

IT METRICS STRATEGIES

Helping Management Measure Software and Processes and their Business Value



What Makes Your Organization Fast? Metrics and Organizational Learning — Part II, People Issues

by Michael Mah

My article on metrics and organizational learning in last month's *ITMS* described how excellent companies leverage ideas and collective thought processes to learn faster than their competitors and to compete more effectively. These sentiments have been promoted by John Chambers of Cisco, Alan Webber of *Fast Company* magazine, and John Perry Barlow (during a recent keynote address at the *Pop!Tech 2000*). I wrote about the following ideas:

- It's not just time to market — it's time to learning.
- None of us is as smart as all of us.
- Company metrics and IT baselines can act as organizational knowledge.
- You can organize a metrics function.
- You can overcome fear of a metrics inquisition.

Two notions leap out from this list. The first is the concept of connectivity — connecting individuals into a collective meta mind that can “think.”

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Defect Metrics, Inspections, and Testing: Part II

by Michael Mah

In Part 1 of this article, I described defect metrics and the behavior patterns that have become evident through scientific research on software projects (see *ITMS*, January 2001). Metrics on defect-find rates throughout a project's lifecycle (from the early design phases to deployment) show a buildup to a maximum peak, followed by a gradual decline characterized by a long tail.

This peak followed by a long tail is known as a Rayleigh curve, named after the British mathematician. With metrics behavior like this in hand, advocates of defect inspections argue that the peak of the curve can be controlled in two ways: it can be (1) lowered in magnitude and severity, and (2) shifted to the left, so that mistakes are found sooner rather than later. Why wait until testing to correct

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executive summary

This issue continues discussions started in January on organizational learning and defect inspections, specifically focusing on organizational issues and how to deal with emotions and tensions in a high-pressure IT environment. The word metrics implies an objective, sterile view of our working world. The notion of benchmarks seems safe — after all, they're simply charts and graphs that tell us the state of our IT programs. In practice, nothing could be further from the truth.

Measures may indeed be about substance and structure and may seem to have little to do with people's feelings and relationships with their peers, but IT is about solving problems and designing solutions, all of which are very personal in nature. Many software designers consider themselves artisans, and their work is about their code, which they identify with personally. One of the best software designers I ever met was also trained as a classical musician.

Both of the topics in this issue have human-related aspects that, if left unattended, can derail your improvement strategies. These articles identify some of these issues, give you insight into them, and suggest ways to effectively solve them. And if you're skillful at this, you might be able to replicate the kind of success achieved by the company described in the defect inspections article. What began as a process improvement initiative in that specific domain actually snowballed into positive benefits in other dimensions — higher functional throughput, faster schedules, lower costs, and a happier organization.

Lastly, I like to think that metrics highlight both the substantive areas we need to focus on and the potential areas of strain in our internal and external relationships. If you're able to identify and solve the problems that affect your day-to-day work, the net result is an improvement in the quality of your life — and perhaps even leaving work before midnight now and then!

Michael Mah, Editor

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That is, none of us is as smart as all of us. (Yes, all you *Star Trek* fans, I might indeed be talking about the Borg. Of course, when I was younger, the Borg was a tennis player.)

The second notion is that this meta mind can gain access to incredible amounts of information held in a knowledge database. This is not a database containing ideas from outside metrics “experts,” although that would be helpful for other reasons. I’m referring to self-knowledge about processes and project dynamics to enable an organization to learn from *itself*: the organization’s own secrets — what makes it excellent and what makes it struggle.

Why is this important? Because companies can’t afford to waste time and money on shotgun-style methods for improvement. They need to go right to the heart of the matter like a “smart” weapon. Your first thought might be to strike at the people who are screwing up. Wrong! If you want to torpedo your improvement strategies, then do just that.

What I’m talking about are the choke points in your processes. Everyone has them. Communication is a complex thing. Problems are challenging. Writing software code is hard. People get stuck and make mistakes because things were misunderstood or miscommunicated in the midst of the Internet-speed deadlines. So, now that we’re all sinners, let’s go about fixing the problems.

Finding the Heroes

Just as there are choke points that act as brakes whenever you get a team of people working together, there are also magical times when things just click. Great things happen; teams gel. Acts of brilliance or just plain hard work result in spectacular wins against incredible odds. How did this

happen? Well, for crying out loud, wouldn’t it be great if we knew and then told everyone, so they could replicate similar successes and score a touchdown for all of us?

This is the anti-*Dilbert* reference frame for benchmarking and process improvement initiatives. If I addressed these notions using that kind of language, you’d all start thinking, “There goes Mah talking about bureaucratic metrics processes. No thanks, I’ve got real work to do.” When people feel they are wasting time and effort, they get cynical, and rightly so.

Ironically, that’s exactly what I’m talking about: not wasting time and effort. Light methods are great, but I’m talking about using *smart* methods, *learned* methods, especially in larger organizations where presence and clout in the marketplace make for expensive blunders and enormous lost opportunities when missteps occur. (Remember my references in the December 2000 *ITMS* to the now-defunct Ashton-Tate and the sad story of dBase IV?)

When you have no way of knowing what’s broken, you can’t fix it, so things keep limping along. And when hardworking staff members kill themselves and pull off heroic deeds against the odds, the act can’t be repeated because no one understands how it happened. To make matters worse, organizations today churn staff faster than a Maytag washer. When critical knowledge is held only in an individual’s mind or in his or her desk files, the information is gone when that employee leaves. What a waste!

Successful metrics programs are about zeroing in on exactly what needs to be done, learning faster, and getting things done more efficiently. They are about *not* wasting time. Time to market comes from time to learning. Organizations that do not learn will suffer and stay dumb, while those that do will beat them in the marketplace, time and again.

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Dealing with Surprises

“If you don’t want to know the answer, don’t ask the question.”

I first heard this statement several years ago, and it has stayed with me ever since. I wish I knew who said it first because he or she captured one of the most difficult aspects of IT metrics programs in a single phrase.

Things like benchmark statistics, both internal and external, can bring incredible insights that produce good outcomes. But they also present peopleware challenges that result in inhibited learning — most of the time, people do not like to be exposed to news that might be interpreted as bad.

Inquiry and metrics introduce the risk that an organization will have to deal with the mismatch of outcome to expectation — i.e., surprise. Yes, the business world is loaded with surprises, and managers deal with them every day. But what I’m referring to here are situations where the element of surprise might shake an individual’s (or group’s) perception of identity — whether they are competent or incompetent, good or bad, even whether they are lovable or unlovable.

Some time ago, I was asked to benchmark the IT applications development proficiency of a large, Wall Street brokerage firm. It was a five-month engagement that involved interviews and data collection with the firm’s IT development staff. Many of these applications were the heart of equity trading transactions involving hundreds of millions of dollars in the New York Stock Exchange. Others involved complex financial analysis of fixed-income securities and derivatives. We spent weeks on-site, talking with developers, managers, directors, and vice presidents. The objective was to find out just how fast this organization of 400 was running.

Just about three weeks from the delivery of our findings, a new senior vice president/CIO was brought in from Europe to take charge of the entire division. The vice presidents and managing directors I had worked with were uncertain about this new fellow, but our preliminary findings showed good news. This group was running with the wolves: its time to market was easily in the upper industry quartile, and its cost performance was right around the industry norm.

System reliability needed some improvement because outages in this area could be very expensive, but generally things were good there, too. The bad news was that the group chronically overpromised, so the internal perception was that the group was always delivering late and with less than expected functionality.

When we presented this information to the new top dog, he was gruff and impolite. When the good news portion of the findings was presented, things got worse, with the new CIO challenging our findings. The attack was unexpected and severe. I left the meeting feeling like I had been ambushed, as did members of my team and the vice presidents who sponsored the study. Everyone left the CIO’s office in a state of shock. I wondered why in the world I was in the metrics business.

(What made things even more horrible was that one week before the presentation, the workstation with the analysis had crashed and the server backup had failed. We had to work around the clock to recover and barely did, getting down to Wall Street at the very last minute to present the report.)

Much later, I found out that, in this case, good news was a bad thing. Unbeknownst to me, the new senior vice president was on a mission to downsize staff by as much as 25%. His reward would come from achieving *that* metric. Saying that the IT division was as good as the rest of the industry, with schedules much faster than the norm, would interfere with his goal. If people found out about our report in the midst of the slash of the downsizing knife, all hell could break loose. So we became the enemy, and the report was buried and never presented to the hardworking participants who gave their time for the benchmark interviews.

Risks to Organizational Learning from a Peopleware View

The above story underscores a significant aspect of how to make metrics work for you in the context of organizational learning. If you understand an organization’s cultural and behavioral frame around information, how it is used, and when it poses risks and opportunities, then you can make the most of your IT metrics efforts.

Simply knowing these risks can help you prepare for difficult conversations and negotiations that come about when metrics reveal hidden aspects of IT performance, both positive and negative. Getting to the point where measures form the basis for real improvement strategies requires practitioners to know where the booby traps are. Most of the time, the objections are well hidden. You have to become sensitive enough to pick up on the cues and then test your findings with an inquiry of your own to understand what gets in the way of true learning and process improvement.

In *Organizational Learning II: Theory, Method, and Practice* (Addison-Wesley, 1996), authors Chris Argyris and Donald Schon summarize some unspoken rules that develop in organizations:

- Let buried failures lie.
- Keep your view of sensitive issues private; enforce the taboo against public discussion.
- Do not surface and test differences in views on organizational problems.
- Avoid seeing the whole picture; allow maps of the problem to remain scattered, vague, and ambiguous.

The deeper and more fundamental norms, strategies, and assumptions are:

- Protect yourself unilaterally by avoiding direct and indirect personal confrontation and public discussion of sensitive issues that might expose you to blame.
- Protect others unilaterally by avoiding the testing of assumptions where that testing might evoke negative feelings and by keeping others exposed to blame.
- Control the situation and the task by making up your own mind about the problem and acting on your view. Keep your view private, and avoid the public inquiry that might refute it.

These behavioral elements determine whether metrics can be discussed and what will be left alone. Argyris and Schon point out the following about an actual case where

an inability to deal with surprises revealed organizational dysfunction that inhibited learning:

The features of the behavioral world that inhibit organizational inquiry into [problems] also pervade the development process itself. Thus, [managers] used strategies of unilateral control and withholding information to protect themselves against and deal with [managing directors and vice presidents]. Managing directors and vice presidents, with their territoriality and wariness of top management, used similar strategies to protect themselves and resist central control. And both groups sought to avoid confrontation and the negative feelings it might provoke by publicly refraining from testing their assumptions about each other.

Thus, features of the behavioral world ... constrained inquiry into their processes. One might say that the behavioral world protected itself from exposure.

Whether you're dealing with IT metrics or metrics of another kind, these people-oriented issues can shape and constrain an organization's pattern of action. An organization's "learning system" can be governed by inhibitory processes that cripple acquisition of knowledge that's viewed as threatening — even so-called good news! And it may not be just the top of the hierarchy that's the problem. Sometimes an organization's culture is so laced with a lack of confidence and insecurity that members throughout its tiers practice fear-based behavioral rules.

What to Do? Make a List and Check It Twice

Overcoming these barriers might seem overwhelming, but it can be done. The first thing you need to do is understand both the spoken and unspoken rules within the organization. The spoken rules are referred to in some organizational learning literature as espoused values. These can often be discovered in places like mission statements, core principles, and the like.

The unspoken rules are more difficult to unearth, but they manifest themselves in how an organization acts. They show up in what

