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Software quality assurance suffers due to cynical staffing

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Why is it so very difficult to staff the software quality assurance with the right person?

After researching on this question for many years, **Mr Raghav S. Nandyal**, author of *'Making Sense of Software Quality Assurance'* (www.tatamcgrawhill.com) comes up with an answer: "The root cause of this problem, I find, lies much deeper in an organisational idiosyncrasy linked to ineffective staffing which can at best be described as a bizarre and a cynical approach to staffing software quality assurance – 'staff it with the non-performers'!"

Such thinking, he says, stems from a misplaced reasoning abetted by a wrong compensation system in which fire fighting is considered glamorous, whereas preventing fire is not.

Software quality assurance is a multifaceted function with a significant strategic importance, argues Mr Nandyal, in the course of a recent e-mail interaction with *Business Line*.

"Its primary responsibilities are to effect holistic and balanced process improvements, to retain institutional or organisational memory of execution, and to periodically use a structured diagnostic mechanism such as an appraisal or an audit to reinforce management commitment to the vision of excellence in execution."

Excerpts from the interview.

What, according to you, are the much-wanted skills in software quality assurance?

To be a successful software quality assurance professional, one needs to display a keen and sharp intellect in a range of organisational development and process management competencies.

I would also conclude that only those well rounded individuals who have successfully served in all project capacities and positions – having graduated from a test engineer to a software developer, to a project leader, to a project manager, and having managed business engagements while making positive contributions to process improvement – become eligible to assume the role and function of a software quality assurance professional.

Of course, every position in an organisation competes for the best talent available. Yet, an organisation has a lot to lose from a weak software quality assurance function, given its multi-dimensional make-up.

Are there different certification courses available for wannabe software quality assurers? How expensive are these?

The most recognised certification for a software quality appraiser is defined by the Software Engineering Institute within its SCAMPI Appraiser authorisation program. The prerequisites and the process of gaining recognition as a SCAMPI Appraiser are very involved and cumbersome.

The training cost alone up to completing the SCAMPI Lead Appraiser training adds up to a total of about $15,000. The three training programs that are required are the SEI Authorised Introduction to CMMI or People CMM, Intermediate Concepts of CMMI or People CMM, and the SCAMPI Lead Appraiser Training.

To gain the prerequisites and the necessary experience prior to undertaking these training programs, other costs such as participating as a team member on two SCAMPI appraisals, have to be factored-in. The process of gaining and retaining the recognition as a SCAMPI appraiser also places its own demands, cost-wise.

Since October 2006, the SEI has further drawn up a distinction among appraisers within its High Maturity Lead Appraiser (HMLA) certification program. Out of a total of 476 SCAMPI appraisers today, about 26 per cent belong to the HMLA category. There are again expenses to gain this distinction and retain it.

So, as you can easily make out, the expenses to attain the SCAMPI appraiser certification or authorisation at the Software Engineering Institute are quite steep given a mix of competency and authorisation requirements. It would roughly cost an organisation upwards of $2,00,000 just to create a single SCMAPI lead appraiser from scratch.

What are CMMI and People CMM? How long are certifications valid?

Briefly, the CMMI is a well-documented model to engineer mature software processes. People CMM is very helpful to define a Competency Framework for an organisation and must be used hand-in-hand with the CMMI if one wants to build a robust organisation.

CMMI is structured to effect improvements in a localised context – to the software process, whereas the People CMM is more holistic in its approach.

People CMM is most definitely an organisational development framework. If CMMI implementation amounts to left-brain thinking, People CMM implementation is most definitely right-brain thinking! Organisations need both types of thought to reinvent themselves day after day.

Since organisational maturity cannot be built over a weekend retreat, both models approach the process of growing process and workforce maturity in measured steps, incrementally. There is therefore a characterisation of maturity into five degrees of freedom, Level 1 through Level 5 maturity. In each stage of process evolution, existing practices are made robust with the inclusion of more sophisticated practices.

SCAMPI appraisals are valid for a 3-year period. Depending upon the class of SCAMPI appraisal, the manpower, cost and time required vary. Generally, it is true that SCAMPI Class C appraisals are less expensive when compared to Class B, and Class B is less expensive compared to a SCAMPI Class A.

A rough order estimate for manpower, cost and time depending upon the competencies of the lead appraiser for the three classes of appraisals, are as follows: SCAMPI C: 2 person-weeks, $10,000-15,000, 5 days; SCAMPI B: 3 person-weeks, $15,000-$20,000, 5 days; SCAMPI A: 6 person-weeks, $20,000-$25,000, 7 days.

And what is the return?

Return on this investment is a highly subjective and emotive issue. Appraisals at best tell you what the gaps in your process infrastructure are. They may even make recommendations, in the final appraisal report, as to how you should prioritise and fix these gaps. How the organisation responds to this report is entirely up to the leadership in the organisation.

If the leadership ignores the report entirely and dumps it as garbage, then the investment goes down the proverbial drain! If the leadership only addresses the symptomatic causes and not the deeper dynamic issues, then the results if anything are bound to be superficial and the benefits are likely to be

unpredictable in both the short-term and long-term.

If the leadership takes these appraisal recommendations seriously and embarks on a follow-up process improvement program with renewed vigour, then I would believe that the gains from making this investment would show up manifold – both quantitatively and qualitatively.

Since effective process evaluations and appraisals are a necessary prerequisite for improving both the process and product quality, I would say that well intended appraisals show dramatic returns on investment on dimensions such as employee satisfaction, customer satisfaction, project profitability, reduced cost of rework and in general paving the way for the huge profit margins posted and reported by high process maturity work cultures.

A 20-30 per cent profit margin after tax is impossible if there is no discipline in execution. What I am certain about is that, when process appraisals are done well in order to serve the business interests, and are able to highlight the problems of efficiency and leverage confronting the organisation, a deep sense of discipline is ingrained into the follow-up process action plan. There is no question about it.

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