



Atlanta SPIN

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Tom Guthrie

The Practical Application of Six Sigma to Operations



Tom Guthrie Opening the Meeting

Tom Guthrie, Vice President of IT Operations for Cox Communications, gave an experienced-based presentation on Six Sigma to another full house at Atlanta SPIN. Tom opened the presentation by emphasizing the importance of aligning Six Sigma efforts with the business drivers. The beauty of Tom's approach was that he used appropriate metrics that followed from the use of Six Sigma to accomplish this in practice.

Tom stressed that this was a pragmatic approach. It was adopted and adapted because it made bottom-line business sense. The specific implementation within his organization was not necessarily a traditional approach. For example, there was not a group assigned to drive the effort, such as an "Office of the Black Belts." Furthermore, there was not a company-wide mandate to adopt this approach. Rather, Tom had the authority to institute these changes, and

he did so because he saw the value to the business of doing so. His key objective was to incorporate metrics into the operations culture and drive his organization to genuinely manage using these.

Like nearly all managers, Tom was faced with the challenge of doing more with less. There were measurement schemes in place within the organization when Tom initiated his efforts. The key failings, however, were that these measures were not customer-focused and there wasn't a common consistent approach to their assessment within the Center. They could not be meaningfully correlated to Center performance nor did they drive behavior that led to more efficient operation over time. Numbers were being crunched, but they weren't leading to improved service or customer satisfaction.

With the right measures in place, if the Center wasn't operating at a +/- Three Sigma level (referred to as Three Sigma below), he saw customer complaints that needed to be addressed and had very real costs associated with them. Time and time again, he found that he needed to intervene to improve processes and procedures because of customer dissatisfaction. In general, once the Center was at Three Sigma on a particular metric, customer complaints in that regard became minimal.

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In short, a Three Sigma level of operation was genuinely necessary if business value was to be optimized. One key to bringing the Center to this state was to require that all Center personnel received training and became green belts. There was a cost for this training and funding had to be set in place, but it was essential for success.

Tom noted that in some cases, for example billing or payroll, the performance standard needed to be more aggressive, perhaps +/- Six Sigma, before this was the case. However, for most normal customer service processes, Three Sigma was in fact also sufficient. Tom's advice here was that an organization really needed to evaluate the costs versus benefits for moving beyond a Three Sigma level of operation.

In discussing the measures (metrics) that were set in place, Tom emphasized that while people don't like it, variation is a reality. Significant improvement consistently arises from reducing this variability. The metrics enabled the Center to understand clearly and definitively if its processes were stable and under control. The methodology of control charts became deeply ingrained over time within the Center's operation, as managers recognized how these metrics correlated with customer satisfaction and led to less damage control and rework.

Tom took a specific example of the computation of a golf handicap to illustrate the ideas he was discussing, and how they played out in practice. A key point was that consistency was as or more important than the average actual result. A person who regularly hits shorter, and perhaps a bit off the fairway, will do better than a person who hits a terrific drive one time, is on the fairway another time, but then is badly off in the rough the next time. When this is applied to the computation of a golf handicap, where variability is not fundamentally considered but rather averages are computed, the value derived can be misleading. The calculated handicap (average-centric) is significantly less, and suggests the golfer is a better player, than the actual statistical capability (variation-centric). The consequence is that the performance is presumed to be better than it is.

Translate these same ideas into a business setting and we can find ourselves in a world where the numbers look good while the customers are complaining. Tom captured this insight by observing that what customers experience is variation, not averages. A call center with the same average but much less variation will provide materially better customer service and accordingly less complaints.

At Cox Communications, what Tom drove his organization to do was to look at metrics that directly translated into the customer's experience, for example the percentage of customer reports that were fully resolved in the first call from the customer. The organization had been looking at Service Level Automation (average-centric) measures and whether they were met or not, and how they had changed from month to month. The variation-centric metrics approach enabled the managers to begin to see whether their processes were under control or not. He also noted that it was helpful to frame metrics from a positive slant, where higher measures reflected better performance.

Furthermore, if a process is under control, it becomes clear how efficiently the operation is being done. For example, a process could be under control but not at Three Sigma. The metrics can then provide a meaningful gauge for how successful any introduced process changes really are. Furthermore, the cost of quality is calculable and Tom gave two examples where an incentive was offered given this knowledge. In one example, an external vendor was not meeting the quality level that the Center needed. An incentive was established if the vendor team could hit the needed mark. The vendor quickly found ways to do this; pocketed the incentive; and the Center significantly reduced its overall costs despite the additional payout. In a second internal situation, the responsible team was offered an incentive if a seriously flagging measure could be sufficiently improved. Initial team steps addressed the "low hanging fruit" to improve performance; however, this was not sufficient to reach the desired goal. It became clear that the path to ultimate success required both working harder as well as working smarter, which translated to finding some more creative ways to improve their processes. This is still a work in progress, with the team currently looking to identify changes in work ownership that will enable them to meet the challenge and receive the incentive.

The results and changes that Tom described were not achieved overnight. It took some considerable time to get the entire team on board and trained to work with the appropriate metrics. Tom essentially led these efforts early in the effort, no surprise given the fundamental culture change he was driving in the organization. As this approach took root and matured within the organization, Tom was able to depend on his managers and analysts to handle things he once needed to be engaged in. Today he is pleased to be periodically interrupted by managers showing him the control charts for their groups and explaining what they demonstrate. Furthermore, his managers now deal with him with hard data and metrics rather than anecdotal information.

If you are interested in more detail, the presentation slides can be found at www.atlantaspin.org/meetinginfo.htm.



Recent News from the Software Engineering Institute

[2006 SEI Annual Report Published](#)

The online version of the 2006 SEI Annual Report is available at <http://www.sei.cmu.edu/annual-report/>. It describes the accomplishments of the SEI during fiscal year 2006 (October 1, 2005, through September 30, 2006). The report profiles people at the SEI whose contributions are shaping the future of software engineering. Some of the featured topics are ultra-large-scale systems, proof-carrying code, computer forensics, service-oriented architecture, future combat systems, and CMMI for Development V1.2. The report also presents information about the SEI, its staff members, and its organization, including staff accomplishments, publications, leadership positions, demographics, dissemination activities, and funding data.

To obtain a printed copy of the SEI Annual Report, contact SEI Customer Relations at [1-888-201-4479](tel:1-888-201-4479) or customer-relations@sei.cmu.edu.

[New CMMI Appraisal Systems Released](#)

The SEI Appraisal Program released a new system, the SEI Appraisal System (SAS), in October 2006. The system was designed to be useful as a tool both for appraisers as they conduct and report appraisals and for the SEI as it analyzes CMMI trends and assures the quality of CMMI appraisal results. For more information about reporting appraisal results, see <http://www.sei.cmu.edu/appraisal-program/reporting.html> .

SEI has now released a newly designed Published Appraisals Results System (PARS) based on SAS. This system allows organizational sponsors of appraisals the opportunity to publish their most recent appraisal results. The process of publication has been greatly streamlined. To read more about publication on this Web page, see <http://www.sei.cmu.edu/appraisal-program/pars.html> . Note that the link to the PARS site has been moved to <http://sas.sei.cmu.edu/pars/> .

Additionally, the Appraiser Directories have been replaced by the searchable directory at http://partner-directory.sei.cmu.edu/search_auth.cfm . This directory provides users of CMMI more information when choosing an SEI Partner to support their process improvement needs and for verifying the SEI credentials of all agents in the SEI Partner Network.

[5th Annual SEPG Australia Conference 2007 - Call for Proposals](#)

For more information on the SEPG Australia Conference 2007, visit the conference Web site: <http://www.sqi.gu.edu.au/sepgaust>

Conference Theme: "Agility and Capability" Continuing demands from the market for "better -- faster -- cheaper" software, combined with an end-use environment that is constantly in flux, have led to development of "Agile Approaches" to software development that, at first glance, seem to be incompatible with the use of capability maturity models that in the common view are seen as document driven and heavily bureaucratic. In parallel with this is the increasing emphasis on the need for agility, not just in the development process, but in the whole management approach for the enterprise -- the "Agile Organization". As understanding of the synergies between agility and capability have evolved, it is increasingly seen that there is no necessary conflict, but rather a potential for accord that draws on the strengths of both approaches, resulting in better products achieved more consistently. The SEPG(SM) Australia Conference in 2007 seeks experiences from industry identifying the challenges, implementation results and benefits of combining agility and capability in the development of complex systems.

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Process Improvement Sites:

Software Engineering Information Repository

<http://seir.sei.cmu.edu>, has over 30,000 registered users and is a forum used to contribute and exchange information about software engineering improvement activities, including CMMI.

The CMMI Process Improvement Yahoo! discussion group

http://groups.yahoo.com/group/cmmi_process_improvement/ is a forum used to contribute and exchange ideas about CMMI-based improvement.

BSCW Shared Workspace <https://bscw.sei.cmu.edu/pub/bscw.cgi/0/79783> is a forum used to contribute and exchange CMMI-related materials.

Information courtesy of SEI Customer Relations. Find out more about SEI Membership online at www.sei.cmu.edu/membership
customer-relations@sei.cmu.edu

About Atlanta SPIN

The Atlanta SPIN organization was chartered in 1991. This group has been a force for software process improvement in the Atlanta area since then. The organization has a growing membership list that currently numbers 850+ members. The group typically meets every third Wednesday of the month. Our meetings typically attract audiences of 40 – 50 people. These meetings provide a forum for like-minded people, interested in learning from others and sharing their own experiences. There is time allowed before and after the meeting for networking among the participants, including a review from the audience of any job openings that are available. The Board, through its work with Sponsors, ensures that food and drinks are also available at no cost to the membership.

Ron Wojcik, editor