IT Metrics Strategies Interview: Stu Kliman on Relationship Management

by Michael Mah

In the April 2001 issue of *ITMS*, I tackled the subject of metrics and negotiation. I described how negotiation using metrics is crucial when IT organizations face inevitable cost constraints that occur in an economic slowdown. This is compounded by the fact that IT organizations are often aiming for Internet-speed deadlines. It's a double whammy for IT organizations today.

These intense pressures call for new skills, with metrics being used to negotiate sustainable and realistic agreements on project scope, deadlines, cost, and reliability. Navigating through current business conditions will call for IT professionals to develop and use metrics and negotiation abilities more effectively than ever. However, it should be noted that many IT professionals have not had formal training in either discipline.

The Rise and Fall of Alliances and Partnerships
There's another trend that I believe will become even more prevalent: IT organizations will be pressured to ramp up their abilities with more outsourcing and partnering relationships, as opposed to growing new capabilities organically. This will be a fast-track method to gain access to core

Case Study: The Story of a CMM[1] Project — A Process Improvement Production, Part 2

by James Perry, James Heires, and Carol Wickey

In Part 1 of this story (see *ITMS*, May 2001), readers learned about a process improvement project taking place in a company based in the US Midwest, along with some of the organizational dynamics involved. With the stage set and the cast of characters assembled, the story of the project is ready to be played out.

A Funny Thing Happened on the Way to Level 2
Two project managers were assigned early in the project's lifecycle. Unfortunately, they were assigned five months into the project schedule. This was the first clue that the project was headed for trouble.

[1]Copyright 2001 by Carnegie Mellon University. The Software Engineering Institute is a federally funded research and development center sponsored by the US Department of Defense and operated by Carnegie Mellon University. See www.sei.cmu.edu/cmm/cmm.html.

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executive summary

Partnerships. Alliances. Outsourcing. Joint ventures. Today's economic climate requires companies to speed their time to market while lowering costs and increasing the amount of functionality they can deliver. Many seek to achieve this through partnerships, establishing metrics and benchmark frameworks to ensure that performance goals are being met.

This climate mandates that organizations master at least three critical skills to ensure that alliances are successful: metrics, negotiation, and alliance relationship management. The first two were discussed in the April 2001 issue of *ITMS*; this issue tackles the third.

The stakes are high: research shows that between half and three-quarters of alliances fail. Since many alliances are valued from several hundred million dollars to billions of dollars, the financial risks are staggering. To address the topic of how to make alliances succeed, I interviewed Stu Kliman, a founding partner with Vantage Partners LLC and a Cutter Consortium senior consultant. Kliman gives fantastic insight into the emerging science of relationship management and outlines what managers can do to move this from an individual skill into the realm of an organizational capability.

Another way to meet the challenges of faster schedules, lower costs, and increased functionality is to elevate an organization's own processes to increase efficiency. This is described in the second part of an article by James Perry, James Heires, and Carol Wickey entitled "Case Study: The Story of a CMM Project — A Process Improvement Production." (Part 1 appeared in last month's *ITMS*.)

What I love about this article are the "behind the scenes" lessons learned: actual experiences from the frontlines of a process improvement initiative with advice to practitioners based on the morals of the story. I'm grateful that these experts have shared their secrets and hope you find them valuable to your initiatives.

Michael Mah, Editor

competencies in rapidly changing industries at what is perceived to be low cost and fast speed. Scores of new relationships will be negotiated to deliver IT services and functionality. Readers of *ITMS* may recall that I've cited studies by International Data Corp. stating that outsourcing was a US $100-billion industry in 1999 and is expected to rise to $150 billion by 2003. But don't be surprised if the $150-billion figure rises even higher as alliances become more commonplace given the current economic trends.

However, alliances fail at alarming rates — as high as 70%, according to studies by KPMG Peat Marwick and Andersen Consulting — where the alliance failed outright or achieved only limited objectives. Seeking to understand the causes of these failures, Vantage Partners LLC of Cambridge, Massachusetts, USA, conducted a three-year cross-industry study and found that poor or damaged working relationships accounted for 52% of alliance failures! Poor strategy and business planning accounted for 37% of the failures, with bad legal terms and conditions accounting for 11% (see Figure 1).

These two mega trends forewarn IT professionals about the terrain that will need to be navigated. It's clear that metrics, negotiation, and relationship management will be core disciplines that IT organizations will need to master if they want to succeed. Clearly, these elements are essential for the creation of successful alliances.

But what is relationship management? To learn more about its comprehensive study, I attended a Vantage Partners event in Boston, Massachusetts. The presenters were Jeff Weiss and Stu Kliman, both of whom are founding partners at Vantage. I then interviewed Kliman about the study and relationship management in general, so that *ITMS*

readers might better understand some of the secrets of successful alliances.

In addition to his role at Vantage Partners, Kliman is a Cutter Consortium senior consultant and a former member of the Harvard Negotiation Project. Here are the highlights of our conversation.

Relationship Management, Alliances, and Partnerships Within IT

Michael Mah: What is relationship management (RM), and where do the ideas come from?

Stu Kliman: RM is the process of planning for and dealing with the inevitable differences that arise as two or more organizations endeavor to work interdependently. If done well, RM includes efforts to both minimize the likelihood that problems will crop up and maximize the likelihood that they will be well handled when they do.

When I talk about RM, I make a distinction between two different kinds of relationship management. The first kind is focused on a particular transaction or relationship. The second is focused on organizational capability; what processes, tools, and skills does the organization need to have in place to say it truly has an organizational capability in effective RM?

The genesis of these ideas is the Harvard Negotiation Project and a seminal book called *Getting to Yes: Negotiating Agreement Without Giving In* by Roger Fisher, Bruce Patton, and William Ury [Penguin USA, 1991]. To those original ideas, my partners and I have added a great deal of research and work on complex relationships, including intervening in failed joint ventures, IT relationships, and partnerships and trying to put them back together.

MM: Great, like a corporate therapist. What are the costs of bad relationships in the corporate world?

SK: Ultimately, the cost of a bad relationship can be the outright failure or suboptimization of the enterprise or effort. Simply put, a poor relationship can prevent an effort from delivering up to its potential. Indeed, there is a fair amount of research out there, including some KPMG studies and Andersen Consulting studies, that says about 70% of alliances fail to achieve their goals, and I would say the same numbers apply to complex IT relationships. Now, the question is: why?

We at Vantage have recently completed a study of 150 alliance relationship managers, including a good number of IT outsourcing relationship managers. Interestingly, 52% of these alliance managers reported relationship breakdown as the foremost cause of alliance failure. That's a pretty extraordinary number of people who are out there working on relationships who are pointing to inadequate attention to the working relationship as being a major cause of failure of the alliance.

Taking that down a level, the costs of poor relationships include time lost dealing with conflict, unnecessary escalation, slowed decisionmaking, lower morale, frustration among those who are involved with the alliance interface, lost opportunities for finding unexplored synergies and joint gain, and a poor reputation as a partner, customer, or vendor. Over time, all of this leads to less value captured and less opportunity found, due to lack of attention to relationship issues.

The Money on the Table

MM: Let me add to that. You said that studies show that about 70% of these relationships fail in one form or the other. In outsourcing, it's not uncommon for some of the deals to be several hundred million dollars, in some cases $1 billion, $2 billion, $4 billion, or more on some of the largest deals. We're talking about staggering amounts of money at stake.

SK: It is, indeed, a staggering amount of money. Given that, I basically see investing in RM capability as a cheap insurance policy. I'm consistently amazed at how difficult it is to get folks focused on the importance of moving toward an institutional approach to more effective relationship management.
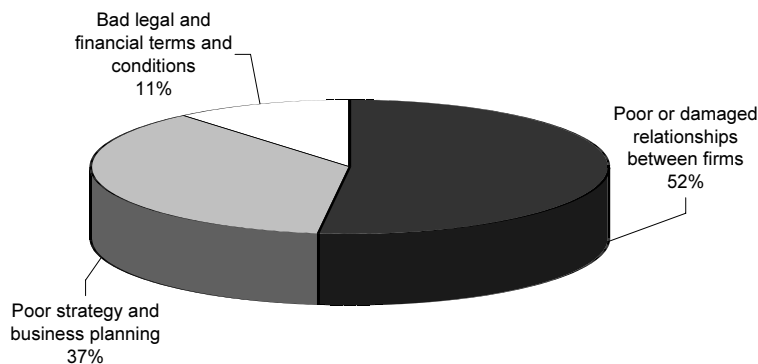

Figure 1 — Foremost causes of alliance failure.

MM: In IT, the oft-cited Standish Group Chaos report states that as many as one-third of IT projects are canceled and that more than half overrun by almost double. If there's about $250 billion a year spent on IT projects, that means more than $80 billion is written off in canceled projects. Some fail because of technology issues, but many fail because of bad planning, aggressive expectations, and/or impossible deadlines. What advice would you give an embattled IT manager?

Advice for IT Managers

SK: Again, my experience is that poor results are often caused by poor relationship dynamics, and this is supported by our research. Although you cannot, of course, eliminate all problems by great RM alone, you can certainly work to mitigate the likelihood that problems will occur and maximize the chances that they will be effectively handled when they do. That's the essence of effective RM.

In terms of advice for the embattled IT manager, I think there are a few concepts that are quite helpful. The first three relate to behavioral norms IT managers should work to put in place in their organizations, and the fourth is an activity that IT managers should insist be part of all major relationships. Let's start with the three behavioral norms.

The first concept is something I call joint contribution. If organizations want to make projects work better, they need to ensure that all parties understand that problems come as a result of the interactions and reactions of the people involved in the project; all parties

have contributed in some way, shape, or form to the difficulty that exists. When people get into trouble and projects get into difficulty, too often people start looking for a way to determine who is at fault. That doesn't fix the problem, and it certainly doesn't take into account that relationships work within an act-react structure.

The concept of joint contribution says that results can generally be mapped back to actions taken by all parties in that relationship. That doesn't mean all parties are equally culpable or ultimately legally responsible, but each contributes in some way. Thus, from the point of view of successful IT projects, if an understanding of joint contribution is at the core of a working relationship, the environment becomes focused on figuring out why things are going wrong, fixing them, and learning from them.

A second core behavioral concept that IT managers need to have at the foundation of their relationships is joint problem solving. When problems arise, we often see people asking the other side to fix it, an approach that doesn't fix problems in a systematic way. To figure out answers and come up with good solutions, customers and vendors need to work together in a joint problem solving mode.

The last behavioral concept is on-the-merits decisionmaking. Usually, when difficulties arise in complicated IT relationships, parties try to coerce, rather than persuade, one another to go in a particular direction. This tends to be bad both in terms of the substantive solution generated and the working relationship. The more that all parties believe decisionmaking will be on the merits, the more likely they are to engage in a good conversation to fix the problem.[1]

To get these behavioral norms in place and set the stage for effective RM, the number one thing I would suggest to relationship managers is that all major relationships go through a relationship launch process. The relationship launch is an event, often lasting two to three days, in which all of the major parties and their key constituents come together and plan how they are going to

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[1]For more about on-the-merits decisionmaking, see "Metrics and the Seven Elements of Negotiation." **IT Metrics Strategies**, April 2001.

work together. Then they spend some time doing what I call relationship planning, which includes envisioning what a good working relationship would look like and having some straightforward conversations about what the challenges of working together effectively toward that goal are likely to be. Often, we call these discussions "nightmare conversations." But once they're out on the table, participants can organize the nightmares into categories and begin to put in place some RM mechanisms that will govern their relationship and prevent or address these nightmares.

These relationship management mechanisms may simply be standard protocols that the parties are going to use to work together, things like commitment management protocols, decisionmaking protocols, or communication guidelines. Parties can also use a relationship launch to determine the details of more process-oriented protocols. What is the relationship audit process going to look like? What is the conflict management process going to look like? How can we make sure that the conflict management process is one that has learning as its goal and that systematically tracks conflict to determine what is getting in the way?

The Litigation Wave: RM As an Insurance Policy

MM: [Cutter Consortium Senior Consultants] Tom DeMarco and Tim Lister claim that some companies are now spending more on lawyers for IT-related litigation than on programmers. It would seem that conflict is running amuck, and many relationships are breaking down under the pressure. What are your thoughts about interventions that might be useful to try to break the cycle?

SK: First of all, I'd say that effective RM is the most underdeveloped, underutilized lever out there in terms of minimizing the likelihood of litigation. Indeed, I argued in a white paper that corporate counsel should be the strongest proponents of building institutionalized relationship management capability because it's one of the levers they can use to minimize the threat of litigation. A corporate attorney ensures that there are policies and procedures in place for the company to follow the appropriate OSHA [Occupational Safety and Health Administration] or EEOC

[Equal Employment Opportunity Commission] regulations so his or her clients don't get into litigation over those kinds of matters. In the same way, corporate counsel should be focused on ensuring that the organization has effective RM processes and procedures in place to mitigate the likelihood of litigation.

MM: It would seem that if you're asking the lawyers to advocate for good RM, you're asking them to prevent the problems that might guarantee them future work. Aren't you asking them to put themselves out of business?

SK: Most of the corporate counsel that I've worked with, particularly the folks who make their living in the middle of outsourcing relationships, understand the importance of RM. They don't, however, really know what to do with the relationship or how to make it better.

When significant conflict arises, relationship managers all too often turn to the contract — specifically, the "right to cure" clause. This tends to escalate matters out of control. When confronted with difficulties, companies should have well-developed conflict management mechanisms — ones that focus on classic, interest-based problem-solving mechanisms. Once they get past these difficulties, the parties should then relaunch their relationship — or hold a first launch, if one has not happened already — to try to reset the expectations and put in place some good relationship management mechanisms.

Individual Versus Organizational Relationship Management Skills

MM: Is RM just about negotiation skills? Where do people with managerial skills fall?

SK: Organizations need to have good RM and managerial skills, of course. However, I make a critical distinction between a few individuals with great RM skills and true institutionalized competence in RM. These are very different, for a few reasons.

First, organizations have multiple important relationships, and it is not often that organizations have enough people with truly great RM skills to cover them all. So, immediately, you're exposed by a simple reliance on skills. Second, even if an organization could put great relationship managers on each

interface of all of their major relationships, the fact is that projects don't get into trouble at the relationship manager level, but at the day-to-day working level. So it's very difficult to rely on a skilled relationship manager to ensure all those interfaces work as well as possible.

Even the best people don't really have the time to build, for example, a joint-launch process from scratch as they get their new relationship going or time to build a specialized relationship audit process. Because of time challenges, they don't build, and therefore don't implement, the kinds of RM activities the relationship really needs. So, organizations need people with great skills, but they also need to provide standard RM processes and tools for the relationship manager to use, so they can easily implement them in a way that is consistent across multiple alliances and relationships.

When organizations simply rely on skills, it's quite difficult for them to look across their relationships and to learn from them. In other words, without a standardized RM process that's being systematically applied across all key relationships, it's very difficult to see what problems occur consistently and map those back to what is being done within the organization to cause those problems.

MM: If we're talking about building an institutional framework, it sounds like it's a senior management decision to commit to something at this level.

SK: That's right. You can't rely on individual relationship managers who are busy worrying about day-to-day operations of their relationship to have the focus, the time, or the budget to build the RM infrastructure. It is the organization's responsibility to provide those people with the tools they need to enable them to pay systematic attention to the relationship.

What You Can Do Now

MM: But if I'm an IT manager or someone on the frontline interfacing with a supplier or client, and I can't wait for the senior vice president to make the call on this, where do I start? Since most people in technology don't have formal training in these disciplines, where should they begin?

SK: People should realize that they have more power to affect their relationships than they think. Relationships are very reactive entities, and if an individual, or a set of individuals, decides to build the working relationship with the other side, as a general rule, the other side will react positively. One of my colleagues wrote a book, *Getting Together: Building Relationships As We Negotiate* [Penguin USA, 1989], in which a concept called "unconditionally constructive" is described. I often think of that when I'm in difficult relationships, asking myself, "What can I do today to make this relationship better?"

Beyond that, I would certainly spend some time reading *Getting to Yes* and thinking about how to apply its core precepts. That is, how can I ensure that we are separating positions from interests? How can I make things more focused on joint problem solving? How can I make sure decisions are made on the merits? Another wonderful book is *Difficult Conversations: How to Discuss What Matters Most* [Penguin USA, 2000], which also has a tremendous number of helpful concepts for the individual practitioner, including joint contribution, which I mentioned earlier.

Finally, people can reach out to others who are managing relationships and try to create their own little RM community. People can spend some time networking internally, have some brown bag lunches where people share experiences and share the tools and mini-methodologies that people have built on the fly. In my experience, there's a tremendous untapped reservoir of RM expertise in organizations that doesn't get shared and certainly doesn't get methodologized. All that is just waiting to be found.

MM: It sounds like you're saying we can go out and improve our relationship management skills one relationship at a time.

SK: Yes, absent an institutional approach, there is a lot that can be done one relationship at a time.

Relationship Due Diligence
MM: What are relationship due diligence building tools?

SK: The idea of a relationship due diligence tool is that as customers and vendors get into significant and complex interdependent relationships, both are wise to understand, prior to entering into those relationships, what the likely RM challenges are and what it will be like to work together.

Answering these kinds of questions is often done intuitively; people ask themselves, "Is there a good fit here?" A relationship due diligence tool enables organizations to ask this question more systematically, to really take a look at the people on the other side of the table and try to figure out who they are, how they make decisions, how they handle commitments, how they build trust, how they handle surprises, how they handle difficulties and conflict, how they're organized, and how they operate. Then you can diagnose the likely challenges of working together. Customers can include a relationship due diligence evaluation as part of their vendor selection process. Some customers might even go as far as to decide not to work with a particular vendor if they see the RM problems as being too large.

More important for customers are those circumstances where the parties decide to go forward, recognizing that there is not a great relationship fit and that there will be many RM challenges. In other words, saying "That's the best vendor. I understand that we're going to have some RM challenges, but we'll work with them anyway." In this type of situation, the relationship due diligence process enables you to have the necessary data to begin systematically planning for those problems.

MM: Say I'm a customer and I have four vendors that have given me proposals, often what they put in the proposal are substantive and structural things. It sounds like you're talking about a domain that's quite subjective.

SK: The beauty of RM tools is that every organization can decide for itself how much of an appetite it has for RM tools and the specifics of how it wants to build them. Some relationship due diligence tools can be quite subjective. You can have a checklist and try to rate various vendors against a number of characteristics. Having done a little bit of research, you can see how they tend

to handle conflict, how and whether they have effectively built trust, whether they are fast or slow decisionmakers, to what degree their relationships have ailed or done poorly, and the like. You also want to evaluate operational differences in terms of how they work versus how you work.

MM: How about the number of lawsuits pending against them?

SK: Yes, exactly right. Pending lawsuits would also be a pretty good indicator of some kind of lack of RM competence.

MM: In outsourcing, how do cultural clashes and divergent interest structures complicate relationship management? You see things differently depending on which side you sit, much like the way dimpled ballots were viewed by different sides in the last US presidential election.

SK: The fact that individuals and organizations have different interests, cultures, etc., is the reason you need RM. We all have different sets of experiences, and we interpret data in different ways and thus form different conclusions. All of these differences need to be well managed.

What to Do If Your Partner Plays Hardball

MM: What if you and your department or company want to operate as you describe, but your partner prefers to play hardball, using power tactics and gamesmanship?

SK: Great question. The first part of the answer goes back to the difference between relying on individual skills versus initiating an institutionalized approach. It's very difficult to deal with hard bargainers on an ad hoc, I'm-reliant-on-my-own-intuitive-judgment-and-personal-abilities basis. It's too easy to get reactive. It's significantly easier to handle these sorts of issues if you are relying on a well-thought-out, standardized approach.

If you have internal clients creating these kinds of challenges, I strongly recommend you develop an internal joint planning process. It's actually a little bit easier to do this with an internal client because you can agree internally on what the joint planning process will look like.

With external vendors, IT managers must lead the way. They have to say, "Here's how we try to operate collaboratively" and then sit down with the other side and negotiate over the way they'll work together. In other words, you need to put the negative dynamics and possible challenges on the table, frame these challenges as a joint problem, and start talking about them.

With both internal and external alliances, you don't just want to negotiate over the substantive terms of the deal, but also over the relationship terms.

MM: Fascinating. It sounds like you're saying that the process of "how you interact" has to be explicitly negotiated if you're faced with this situation.

SK: Exactly right. We often say that there are actually two negotiations going on in any negotiation: one is the negotiation over the substance — the terms and conditions of the relationship. The other negotiation is over the relationship — questions like: How will we work together? What are the mechanisms that we are going to institute to make this relationship as work effectively as possible?

MM: IT projects are often more like research and development than a purchased commodity, especially when new software applications are developed. In situations like this, with high expectations, short deadlines, and tight budgets, where does RM come into play?

SK: I can't tell you how many times organizations try to deal with these kinds of challenges with a substantive fix. A relationship manager might turn to his or her colleague and say, "Trust is breaking down on this interface, better tighten up the service-level agreement [SLA]." That just doesn't work. Tightening up the SLA won't make the problem go away, and it certainly won't increase trust.

Obviously, substantive agreements are important, clear SLAs are incredibly important, and the ability to deal with all of the challenges that arise over the course of a project is important. But to deal with the extraordinary challenges of today's IT projects, relationship managers need to create an environment of joint problem solving, joint

contribution assumptions, openness to disclosure, and on-the-merits decisionmaking using metrics and benchmarks to guide their choices.

Metrics: A Core Discipline for Both Sides

MM: I'd like to add an observation. Sometimes metrics enhance communication and understanding. Other times they can reveal things that people don't want to hear like performance targets not being met. Tensions might rise in the relationship. It sounds like you're saying that good RM processes can help you deal with issues like the latter.

SK: That's exactly right. Measurement systems need to act in tandem with relationship management practices. A couple of thoughts about how relationship management fits in.

First, I think it's extraordinarily important to measure the quality of the working relationship; such a measurement should be done by both sides. This is quite different from the classic customer satisfaction or SLA measurements, which are one-sided and don't focus on the underlying relationship issues. Second, when we get indicators that things are not going well, the relationship needs to be structured such that the question becomes "What are we going to do about it?"

In other words, it's not enough just to implement measures; you must then ask, "How do we deal with the poor indicators that we find?" The more the relationship is bogged down in a dysfunctional dynamic where the parties can't work together to solve problems, the more difficulty they'll run into.

MM: What metrics would you say you need? What are the top five metrics in this space that you'd recommend people keep track of?

SK: Some are subjective, and some are more rigorous. The subjective ones should measure the extent to which trust and respect exist, the extent to which people feel coerced versus persuaded, and the extent to which people feel fairly treated. All of those are indicators of the health of the working relationship. You can also measure in a more rigorous fashion, measuring, for example, how much time it takes for a conflict to be resolved or how often things need to be escalated. At the end of the day, you want to get a sense of how well you're achieving your relationship goals and the barriers to doing better.

MM: I like many of the things you said; they resonate. But I'll bet a lot of people don't think about applying an indicator to dimensions like, "How trusting do I feel?" You're talking about people going into a "feelings" conversation.

SK: Yes, and the idea of creating a mechanism to bring that out is extremely important, which leads back to the idea of a relationship audit. You shouldn't just be measuring how the relationship is working in terms of the SLA, which tends to be blame-focused. Instead, you want to measure how you are doing against your relationship goals.

About Stuart Kliman

Stuart Kliman is a founding partner of Vantage Partners LLC. As a management consultant, Mr. Kliman's practice focuses on helping clients build the capacity to negotiate, build, and manage stronger and more mutually valuable customer, vendor, and partner relationships. He has worked on these ideas with clients in the IT, pharmaceuticals, financial services, and manufacturing industries. Mr. Kliman is a former member of the Harvard Negotiation Project and has practiced as an attorney with the law firm Arent, Fox, Kintner, Plotkin & Kahn in Washington, DC. Mr. Kliman is a member of the Maryland Bar and received his law degree cum laude from Harvard Law School and his bachelor's degree magna cum laude from Franklin and Marshall College. He is a contributing author to McGraw-Hill's *Handbook of Management Consulting Services*. Mr. Kliman is a frequent writer and speaker on issues of negotiation and relationship management. Stuart Kliman can be reached at skliman@vantagepartners.com.

Case Study: The Story of a CMM Project — Part 2

One project manager was assigned the responsibility of the overall project; the other was primarily responsible for project-related documentation. The documentation requirements of the project were quite heavy, given the relative informality of the organization's processes up to this point.

The first major task of the project manager was to develop a project management plan to help guide the project to a successful completion. A fixed budget and schedule had already been determined by the applications development (AD) department management and were considered constraints of the project. The scope and high-level goals were also previously established. The project schedule was fixed at 18 months, the project scope was limited to AD, and the project objective was to achieve Capability Maturity Model (CMM) Level 2. Both project managers were skeptical of the schedule, since it has been reported that 18 months is the minimum time recommended to move from Level 1 to Level 2 (see Figure 2).[2] In fact, only 25% of those organizations achieving Level 2 did so in less than 18 months. Management, however, was firm with its schedule constraint because it had already promised this to senior management.

The budget and schedule constraints were used to establish an outline for the project management plan. The plan was then refined to ensure coverage of the requirements of CMM at Level 2. Working back to front, key process area (KPA) activities were laid out on a schedule, along with the historical benchmark study, CMM evaluations, training, and other activities. Major project tasks (e.g., KPA development) had to be overlapped with each other on the schedule to achieve the 18-month goal (see Figure 3). This caused some unexpected side effects, as we'll see in a moment.

As the project plan came together, it was clear that an experienced consultant could be helpful not only to develop the project plan, but also to lead the department to develop new processes. Competing bids were requested from two CMM consulting services, and one was selected to support the project. The consultant was helpful in determining the cost and duration of each of the major CMM-related tasks, and this information was folded into the project plan.

One of the first tasks recommended by the consultant was to hold overview training sessions for executive management. This was considered important because it made explicit the senior management commitment to the project and provided information to them regarding software process improvement and CMM.

Another early decision was to establish a permanent software engineering process group (SEPG) as described in Part 1 of this story. The SEPG would provide direction to the project and a core group of process enthusiasts to ensure project momentum. Because AD had never before undertaken formal process improvement, the consultants delivered a workshop to establish the roles, responsibilities, and intrinsic rewards of being a SEPG member. This workshop resulted in a SEPG roster and charter, which were documented and agreed on by the membership. The charter was valuable later in the project, when it became necessary to define how other affected groups would work with SEPG. SEPG met biweekly to discuss progress, risks, and action items. At times, more frequent meetings were called to deal with the rapid changes being implemented in AD.

The next activity on the schedule was a CMM seminar, designed to give a thorough understanding of CMM to members of SEPG, line management, and the project management office (PMO). This seminar covered every KPA at each level of CMM in some depth. Each participant was issued a copy of a CMM reference book,[3] which was used heavily in the upcoming KPA workshops. This seminar concluded the introductory training and permanent infrastructure development. The bulk of the remaining

[2]Hayes, Will, and Dave Zubrow. *Moving On Up: Data and Experience Doing CMM-Based Process Improvement*, Technical Report CMU/SEI-95-TR-008 ESC TR-96-008, August 1995.

[3]Paulk, Mark, et al. *The Capability Maturity Model: Guidelines for Improving the Software Process*, Software Engineering Institute, Carnegie Mellon University, Addison-Wesley, 1995.

Number of months to move to next maturity level

Recommended time between appraisals

Time period of initial assessment

Largest observed value that is not an outlier

76th percentile

Median

25th percentile

Smallest observed value that is not an outlier

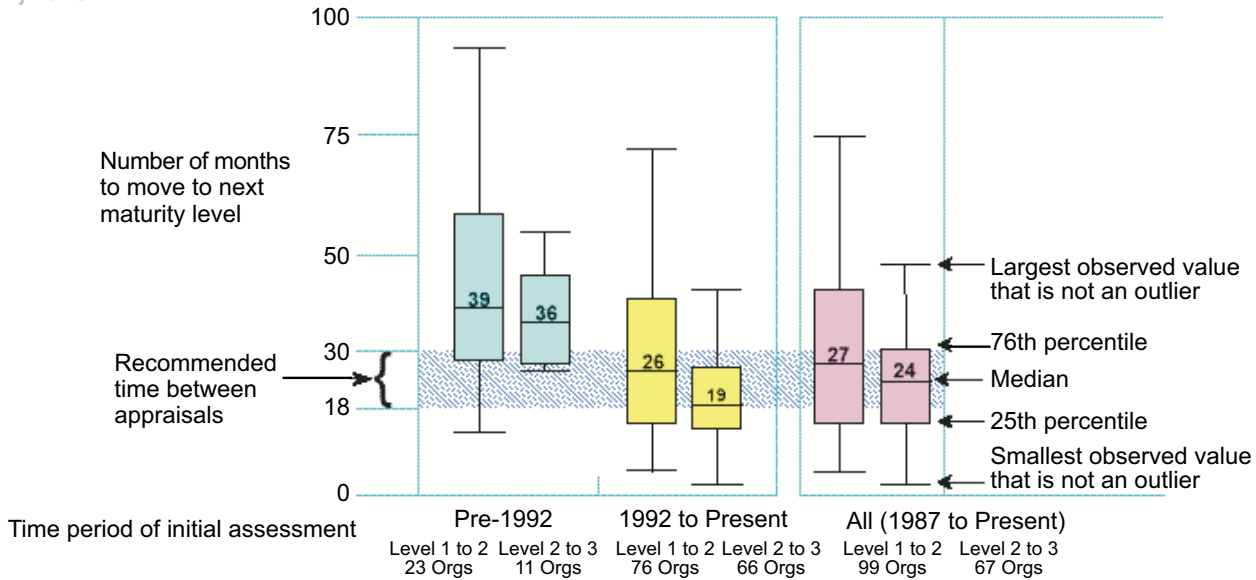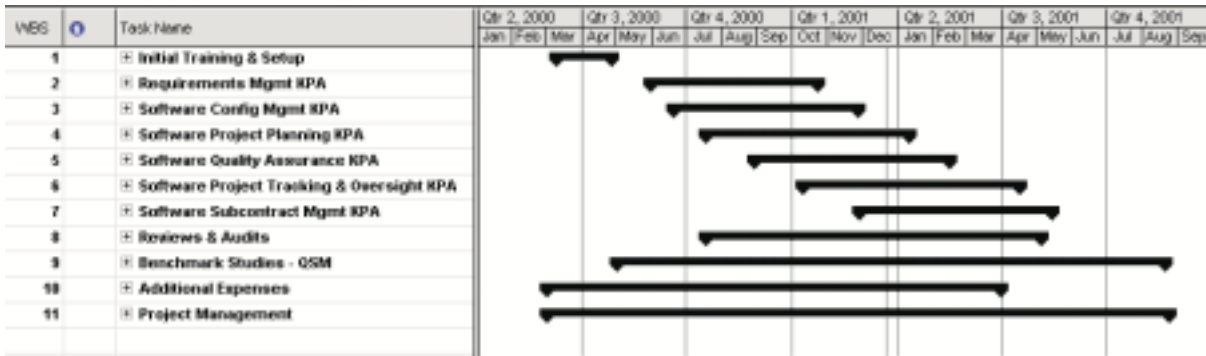|	Pre-1992		1992 to Present		All (1987 to Present)	
	Level 1 to 2	Level 2 to 3	Level 1 to 2	Level 2 to 3	Level 1 to 2	Level 2 to 3
	23 Orgs	11 Orgs	76 Orgs	66 Orgs	99 Orgs	67 Orgs

Figure 2 — Time to move up.

Figure 3 — Master schedule.

activities consisted of KPA-by-KPA process development and improvement.

Prior to holding each KPA workshop, a separate process action team (PAT) was selected to develop and implement the processes of each KPA. The PAT would participate fully in the KPA workshop and followup activities in order to implement a set of process artifacts. Prior to the KPA workshop, PAT members were asked to arrive prepared with any existing process artifacts in use in their work areas. These were reviewed early in the process definition workshop, before any new processes were developed. During some workshops, it was decided that the PAT membership needed to change based on this discussion and the needs of the business. A PAT leader was chosen for each PAT prior to the end of the KPA workshop.

Each KPA was approached individually as a workshop, but in the context of the larger

Level 2 picture. As mentioned above, each KPA work package was similar in design but varied in content. One week was scheduled for each PAT to complete the work package on each KPA. The primary goal of the workshop was to produce draft versions of all documents needed for the KPA.

In the early KPA workshops, project managers were unwilling to participate, citing other project priorities. In later workshops, after the PMO better understood the impact of CMM, project managers seemed to sprout from everywhere to help out.

Each KPA workshop began with a two-day detailed seminar, picking up where the CMM seminar left off. By this time, the members of the PAT were ready to roll up their sleeves and get to work on the process definition. A gap analysis was performed to determine how well the existing AD process covered the goals of the KPA. Supplementary

material was then developed to address any gaps. In the case of AD, only a project management process previously existed, and it needed significant attention. As one CMM consultant repeatedly expressed: "You've got a lot of work to do!"

A policy was addressed in each KPA workshop, but all six policy statements were integrated into one physical document to reduce the number of documents that needed to be managed. Other documents produced were plans, process descriptions, procedures, and templates. Not all of these documents were produced for each KPA, but they would be mixed and matched to address the needs of the business. In particular, the number and detail of procedures varied from KPA to KPA, depending on AD's particular needs in that area.

As the PAT members worked through the goals of each KPA with respect to any existing process descriptions, they began to develop the new processes, finding that it was often necessary to break into subteams. Working in subteams allowed more work to be completed in the allotted time. Periodically throughout the workshop, the subteams would reconvene to brief the entire PAT on progress or challenges raised in the subteam. At the end of each workshop day, a 30-minute outbrief was held to share the events of the day with persons outside the PAT. This was an opportunity for management or other interested persons to have a voice in the process without investing a week of their time. Many times, e-mail summaries were requested by those who missed the outbriefs. In later KPAs, these were produced as a matter of course and were lauded as valuable to those interested in learning about the workshop's progress.

As the workshop concluded, the PAT leader ensured that all action items were captured, the latest versions of the workshop artifacts were gathered, and an action plan to reconvene the PAT was established. The PAT leader was responsible for addressing any open action items from the workshop, ensuring that artifacts were refined and peer reviewed, and reporting status to the SEPG and management steering group (MSG), as appropriate.

Because of the overlap between the KPA activities, one workshop was being planned before the prior workshop was completed. This approach worked quite well for early KPAs, but when delays were experienced, some replanning had to take place. This was troublesome when the same individual was a member of two simultaneous KPAs, causing overload and loss of effectiveness.

Postworkshop activities included polishing the draft versions of the workshop documents, peer reviewing the finalized documents, and preparing for a pilot. At this point, engaging a technical writing specialist project manager proved to be quite valuable. A single writer edited every document for style, format, and grammar to enable the documentation set to remain consistent and readable. The other benefit was the documents were cross-checked for content from one KPA to another. This pulled together the entire documentation package in a way that ensured that dependencies between KPAs were maintained.

Next, the PAT prepared to pilot each KPA on a small number of projects. This involved selecting two to four projects that were at an appropriate point in the software lifecycle relative to the focus of the KPA. For example, for the requirements management KPA, pilot projects would be selected from those just getting under way but still lacking an approved set of requirements. Members of the PAT trained the pilot project teams on how to carry out the processes of the KPA. This training was timed to coincide with the project's use of the process. During the training, a brief overview of the policy was followed by more detailed treatment of the procedure-level documents and associated tools. Emphasis was placed on what behavior was expected from each pilot project. Pilot project team members were encouraged to voice their concerns and questions regarding the process before the training session was complete. Some tools (e.g., software configuration management) required more extensive training to master, so this training was offered in a separate training session. Other tools (e.g., peer review system) were simple enough to include in the pilot training.

Immediately following the training, pilot projects were expected to begin using the new process. Weekly update meetings were

held with the pilot projects to determine how well the pilot was progressing and to address questions and concerns that arose after training. Process and product-oriented measures (as available) were reviewed and used to determine the status of the pilot, and any issues were documented.

Each pilot was allowed to run for three to five weeks, monitored by SEPG, to allow sufficient time for the process to be used and evaluated. At the end of this period, the monitoring concluded, and the pilot projects continued to use the new process. All issues gathered during the pilot were then evaluated to determine what (if any) rework was needed before the process was ready for rollout.

Once a successful pilot was completed, a rollout of the KPA to the entire AD organization was prepared. This required gaining management approval on the documents associated with each KPA. Maintaining formality over this portion of the project was important for AD because previous process-definition efforts had failed to gain management approval and had to be watered down to satisfy all stakeholders.

There's Trouble in River City!

As the requirements management KPA was concluding a successful pilot, the PAT began briefing line managers and senior developers on their findings. The PAT recommended proceeding with a rollout of requirements management to AD based on a successful pilot, a short list of action items, and agreement to proceed from the pilot projects. One project reported that for the first time ever, his project was able to control requirements volatility, which had previously become a major cause of lackluster schedule performance.

Despite this overwhelming evidence of the value of the requirements management process, resistance came from several of the more vocal line managers. The resistance took the form of complaints that the new requirements management process did not go far enough in terms of technical, step-by-step procedures. There were three reasons step-by-step procedures were not included in any of the KPA work products:

1. CMM describes *what* should be done, not *how*, and the detail required by this sort of procedure is below the level called out in the model.

2. Procedures are part of the implementation of the model in the context of the organization.

3. Improvement of technical methods is covered in the Level 3 Software Product Engineering KPA.

Detailed procedures for requirements management and requirements development also fall under the responsibility of the PMO. While the PMO participated in the CMM project and on the PATs, it had a concurrent activity under way to define and improve the PMO process, which included procedures for developing high-level requirements and technical specifications. Although the PMO was attempting to improve the process, this was in fact disruptive because it was not integrated with the CMM project.

Pilots were asked to identify the need for more how-to detail, and they hadn't expressed such a need. The objecting managers were involved in the CMM overview seminars and should have understood these three reasons. Their objections were likely motivated by a fear of losing control.

It's All in the Timing

The resistance to software process change was expected by the project manager, but the timing and its coupling with external events beyond the control of AD were unexpected. As a result of objections to the lack of detail in the requirements management process, the full rollout of the requirements management process was delayed until adequate procedures could be supplemented. One positive result of these objections was that a tool was chosen to support the procedural part of the new requirements management process. Rational's RequisitePro (www.rational.com/products/reqpro/index.jsp) was requested and approved to be used on two high-visibility projects to help gather and control requirements. In addition, refinements were added to the existing requirements management documents to address AD's perceived needs. The process was approved and rolled out in a limited fashion to the PMO so that benefits could be realized

as soon as possible. Full rollout, however, was contingent on further refinements to the process.

This rework was damaging to the project's cost and schedule constraints, not because it was unexpected, but because the people doing this rework were prevented from making progress on the remaining KPAs due to overlaps in the schedule.

A Successful First Act

Although full deployment of some new processes was delayed, the CMM project as a whole was still on track relative to its project plan. The project:

■ Completed the definition of requirements management, software project planning, software project tracking and oversight, software quality assurance, and software configuration management processes for AD.

■ Started deployment to AD via pilot projects and process training. Moreover, it had defined these fundamental processes as common organizational processes. This organizational process definition is characteristic of a Level 3 organization.

■ Established the process infrastructure, consisting of an SEPG, MSG, and PATs. Establishing an SEPG is also a hallmark of a Level 3 organization.

■ Defined and made significant progress to institutionalize a peer review process, another Level 3 discipline.

■ Completed a metrics benchmark study, introduced a metrics analysis tool, and prepared the foundation for a metrics program. Part of this foundation was a metrics plan, which (among other things) explicitly defined the core metrics to be used on all projects.

■ Developed effort/cost, schedule, size, and computer resource estimation and tracking procedures and introduced tools to support them.

■ Delivered extensive training on CMM, process improvement, and the new AD processes.

■ Introduced, as part of its own project tracking, basic risk management and

earned value processes, which would serve as a basis for later process improvement. This act alone served to position the project as a leader and model for other projects to emulate.

■ Expanded its original scope to include evaluating and recommending tools to support the new AD processes for requirements management and software configuration management.

Equally valuable, participants in the CMM project gained an understanding of the nature of the current process and the required relationship with the changing technology in AD and IT. IT software development and maintenance is often project based. For example, projects produce new systems and evolve new releases of systems. AD, however, was changing into a somewhat different operation for performing its work. AD projects were classified as very small, small, large, and very large, and the number of smaller projects was increasing; over time, the work became more task based than project based. This led the CMM project to redesign the AD process to make the enactment of the AD process efficient at the task level. To do this, it used worksheets as the primary mechanism for applying the AD processes to a task. Labor-intensive work products (e.g., plans, procedure artifacts, methods, and functions) were applied to systems, business process areas, large projects, service areas, (e.g., help desk), or the AD organization as a whole.

AD has been adopting new technology driven by the demand for decreasing schedules, lower cost, and increasing functionality. These demands were repositioning AD away from traditional software development that supports the business toward delivery of business process functionality using SAP (a major Lean Electronics initiative).[4] SAP delivers functionality using business process

[4]As mentioned in Part 1 of this article (*ITMS*, May 2001), Lean Electronics stems from work at Toyota to increase productivity and profitability. The Lean Electronics philosophy focuses on the elimination of waste throughout the value stream. Lean Electronics principles have traditionally been applied to manufacturing-oriented areas of the company. Very few software development activities or processes within the company, however, have participated in the Lean Electronics initiative.

designers, enterprise databases, and an enterprise delivery platform. SAP is more than a delivery mechanism; it replaces the software development process by a business process delivery methodology, which includes project planning, monitoring, and control. The CMM project began to map and integrate the new AD organization process with the SAP process. This effort remained incomplete, however, at the end of the project.

In addition, AD has been moving away from legacy systems and inhouse client-server systems toward e-business systems. E-business application development is both similar to and different from traditional AD system development. The enterprise is moving beyond the organization and the company to the industry at large. The business and application frameworks are becoming more isomorphic. At the same time, application infrastructure is becoming more business process component based and Internet driven. This e-business trend was a primary factor supporting the decision to reorganize AD, IT, and the other e-business groups.

Script Rewrite

This was a precarious time for the delivery of IT services. Due to end-of-year budget constraints, reallocation of resources to meet AD project deadlines, and indications of a pending reorganization, senior management requested replanning the CMM project. AD and IT senior management recognized that the scope of process improvement had to be expanded from AD, not just to IT but to the entire e-business unit, which was just being organized. During replanning, the CMM project and most of the related process improvement activities were put on hold. The only activities spared were the piloting of tools and the completed processes. Even a workshop that was only halfway completed was shut down.

The CMM project manager decided to prepare two new project plans, one consuming minimal budget and another optimized for rapid completion, because of uncertainty about the constraints of the new organization. Uncertainties included resources, management, process responsibilities, and the new organization structure. If limited resources and the other uncertainties ruled out a full process improvement program for

the new organization, the minimal approach would at least enable a sustaining effort for the current state of the process. If, on the other hand, management recognized the benefits of CMM, the rapid completion plan would be selected. Planning was based on lessons learned from the CMM project experience to date, differences between AD and the larger business unit, and reorganization issues that required a change in strategy.

AD and IT senior management had been, and continued to be, supportive of process improvement, and the flexibility of the two new plans promised the continuation of process improvement, at least minimally.

The extent of the reorganization took both AD and the CMM project by surprise. The resulting reorganization turned out to be the kiss of death because it reassigned AD and IT senior management, dispersed the PMO, and reassigned the CMM project manager to another group. Loss of management sponsorship and resources will be a critical test of the strength of the commitment of development and project management, not to CMM, but to improvement itself.

Morals of the Story

Reorganizations in the corporate world are rarely uneventful. Their very intention is to motivate change in the organization. When management is shuffled around, championed causes are disrupted, placing them at risk of an untimely death. Although these changes are rarely controlled by any project, as the writing on the wall becomes visible, senior management should be consulted in an attempt to protect the project from the pending changes. Here are a few of the lessons characterizing the experiences of this project. They are listed in order of highest priority.

Avoid Inadequate Resources

In the early KPA workshops, very few practitioners or project managers participated in developing the new processes. Many times throughout the initial workshops, participants were asked to brief the PAT on their knowledge of existing processes, but very little information was known at the time. Later, it was discovered that processes did in fact exist. Although the PAT members were very knowledgeable and motivated, additional

participants would have broadened this knowledge to a more appropriate level. The lack of PMO participation was especially problematic, given the strong project management focus at CMM Level 2.

Ensure Senior Management Involvement

Although senior managers believed in CMM and the project, their active involvement was lacking throughout the project. The reason senior management (above AD) was not involved is that there was a perception that CMM would only apply to the software development activities within AD. At one early program review, the AD department manager was surprised to learn that he was the leader of the MSG. In another program review, a manager from another department noted that the CMM project had been let down by its own management. In fact, the MSG only met a few times and had little chance to form a functional group, much less provide any value to the project.

Enlist "More Senior" Management

Sponsorship of the CMM-based process improvement did not extend high enough in management to sustain the project during the disruption of the reorganization. Successful organizational process improvement depends on:

- The extent and intensity of senior management commitment

- Senior management championship of the improvement

- Extensive senior management buy-in, commitment, and support

- Continuous reinforcement of senior management commitment by the project management and by the project practitioners

- Clear visibility of process status by senior management

This level of commitment requires significant planning and resources and must be formal, rather than ad hoc.

Develop a Metrics Program Early

The lack of a formal metrics program caused the project some challenges. Perhaps the largest challenge was the fact that no measure of project value was available to support the continuation of the CMM project at the moment of truth. Although the earned-value analysis showed favorable project management capability, project value measures were not being made. Had there been some measure of the project's worth, there may have been a stronger desire to continue the project. As this became increasingly self-evident, work began on a metrics plan, but it remained unfinished in the end.

Pay Attention to Timing

When major decisions were planned for the CMM project, the timing of these decisions with respect to other events (e.g., project planning versus fiscal year boundary) was unfortunate. This project might have ended differently had replanning taken place earlier. This would have given senior management enough time to consider the long-term implications of their decisions and might have resulted in a better decision.

Establish a Linkage to Business Goals

On a positive note, the CMM project stressed the importance of tying process improvement to the business goals of the organization. Furthermore, the CMM project recognized the need to adapt KPAs to the context of the organization, the projects, and the work being performed. Therefore, AD always began the implementation of KPAs with a tailoring of CMM to its goals. This is a critical step that is often skipped in process improvement efforts.

Provide the Right Focus

AD senior management did not pursue process for "process' sake" or Level 2 just for the maturity rating, but rather focused on organizational and project value. This is one of the reasons management was not concerned with the delay of the deployment (i.e., rollout) of the requirements management process.

The CMM project focused on the efficiency of the process implementation. The initial implementation of CMM in an organization tends to be similar to that of large projects, typical of the defense and aerospace industry of the 1980s. The result is often an implementation that is not efficient for the kinds of projects typical in many IT organizations today (e.g., small or fast-time-to-market

projects). The CMM project did not develop formal process requirements, but instead used constraints in terms of business goals to assist with implementation decisions. For example, when formal project software quality assurance and software configuration management plans were not appropriate for every project, they were implemented at a higher level (i.e., group of projects, program, or platform) or replaced by a simpler worksheet. This reduced the overhead required of smaller projects while allowing flexibility of larger or unique projects.

Scope the Improvement Appropriately

The CMM project did not limit the scope of process improvement to just the software portion of the lifecycle (i.e., from the allocation of software requirements to delivery of the software product to production). Front-end and back-end activities were included if their inclusion added value to AD and were in AD's scope of control.

Support Projects

Organizational process improvement requires effort at two levels: organizational and project. The tendency is for the effort to be concentrated in activities to build the organizational infrastructure, neglecting the effort to support projects. Just as evolution of maturity from CMM Level 2 to Level 3 requires a paradigm shift from project to organizational process focus, so, too, is a paradigm shift in the opposite direction required for project support from the organization to the project to effectively institutionalize process change.

Be Aware of External Forces

The CMM project was internally motivated. There was no external pressure to use CMM. On the contrary, there was a need to justify process improvement to AD's internal customers because AD's budget was allocated based on application features to support business systems.

There were other external forces as well, such as the SAP initiative and the technical demands of Web development. The CMM project, in retrospect, underestimated the power of these forces — particularly those of the Web — and should have addressed processes to support component-based development for applications that span business units.

Closing Curtain

Reorganization, reallocation of process infrastructure resources, new management, and changes in technology have temporarily closed the curtain on process improvement. Nevertheless, as the players regroup, process improvement may yet spring from the accomplishments of this project.

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