

UNCOMMON TECHNIQUES FOR GROWING EFFECTIVE TECHNICAL MANAGERS

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ABSTRACT

This paper utilizes real project scenarios to demonstrate a set of techniques that support common patterns employed by many effective technical managers across a range of organizations. Planning, status, metrics, and communication with task performers and senior management, are addressed. If you are a lead engineer, technical manager, or project manager in a growing organization that is striving to institutionalize its processes, this paper will provide you with a wealth of insights and practical techniques that could help you become more effective in your job today. If you are a senior manager this paper could help you grow more effective technical managers for your organization tomorrow.

The techniques shared are particularly relevant to companies that frequently find themselves operating in chaotic environments, but are serious about change.

Introduction

Have you ever known a technical manager who could quickly size up a situation, determine exactly what needed to happen, and then just make it happen with all the key stakeholders in agreement? Some make it appear simple. Did you ever wonder how they do it? Do you think they use metrics? More importantly, do you think other managers can learn to do it too?

When I ask participants in my workshop how they feel about metrics, the response is usually not a positive one. We hear, “metrics are late”, or “they’re sent to the wrong person,” or “they don’t tell me anything I don’t already know.” Many managers don’t seem to be able to connect traditional metrics to the real issues they face every day.

Background

Over the past few years I’ve had the opportunity to observe and interview a number of managers in large and small organizations. While specific techniques often differ, I have observed a set of common patterns employed by many effective managers. These patterns include planning, involving their team in decisions, communicating crisply using objective facts, and connecting to the issues senior management wants to hear about. Although these patterns have proven effective for many, they are not always easily followed by new managers looking for ways to improve their skills.

How the Material in this Paper Can Help You

In this paper I share a set of techniques that can help technical managers use metrics more effectively--but more importantly, these techniques can help managers improve their overall technical management effectiveness. The techniques discussed are consistent with the practices recommended by the People Capability Maturity Model [1].

Structure of Paper

There are eight (8) techniques presented in this paper. They are partitioned into three (3) categories; Planning, Status, and Reporting. The Status section focuses on communication between technical managers and task performers, while the Reporting section focuses on communication up the chain to program managers and senior management.

Planning

Few would disagree that planning is important, but on many projects planning doesn't always happen as it should. I had it explained to me by one workshop participant this way; "the principles I understand, but I have trouble applying them in the 'fog-of-war' of a real project."

To help understand consider the following scenario. A technical manager is assigned to a new project, and discovers that all the planning that should've happened in the proposal phase didn't. The manager immediately faces intense pressure to meet an aggressive schedule. When he raises the planning question the program manager tells him, "the planning hours were cut to win the project."

The first technique includes a simple method that will help technical managers recall the fundamentals of planning. But just knowing the fundamentals of planning wouldn't have been enough to solve the dilemma faced by the technical manager in the above scenario. The key to the technique is knowing *when* and *how* to apply it.

1. The "Integrated Planning" Technique

There are six parts to the initial technique. First, pull your key technical team members together and establish and document your common architectural vision [2]. Effective technical managers know the importance of this activity and they make sure it happens even if there is only time for a single diagram and a few words to explain it. Second, write down the following five (5) simple questions on a large sheet of paper, and then tape the sheet to your office wall:

WHAT? WHO? HOW? WHEN? HOW MUCH?

Third, after taping the questions to your office wall, answer each question as best you can *given your project constraints*. The questions are explained further later. It's ok not to have perfect answers. We expect you will have a list of issues. Fourth, take the list of issues to your program manager and discuss specifically those related to getting the REAL work done within the budget and schedule. Then WRITE DOWN agreements reached. I cannot overstress this point. Many of the best technical managers I have observed do it, and it will become clear why later.

Now, the fifth and sixth parts are crucial. This is the trigger to help you know *when* to apply the technique.

Fifth, write the following words down on that same large sheet of paper just above the 5 questions; **“I NEED---BY---“**. Make sure they are capitalized and bold. Sixth, whenever someone comes into your office and says those words let it be a trigger in your brain to turn and ask each of the 5 questions.

Ask yourself, **“WHAT”** exactly is it you are being requested to do and **“HOW”** does it fit with the agreed to common architectural vision? Specifically, **“WHO”** does this request require and what impact will it have on the currently planned work? Dig deep on each question, and involve your technical team if you are unsure of an answer. **“WHEN”** does this new request really need to be done? Often the real date something is needed is different from what is initially asked for. Be sure to consider **“HOW MUCH”**, and ask, “where is the budget coming from?”

If this task isn't within your current plan make sure all the impacts are known, **WRITTEN DOWN**, and agreed to before you act. It doesn't need to take long to ask these questions, and many of the best technical managers I have observed do it.

Now, stop and think about what we've just done.

We've applied this technique in the heat of battle—in the midst of project execution. Real planning isn't something you can cut out of your budget to execute more efficiently. Real planning isn't separate from the real technical work-- its integral to it. Don't allow the *“fog-of-war”*, or other perceived *“project constraints”*, to keep you from asking the right questions, or taking the right actions.

Lee Iacocca once said, “When you are in a crisis there is no time to run a study. You've got to put down on a piece of paper the ten things that you absolutely have to do. That's what you concentrate on. Everything else—forget it.”[3]

In a way, Iacocca's statement captures the essence of the first technique—stay focused on the plan. But there is more to being an effective technical manager.

Status

Sometimes technical managers get requests that are clearly not part of their plan. Sometimes those requests are the right thing to do.

Many effective technical managers have an uncanny sense of knowing when its time to adjust the plan. But to be effective at adjusting the plan managers must first have accurate status. One of the most common questions I receive from technical managers is, “how can I get more accurate status from my team,” and often they add, “without annoying them.”

Recently I observed a small project in action. The project had two significant technical tasks and one of them was running into difficulty due to unforeseen complexity. Pressures and visibility from senior management began to mount. There are two common strategies I have observed technical managers taking in similar situations.

The first one I call the “*shield*” technique. In this case the technical manager does everything possible not to bother the technical team. The manager effectively “*shields*” the team from as many “management” issues as possible. The underlying belief being that leaving the team alone is the best way to help the team solve the problem.

2. The “Challenge” Technique

The second one I call the “*challenge*” technique. In this case, instead of shielding the technical team, the manager engages the team, or “*challenges*” them with the full cost, schedule, and technical performance dilemma.

In the case I recently observed, the technical manager chose the second approach. As a result, the technical team discovered a much simpler solution to part of the technical effort, which freed up the resources necessary to solve the more complex challenge within cost and schedule constraints.

Sometimes the true purpose of status is misunderstood by unseasoned managers. Technical teams often find status requests—just for the sake of status-- annoying. But it has been my observation that most technical teams want to be asked for, and to provide, their input when major project decisions, especially those that affect them, are involved.

Effective technical managers often involve the technical team in the decision-making process, and they do it in a “non-annoying” way. To help understand, let’s look at another scenario.

Jim, a technical manager, hurries down the hall late for a status review. In his rush, he passes Bill, one of his assigned engineers. Jim yells across the hall, at first without slowing down, “Bill, I hope you are going to be done by Friday.” Jim slows his pace, just a bit, then adds, “Just tell me you’ll be done.” Bill shakes his head up and down. “You can count on it,” Bill replies as he smiles back at his boss. As Jim turns the corner Bill glances upward and mumbles to himself, “How on earth am I ever going to finish by Friday when I don’t even have all the data I need from one of my suppliers!”

Now, with this scenario, even if Jim took a little more time and asked Bill, “How long will it take you to finish?”, it is likely Jim would receive an overly optimistic response from Bill. This is due to multiple reasons. First, Bill wants to please his boss. Second, engineers tend to be optimistic. Third, the definition of “finish” may well be ambiguous with Bill thinking it means “last bug fixed”, while Jim is thinking it includes documentation and configuration control as well.

Now, lets look at an alternate scenario.

3. The “Fuzzy Question” Technique

In this case, Jim stops by Bill’s office unannounced. The conversation starts out with a discussion about yesterday’s golf outing. It then moves to Bill’s son and the college selection process. Bill mentions that the college visits are causing stress at home, and on top of that he is concerned about late data from a supplier at work. Jim tells Bill that Tom isn’t busy and that Tom has a good contact who works for the supplier that might be able to help.

Note how in this scenario the conversation starts out having nothing to do with work. We call this the “Fuzzy Question” Technique because Jim’s purpose for stopping by Bill’s office is intentionally vague. Spending time talking about non-work topics is important because oftentimes difficulties at work are connected to non-work issues. Also, casually talking about non-work subjects often creates an atmosphere more conducive to open and honest communication. It is certainly a better atmosphere than the hallway environment observed in the previous scenario.

Many effective technical managers use the fuzzy question technique without even knowing it. But for some managers this technique does not come easy. If you don’t know how to use it, and you try, you might end up with nothing more than yesterday’s baseball scores.

4. The “Listen-For” List Technique

I once had the opportunity to interview a technical manager with an excellent track record. During the interview I asked the manager how he recognized a cost or schedule problem. He responded immediately, “Oh, that’s easy. When I’m talking to my people I **listen-for** *Interface Problems*, and *Un-bid Tasks*, and *Resource Issues*.”

Effective technical managers know what to *listen for* when they are communicating with their people. If the fuzzy question method is not easy for you, make a list of the things you know you should be listening for. Then review the list just before you go and talk to each of your workers.

Reporting

Some technical managers are very good at communicating with engineers (i.e. fuzzy questions, knowing what to listen for) to uncover the REAL status. But many of these same managers don’t always know the best techniques to communicate effectively with program managers and senior management. Sometimes these same managers even slant the truth, once they uncover it, because they believe that upper management doesn’t want to hear the full truth.

I once interviewed a Program Manager who described his typical monthly cost and schedule review with his technical managers by saying, “I rarely approve additional

budget for my managers. First I listen to their war-stories, but then I always wait because I know that next month they will just give me a different war-story.”

Many of the best technical managers I have observed are adept at communicating using crisp terms, while referring appropriately to their approved plans, and WRITTEN AGREEMENTS. They are also adept at connecting engineering issues to the issues management wants to hear about (usually cost and schedule impacts).

For many technical managers, each day is filled with issues, action items and meetings. Trying to recall from the top of one’s head details from the past can be difficult. Yet the ability to connect and communicate past details with current situations can significantly enhance a technical manager’s credibility and effectiveness when dealing with a program manager or senior management. The following three (3) techniques can help new technical managers who find it difficult to communicate effectively up the chain.

5. The “Structured Real-Story” Technique

One of the most effective methods that I have observed that can aid a technical manager’s communication up the chain is what I refer to as the “Structured Real-Story” Technique.

“Structured Real-Stories” are not fictional stories, and they are not war-stories. They are crisp true stories that capture key past details in a format that is easy for a technical manager to use and maintain. “Structured Real-Stories” have three (3) key characteristics. They are crisp, they are always written relative to a plan, and they always identify a cost or schedule implication. Examples of structured real-stories include:

- Subsystem XYZ more complex than planned, required 2 additional senior personnel for 3 months
- Senior personnel not available first 6 weeks as planned resulted in 1 month schedule slip
- Training in new design tool took longer than planned causing 2 week schedule impact

What makes structured real-stories effective for technical managers is as much the process used to construct them, as the use of the story itself. Building the stories in the quiet of a manager’s office, when the manager is not under pressure to think-quickly, can help an inexperienced manager analyze a situation and reach a sound recommendation considering all the relevant factors, including similar patterns from the past.

Technical managers who use structured real-stories in communicating tend to have greater credibility because the process is a disciplined one supported by historical patterns used to aid future predictions and reach sound recommendations.

6. The “Artifact and Activity” Technique

Recall, earlier we mentioned engineers tend to be optimistic. Therefore, it is a good idea to have an objective task assessment technique as a cross-check. The Artifact and Activity Technique is a simple method that increases task status accuracy by reducing subjectivity in the definition of task completion. A spreadsheet is used to define the artifacts to be produced and the activities required to complete. Each item in the spreadsheet is given a weighted value. When the item is completed, the engineer checks it off in the spreadsheet. The technical manager uses the spreadsheet as an objective cross-check of task status. It is also worth noting that this status can be attained without “annoying” the task performer.

7. The Graphics and Personal Data Technique

In the beginning of this paper I stated that many managers have difficulty connecting traditional metrics to the real issues faced every day. Many of the technical managers I have observed have much, if not all, of the data they need to be effective managers. Unfortunately they don’t always know how to use this data in the most effective way. This is due, at least in part, to the fact that many managers view metrics only as an INPUT to them, rather than as an OUTPUT from them. This subtle change in perspective can provide a powerful mechanism to help a technical manager communicate more effectively with senior management.

Take a close look at Figure 1. This graphic provides an example of how a technical manager can use his/her own personal data (i.e. data obtained from the ‘listen-for’ technique) as an OUTPUT to communicate a powerful story to upper management. The data provided in Figure 1 is based on what one technical manager told us he listens for when he communicates with his task performers. This data is completely within the technical manager’s control. The graphic bridges from the manager’s technical data to the financial data and terminology management wants to hear and understands.

Specifically, the upper-left part of the graphic demonstrates that *Interfaces* drive code, which drive size, which in turn drives cost and schedule. The upper-right part demonstrates that *Un-bid Tasks* drive requirements which, in turn, drive cost and schedule. The bottom of the graph demonstrates the cost and schedule impact of not having the planned senior personnel (*Resource Issues*) by showing the planned versus actual senior staffing, along with the productivity loss resulting from the use of new hires.

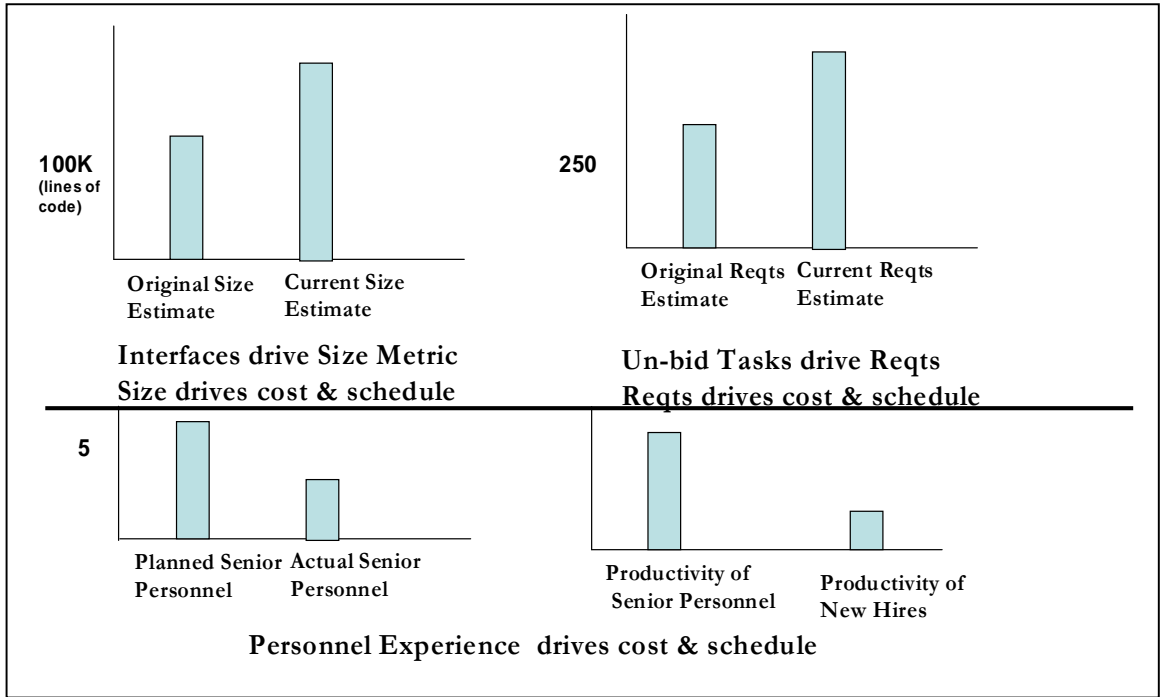


Figure 1 Bridging From Technical to Financial Terms

Using graphics with personal data is a powerful and practical technique technical managers can employ to improve communication with senior management. The accompanying voice track of the manager must be crisp, and to the point for this technique to be effective. This is a practical and proven way to use metrics to help manage, and increase a manager’s effectiveness and credibility. Many of the best technical managers use similar techniques to aid their communication with senior management, and to “connect” their own metrics to the real issues they face every day.

In the beginning of this paper I presented the vision of a manager who could “make it happen with all the key stakeholders in agreement”. It’s believed by some that such leaders are “born, not made.” It has been my experience that many inexperienced managers grow to be great managers by emulating a manager who inspired them in their early professional career. Many effective technical managers that I have observed also know that success does not always rest in having the best technical solution, or the brightest technical stars, or the most naturally-gifted technical managers, but often it is achieved by simple painstaking attention to detail.

I have witnessed, on a number of occasions, a technical manager taking valuable time out of his/her busy schedule to set up special meetings with key stakeholders to listen and work detailed issues, one by one, in preparation for a big meeting. Sometimes the issues at hand might appear trivial, and even unworthy of the attention these managers sometimes pay them. But don’t underestimate the importance of this activity when considering why some managers succeed, and others fall short. Many successful

managers “make things happen” by making sure little things don’t fall through cracks by always following up.

8. The Delegation-Through-Architecture Technique

Some might wonder how a busy technical manager could possibly find the time necessary to always follow up on issues. The key lies in the architectural vision discussed in the first part of Technique 1. A sound architecture extends beyond the technical realm providing the necessary framework for management trust, task delegation, and follow-up [2].

Successful task delegation and follow-up may well be the single most important characteristic leading to a technical manager’s success. This is because task delegation holds the secret to finding the time to work the “little” issues so they don’t become the “big” issues.

Conclusion

The eight (8) techniques shared in this paper are not based on theory. They are based on real experiences of real technical managers and what has proven to work on real projects. It is also worth mentioning that these techniques are uncommon. But they are proving helpful to managers who frequently must work under adverse conditions. I have used them myself when functioning as a technical manager for clients, and I have shared them with other managers through my workshops. Managers in both large and small organizations have provided positive feedback that the techniques can work, but they only work if applied with discipline and commitment.

These techniques can help managers ask the right questions and take the right actions when their environment is driving them in the other direction. Give them a chance, and they might help you too.

References

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About the Author

Paul E. McMahon provides technical and management services to large and small engineering organizations. Before initiating independent work in 1997, Mr. McMahon held senior technical and management positions at Hughes and Lockheed Martin. He has over twenty years of experience in the simulation and modeling domain and has taught Software Engineering at Binghamton University. Today

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