



Presents
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Focus on Beth Layman, Senior Director, McAfee
A CAI State of the Practice Interview
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Biography of Beth Layman

Beth Layman is Senior Director of Business Process Improvement at McAfee. Prior to joining McAfee, Beth worked as Senior Director at Borland and as COO of TeraQuest. She has more than 20 years of experience in the software industry as a senior manager and professional consultant. Her work experience encompasses a wide range of markets and industries including commercial, government, aerospace, IT services, and product software organizations. Beth has provided process improvement-related training, assessments and consulting services, using various models including CMMI[®], and is an SEI SCAMPI Authorized Lead Assessor. Beth is a recognized authority on software measurement and quality management, and is a co-author of *Practical Software Measurement: Objective Information for Decision Makers*. Our interview between Beth Layman and Michael Milutis, Executive Director of the IT Metrics and Productivity Institute, was conducted in December of 2006.

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CAI: Could you tell us a little about yourself and your background and what you are working on today?

LAYMAN: I started out in the software industry in the late 1970s and worked my way up the food chain from programmer to analyst to project manager. I eventually gravitated into the quality area and got into software quality testing. That's when I realized that I was more interested in organizational processes and methods, as opposed to any single individual contributor role.

I worked inside organizations establishing coding standards and code review processes,

developing testing methods, and standardizing deliverables like requirements, project plans, and so on.. I even started something for a large utility company that was very similar to a project office way before there was such a thing!

In the late 1980s I went to work for the Quality Assurance Institute, QAI, in Orlando. It was at QAI that my consulting career really got started. I worked with QAI members to address things like putting processes in place and improving quality and productivity in their organizations. I was in charge of the research group there, too, researching things like function points, requirements and quality assurance best practices. I also got involved in building some simple measurement repositories.

I later got involved in a DOD software measurement initiative which culminated in publishing *Practical Software Measurement* in 2002.

I eventually joined Teraquest as a consultant. That is where most of my consulting experience came from. Along the way, I became a CMMI lead appraiser. I later moved into an officer position there where I managed the software development and IT operations for the entire company.

CAI: When did you start with Borland?

LAYMAN: Borland bought Teraquest in January of 2005. They had a vision of software delivery optimization. Borland was building up a suite of tools for developers that would improve their quality and productivity. But they realized that they also needed services wrapped around the tools in order to help these organizations become successful. So they bought Teraquest, a group of high end consultants, to come in and help build solutions for clients and deliver management and process improvement consulting services. That's what we've been doing for the past 2 years.

I have done a lot of internal consulting inside Borland to make sure that we're doing the same things we're telling our clients to do. Most recently, I've been involved in the implementation of a Project Management Office inside Borland, the first one they've ever had.

CAI: Could you tell us a little bit about the book *Practical Software Measurement*? What motivated you to write it and what were you and your team trying to accomplish with it?

LAYMAN: I think the number one motivation was the problem statement from the DoD at the time. This was in the middle 1990s and the DoD was being confronted with projects that they had spent a lot of money on, but that weren't delivering the goods! They were frustrated with the lack of visibility into these projects and were finding failure rates roughly along the same lines as what is found in standard industry data. Of course, DoD projects are on a scale that is quite a bit larger than anything you will find in the commercial sector.

It basically was the DoD problem statement, "what do we need to be doing differently in these projects," that inspired us to write a guidebook and then later, the published book. We wanted to describe some simple ways to get visibility into the status and the progress of these projects, to allow the DoD to make informed decisions about whether or not the project should go on, whether an intervention was needed, or whether a project was running according to plan. We also needed to recognize the fact that, on a lot of these projects the contractors were all operating at different levels of process maturity.

CAI: You mentioned the scale and scope of some of these government projects. Is there any way you might be able to quantify for us the impact of failure on such projects?

LAYMAN: We're talking about billions of dollars that get tied up in some of these programs. One of the case studies that we used in our book, for instance, was the building and launching of a ship for the US Navy. So the impact of unresolved resource shortfalls, requirements volatility, or quality problems, which typically lead to cost overruns, project delays, and "failures" to meet mission needs is just incredibly huge!

CAI: Measurement and process seem to be fairly interdependent. What do

organizations first need to have in place on the process side of things before they can expect to make any progress on their metrics efforts? How might automation play a role in this?

LAYMAN: That's a good question. If you think about the purpose of measurement, which is to help people make informed business decisions, what we really need is visibility into the initiatives, the product, the project, and the processes that organizations are using. You can see the tie-in to process right there. It is really tough when the processes that organizations execute are inconsistent, not well defined or not consistently performed. When you try to implement measurement in these organizations, you find that you either don't have the data you need or the data is not consistent enough to be interpreted properly.

There is a great graphic that's been used for years in this field. It shows that the visibility into projects - and the opportunity to measure things on projects - is really limited by process maturity. So if you're at Level 1 and every project is executed differently, it is going to be very hard to try to implement a measurement program. However, as processes become more refined, better understood, and more consistent, your ability to measure things and gain actionable insight will become much more targeted.

Measurement automation requires standardized data elements and attributes within and across projects. Getting consistency in the data is nearly impossible without some process definition and enforced compliance across projects.

CAI: Would you be able to define for us at what point in the project maturity lifecycle measurement becomes critical?

LAYMAN: I think it is critical at every stage of the maturity model. This is evident in changes that have been made in the CMMI. You now find the measurement and analysis process area at Level 2 of the CMMI.

Measurement, just like process, evolves and matures within an organization. So at Level 2 you're looking at some very basic measures designed to help individual project

teams manage their projects successfully. At Level 3, organizations are ready to start learning how well their standardized processes are working and to do that, they need to be able to reliably aggregate and compare different project's data and start understanding why variations between project results occurred

By Level 4 measurement is really driving the organizational and project decision making processes. Major decisions, like whether to take on a new project within certain constraints or whether a project will be ready to go operational by the agreed to "go live" date will not have to be made based on intuition (or suicidal optimism!) anymore. Decisions will be based on a rock solid understanding of the organization's "capability" to execute successfully, given different situations, using real data from the organization's actual recent performance.

CAI: Why would it take so long to get to that point? If this is something that is so basic to making sound business decisions, why wait until Level 4?

LAYMAN: I think your assumption is wrong – I don't believe it *should* take a long time to get from Level 1 to Level 4! There are examples of organizations that started from Day 1 with a strong process-focused culture, and that moved rapidly to higher levels of maturity. Some organizations have gone from Level 1 to 4 in 18 months and this is at the same time that they're building a company.

CAI: Could you give us an example of that?

LAYMAN: Yes. Some of the better Indian IT Services firms provide good examples. They are fairly young organizations who have grown rapidly and have gained loyal customers in a fairly competitive market. Their mantra was "build the process right, build the measures in, and move rapidly to high maturity."

By the way, what happens in many organizations is that you have acquisitions, changes in strategic direction, changes in upper management, failure to properly manage change, etc., and all of this hampers an organization's ability to make real progress and can also create a cultural bias against change. That's why some

organizations take years to increase even one CMMI level.

CAI: There are many different metrics out there and many different consumers of metrics. In light of this, how do you determine what metrics are the most meaningful for your own organization, both to technical as well as executive management? What kinds of questions should we be asking ourselves to determine our core metrics?

LAYMAN: You have to have a process for establishing the “right” measurement program for your organization, and that's part of why we built PSM. You need a way to uncover what your organization’s information needs are then design measures that will speak to those needs. You also have to recognize that there are information needs at all levels and roles, including the organization (executive) level, the process level the project level, and even at the product/service (or application/system) level. At TeraQuest, we derived an approach we use in measurement planning workshops where we encourage an organization to completely answer “Who needs to know what in order to do what?” as the first step in establishing a measurement program.

That said, when deciding what to measure, I think you have to raise the issue of constraints. I go back to the notion of process maturity. There are just some metrics that simply cannot be delivered because the processes don't support the collection of that data. Data is created by processes as a by-product. So to some degree you're constrained by your processes.

CAI: It seems to me that once you've identified what it is you want to know, you are still going to come up against all kinds of cultural and technical obstacles. How do you overcome these kinds of challenges?

LAYMAN: I think you hit three key dimensions that must be part of any improvement program. First we have the people side, which encompasses the overall culture, the skillsets of your associates, their buy-in, and their capacity to understand the why, what, and how. Second, we have the process side, which enables you to define and

analyze your measures within a context. Third, we have the technology side, which makes measurement feasible. Without an efficient and natural way to capture lots of raw low level data and then use computing power to aggregate, slice and dice, analyze, and interpret the data, most measurement programs die from their own excessive heaviness.

One of the most profound things that I've learned while working in a product company for the past 2 years is that you have to deploy change in such a way that all three of these operate together. Trying to implement technology without enabling the people or having a process basis for what you're trying to automate will lead to failure. Trying to put measures in with a great process and with a great technology, but without training people and helping people understand and institutionalize what we're trying to do will also fail.

CAI: Do you have any advice for people that are getting started? What are some things that people can do right away to start making a difference?

LAYMAN: You need to be careful about planning more than you can deliver. You need to run these initiatives like any well-run project. Think about the barriers that you are going to face and then build a realistic plan.

However, I'm also a big advocate of balancing careful planning with solving problems quickly. We're in a world where things are changing rapidly. If we want to improve the way organizations do things, we need to do it as rapidly as possible. We process improvement professionals need to learn from the agile community and adopt iterative approaches that will produce tangible results along the way.

My advice would be to run things with rigor as you would in any project. Expect deliverables, expect results and question proceedings if you're not getting value every step of the way.

Questions? Suggestions? Comments? Please contact the IT Metrics and Productivity Journal Editor at michael_milutis@compaid.com