate with each other. Team cohesiveness may be low. The leadership style is transactional by default.

### **Outcome 4: Chosen Leader and Draftees**

In this instance, we are looking at a team members who may have been assigned to a project by management, and then choose their own leader from the group. The choice may be of the person who is perceived as most competent, assuming some prior knowledge about the team member. The choice may also be based on team members' attempting to evade responsibility, and transferring it to the leader. When a team has a 'chosen' leader, the



effectiveness of the team will also be dependent on whether the team and the leader share common expectations about their respective functions. A draftee team has reason to expect a leader who provides direction and prescribes specific methodology. Such a team may find that a chosen leader who wants to delegate authority and encourages questioning as someone who creates too much ambiguity. Draftees in this environment may be unable to cope with the difference in expectations, and may perceive that they are being given too much responsibility. Discomfort with the ambiguity may cause these team members to defect. The members of the team may have very divergent expectations for the project. Some want the project to succeed quickly. Others may want different outcomes. For example, some may see a long, drawn-out project as a form of job security.

**Discussion:**

We have described different leadership styles in the context of IT project management and leadership of project teams. We have proposed an interaction model based on the expectations that different kinds of teams and leaders may have about their roles, the T/LEM. The T/LEM predicts that different kinds of leaders will have different ways of interacting with the teams with which they work. The expectations that leaders bring must match the expectations that their teams have in order for the teams to be successful. These expectations can be about the general management of the team (governance), expectations about rewards due to the team members, and the kinds of behaviors that team members are expected to exhibit. How these expectations collide with each other will color the interaction between team members and team leaders. The interaction will affect the outcome of the team effort. For that reason, it is necessary for managers who are assembling teams for projects to be mindful of the team composition and the kinds of team leaders that are assigned to different groups. Managers who are creating teams or encouraging teams to form around projects should be aware that they, the managers, are creating expectations that will affect the outcome of the team efforts. Our prediction is that appointed leaders are less likely to be successful with a team of ‘volunteers,’ and have a higher degree of success with ‘draftees,’ because appointed leaders share a mental model of the expected interaction with draftees. Chosen leaders are more likely to have success with ‘volunteers,’ because they share the

same mental model, or expectation, of the appropriate way that team members and team leaders should interact.

### **Future Work**

Future research is needed to test the hypothesis of whether congruence between the team leader's and team's mental models or expectations affects project outcomes. Such research could be in the form of case studies and/or questionnaires to test the predictive power of the model proposed here. Other measures might include the rate of attrition for different types of team/leader combinations, which would provide information about the rate of defection from projects.

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