



Presents
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Focus on Gary Gack, CEO of Six Sigma Advantage
A CAI State of the Practice Interview
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Biography of Gary Gack:

Gary Gack has over 40 years experience in the software and IT industry with extensive large-scale project and program management, including teams with over 200 developers. He has owned and managed several software/consulting businesses, and has extensive experience with software process assessments using the SEI/CMM, ISO 15504 ("Spice"), and various proprietary methods. Gary is the author of numerous articles dealing with project management, process improvement, cost accounting and metrics, and software quality assurance and he has also co-authored many Six Sigma training programs tailored to software and technology audiences. Gary is currently the CEO of Six Sigma Advantage. Our interview with Mr. Gack took place in August of 2005.

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CAI: Could you tell us a little bit about yourself, your career, and how you got to where you are today?

GARY GACK: I started off as a programmer in 1962 and progressed through a lot of different roles in the software and IT industry. I was a software architect for a while, a database consultant, a project manager, and I even owned a couple of small businesses that developed packaged software for predecessors to the PCs. Then I found myself running a division of a defense contractor, a P&L center with a couple of hundred engineers and software people, and for the next 15 years after that I worked primarily in software process improvement. Along the way I've become a Sigma Black Belt and a certified software quality engineer and I even picked up an MBA from the Wharton School. In 2000 I was one of the founders with Dave Hallowell of Six Sigma Advantage.

CAI: What is Six Sigma and how does it relate to the world of software as opposed to the world of manufacturing? Could you tell us a little about its beginnings and historical development?

GARY GACK: Six Sigma is basically a defined process for improving products and processes. As such, there are many different dimensions to it. For me, however, it all boils down to three central concepts.

Perhaps the most important concept is the notion of management by fact. We're all aware of the history of the software industry. There's been a lot of silver bullets but not a lot of dead wolves. What management by fact means is that we place more emphasis on using data that's been statistically assessed for validity and significance. Instead of letting power relationships and opinion influence our decisions we can do better by insisting on the use of facts as the primary basis for decisions.

The second very important concept behind Six Sigma is this notion of "Y" as a function of "X." In other words, "Y" is an outcome and outcomes are determined by controllable factors, which we designate with "X.". Generally speaking, however, we can't control outcomes directly. We can't turn a dial and make quality go higher or cost lower. But if we can uncover the factors that are driving our outcomes, we can get down to the controllable components or "Xs." That means understanding the relative significance of the various component "Xs" and focusing our control activities and improvement activities on those components that have proven the most influential. Six Sigma helps you get down to these fundamental component "Xs."

A third distinguishing characteristic of Six Sigma is that it consists of three primary aspects. The first aspect revolves around the deployment in an organization of an improvement process, one which entails clearly defined roles, specific roles for executives and project sponsors, black belts, green belts, yellow belts, etc. Each of those players is given very specific responsibilities and very specific training before the process for deploying Six Sigma commences. This is the change management aspect.

There is also a project aspect that is centered on a roadmap that, in certain respects, is very analogous to a software development lifecycle. The most commonly used roadmap for developing new products or processes is called "DMADV" (Define, Measure, Analyze, Design/build, Verify). Each of these phases ends with a tollgate review where the person responsible for the project meets with the project sponsor and they evaluate progress. A third roadmap of the Six Sigma methodology, known as "DMAIC" (Define, Measure, Analyze, Improve, Control) revolves around the improvement of products or processes that already exist.

Another distinguishing characteristic of Six Sigma is that it typically aims to close half the gap between an organization's current position, in respect to some particular measure of success, and what might be best in breed or best in class. In other words, Six Sigma is not looking for incremental changes. It is looking for very big changes.

CAI: It is our understanding that Six Sigma is just beginning to take hold in software and in the services sector. Do you agree with this? How do you envision the unfolding of Six Sigma within the services sector and within software?

GARY GACK: I do agree with this statement in a general sense but I would make a couple of notes. For one thing, when it comes to the service sector, most of the big

banks have been doing Six Sigma for quite some time now, almost 10 years. Organizations like Bank of America, for example, have deployed Six Sigma very widely and have reported a lot of success with it.

It's really only been over the last 5 years that we've begun to see a lot of Six Sigma traction in the software and IT world. Nevertheless, in the past 18-24 months, we've seen the rate of penetration in software and IT accelerate dramatically. I think this can be attributed to an increasing recognition that service excellence and technology excellence, in general, is extremely dependent on software and IT technology. For instance, I remember hearing a high level officer in one of the major New York banks say, several years ago, that a bank is really just a software and IT company in disguise. All of their differentiation is in their systems.

CAI: What are the key milestones software organizations pass through on their journey from having no Six Sigma program at all to achieving Six Sigma mastery?

GARY GACK: In my experience the first step is awareness and initial sponsorship - sometimes that originates inside the software or IT organization and sometimes from the outside.

The second step is a trial or pilot phase. This means that a few Six Sigma programs get executed to demonstrate initial success. This step is important since, in general, many organizations have trouble believing in Six Sigma until they actually see what it can do.

The third phase is when an organization starts to get explicit about strategic linkage. That means that the organization will start engaging top management to define the big "Y", the critical quality success factors for the business. The organization will then explicitly link its Six Sigma projects to these high level objectives. At this point, you can really focus on selecting the best people to be trained in Six Sigma. You can also institutionalize a process for selecting which projects you want to execute.

If there is a final step I would say it is represented by the complete institutionalization of Six Sigma, to the point that it almost disappears. In the end, Six Sigma just becomes the way you do business.

CAI: Can all software organizations- large and small- benefit by adopting Six Sigma practices? If not, is there anyway you could quantify for us what the actual size of an organization must be at which point Six Sigma becomes a viable strategy?

GARY GACK: In principle, Six Sigma is applicable to an organization of any size. But the reality is that if an organization can devote 3-5 people full-time to doing Six Sigma projects they've probably got enough scale to get a reasonably significant impact in a year or so. If they are not big enough to do this, Six Sigma is probably not going to

have much impact. There will simply be too many distractions. If you translate this into financial terms, it means that an organization must have 30-50 million in revenue before they can really do a whole lot with Six Sigma. There will be exceptions to this, of course. And we've seen small organizations do well with Six Sigma. But in general, the 30-50 million level is probably the threshold.

CAI: For those software organizations that have had a reasonably strong Six Sigma program and implementation, what would be your characterization- in aggregate- of the resulting improvements in terms of productivity, cost savings, and ROI?

GARY GACK: There are number of industry studies that have been conducted about the net benefit that gets produced from Six Sigma projects. What these studies say is that a black belt project that gets completed in 4-6 months will produce on average \$200,000 in net benefit. "Net benefit" means benefit above cost, and this is usually measured over a 12-24 month time period.

If a black belt has some experience, they are probably going to be doing 4-6 projects per year. So it's a rule of thumb that a million dollars in net benefit is going to be generated from each individual black belt. What this means is that most organizations will be able to break even on the initial wave. In other words, they will get enough benefit out of the first round of projects to pay for the cost of the people who get trained and the cost of the training itself.

There was an article in the March issue of iSixSigma that had a very good case study of a company called IDX. IDX is a 500 million dollar software company. They do integrated systems for the health care industry, mainly hospitals. Their Six Sigma return was about 5 times their investment. And their total benefit equated to several percentages of total sales. The IDX case study is fairly consistent with other experiences I am aware of.

CAI: For those organizations that have been successful with Six Sigma, what is it that they've been doing right? What are some of the metrics used by these organizations?

GARY GACK: In terms of what they do right, a primary critical success factor involves the level of management commitment and management involvement. Organizations where managers are just being cheerleaders and not really devoting any of their time tend to be unsuccessful. You really need to get the executives and mid-level managers engaged in this process. That means frequent and active reviews. It also means selecting the right projects and prioritizing them correctly.

Another critical success factor is the focus on leading indicators, i.e. the "X"s rather than the "Y"s. That's because the "Y"s, generally speaking, are lagging indicators whereas the "X"s are things you can control in real time. You want to focus on the "X"s

because they are going to be driving the outcomes.

For software organizations it is not that complicated. Fundamentally, if you know the duration of your projects, your defect containment rates, the cost of quality, and where your effort is going you pretty much have the measures you need to drive dramatic improvements. Unfortunately, most organizations don't have this information. The good news is it's not difficult to get.

CAI: If you had to take a domestic software organization at CMM Level 1 and recommend a generic plan of action for improvement, what would be the first 4 or 5 things that you would have them do immediately? What would you realistically expect to get out of your effort and how would you define that value in business terms?

GARY GACK: The way we usually start a deployment process is with an assessment. We go in and interview a good cross section of the organization, people at different levels of the hierarchy but also with different functional responsibilities, and we identify their perceptions about strengths and weaknesses. In the process, we find opportunities. For example, one very common finding from an assessment is that organizations are not doing software inspections. There is an enormous amount of industry data indicating that by installing inspections you can get immediate measurable benefits. You also get a head start on the gathering of measurement data that you are going to need to make other improvements.

The basic objective of an assessment is to come out with a good strong business case to support doing a pilot. Naturally, that's the next step: doing a pilot. You need a pilot so that you can develop some local conviction.

Assuming you are successful with the pilot, and you almost always are, you can then scale up. By scaling up you can, over a period of one to two years, shift something like 10-20% of total resource from maintenance to value added development.

CAI: How well does Six Sigma support other software best practices such as CMM and ITIL? To what degree can it be contrasted with these practices?

GARY GACK: In general CMM and ITIL are extremely complementary. Many of the organizations we work with are doing some combination of Six Sigma and CMM or Six Sigma and ITIL or Six Sigma and both. There are a lot of things about CMM and ITIL that combine very nicely with Six Sigma.

I think the major difference between CMM/ITIL and Six Sigma is that you can really view CMM and ITIL as being what the SEI refers to as "compliance driven." That means that if you follow these best practices you will get good results. But success, or "good results," is measured in terms of compliance with the activities. In other words, the maturity rating is based on whether or not you are doing the things that CMM or

ITIL say you should be doing. If you are, you get a good score and that becomes the definition of success.

Six Sigma, on the other hand, is *performance driven* improvement. It is going to measure outcomes and define success in financial terms. It really doesn't care what your process level is. Nevertheless, it would be hard to imagine that you could actually achieve significant financial benefit without doing at least some of the things suggested by CMM or ITIL. My point is simply that it is a different perspective. Overall, they are complementary.

CAI: So much has been made of the cost differentials between India and the U.S. What, in your opinion, are the critical success factors for a successful offshore operation? Ultimately, and over the long run, do you believe that the trend towards India will be leading the software best practices movement backwards or forwards?

GARY GACK: I see a lot of organizations going offshore out of desperation. Executive management is so frustrated with the lack of success, the cost increases, the low quality, the schedule overruns- all of this stuff that is endemic to software- that almost out of frustration they say "Let's at least save some money; if we're going to be bad lets be bad cheaper."

A lot of the organizations that go offshore are often in a pretty chaotic state to begin with. They don't have good processes in place. And if they don't have good processes in place, offshoring can quickly make things worse, especially if they offshore everything.

Nevertheless, there is great potential in offshoring. For instance, if a U.S. company is using Six Sigma and really doing a good job of understanding the voice of the customer and writing good requirements specifications then they will certainly be able to leverage the cost advantages that India has to offer, especially in their coding and testing activities. But if they are not doing a good job, it won't matter how cheap it is. If it is wrong or doesn't meet needs, being cheap isn't much of an advantage.

I'm really not sure whether the offshore trend will help us or hurt us in the long run, but my sense of it is that, probably in the near term, the offshore trend will make things worse in terms of process improvement. That's because in many instances it will be thought of as a silver bullet. So you will see people throwing chaos over the wall and of course, after some time lag, the chaos is going to come back over the wall. But in the long run, if we have good processes and good measures and we properly integrate our activities here with those of offshore contractors, I think it has a lot of potential.

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