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What does it takes to be a truly world-class software development organization?

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It has now been about a decade since the nineties that we have witnessed a gradual, but a steady growth of Indian Information Technology. Over the years, the landscape has changed so dramatically that software development organizations have gone from a pure body-shopping mode to one of “*capability-buildup mode*”. Organizations have become sensitive to the fact that they need world-class development methods if they have to stay and thrive in this business. And in order to have truly world-class development methods, they will need to deploy world-class tools, get highly energetic, talented individuals and a have system of coordinated action for continuous renewal. The millennium year however has begun with one of the most popular market places for Indian software, reeling under the pressures of a recession. The other better-known industrial economy, that of Japan is also facing troubled financial times. Does this global market squeeze portend trouble and a gradual shrinking of the Indian IT industry or, is this slowdown an opportunity for it to rise like the legendary Phoenix? While this question may be difficult to answer, the slowdown has most definitely given an opportunity for the Indian IT industry to sit back and study its real core competencies and develop a strategy to advance the state of software practice.

Let me set the stage for you before we begin. The article is experiential. It is based on what I have personally been exposed to during my early days at Motorola India, the first commercial organization to be assessed at SW-CMM Level 5 in the world. SW-CMM Level 5 is the highest rating for software engineering and management excellence. I must mention my mentor and the visionary leader Mr. George Smith under whose tutelage I had the good fortune to grow. I have since strived to demonstrate these traits while executing in my management responsibility in later parts of my professional life - as a coach and lead assessor during the makings of a SW-CMM Level 5 of an Indian subsidiary of a US based multinational. Since the success got repeated, I am confident that what I am about to say, works! I will share what some of the truly world-class software development organizations *must* have as built in system of methods and practices.

To a large degree the passion to excel must exist and should be so intense that, everything else should be placed at the mercy of the primary objective – that of demonstrating

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superior performance. And as they say, “it needs steam to move the pistons of a steam engine, boiling water will not do”. That is the highly intrinsic motivational levels of a truly world-class software development organization. If the system is broken, it does not matter who is responsible for it; it has to be fixed immediately and effectively. So, now let us look at the most essential ingredients that are necessary for making a truly world-class software organization and how this slow down can be best utilized to set the Eugene stables right.

Establish a strong visionary leadership council by evaluating core competencies:

There are numerous books and opinions on what leadership constitutes. Most of them have missed the point in my opinion. The single most important characteristic that distinguishes visionary leadership from the other styles is – when such a council is used as a sounding board for your ideas, the input comes back to you “*value added manifold*” with much brilliance. The process of building trust is often based on frank and open communication which is always firm. Just the mere presence of such a council will make a huge difference to the creation of a world-class organization. Often, people who belong in the council are also fun to be with. A person who can be such a value-adding sounding board is an ideal choice to represent in the visionary leadership council. They often know the intrinsic talents available in their organizations and keep an eye on the more promising individuals in the organization. A software organization with the good fortune of having such role models can manage transformation and change, in crazy times in a very memorable way. I remember an occasion during my days at Motorola, where there was a particular project that seemed to have so many issues with getting to stabilize the requirements and move on with life. To put it mildly, we were extremely frustrated. We had a management review session where we brought the issues on the project to the attention of Mr. Smith. He heard all points of view for over 2 hours and then brought out the accountability structure for the project – who does what and who is responsible for what. After the meeting was over, he walked up to my cubicle and said – “Why don’t you publish a paper?” Not only did this paper get published, this paper was the motherhood of two award-winning tools at the Motorola Tools Fair. This one incident has since changed the whole complexion of my professional life! Truly visionary leaders make a big difference to individual lives. They facilitate the so very crucial “internal learning process” that eventually plays out as the single-most determining factor to be a world-class organization.

Establish highly talented and empowered leadership at all levels:

When you have a strong visionary leadership council at the top, leadership across all levels is a natural extension within the rest of the organization. Capability of a world-class organization is actually the collective capability of this chain of leadership. Each one of these leaders is a champion in their own way and further contributes to the larger organizational objectives without being bothered about where they actually live on the organizational chart! They are flexible in adopting best practices, adapting to changes

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that are necessary and modifying their behavior to newer circumstances. He that owns a compass and can read it correctly all the time is the right choice for a leader. The finesse with which they team up, organize and reorganize is demonstrated by their ability to draw out the best performance in each other. They are also sensitive to the fact that their performance operates in a broadband ranging from poor to exceptional! There is no single value for their performance measure. A combination of factors determines their individual performance capability and they ensure that they draw out their best performance from leveraging upon their intrinsic talents.

Build teams of people who live by a “can-do” attitude and are all Quality Champions:

In the present day IT set up which requires extremely technical people who understand technology, the days of a “traditional” Quality Manager is over! A technocrat who can define the boundaries for the core competencies of an organization is the best choice for today’s Quality Manager. Having such a person within an organization and mentor the professional teams is a definite advantage. And then it takes a whole lot of a “can-do” attitude among people who are inspired to live out the dreams of their leaders. For people to be effective followers, they must have high self-esteem and be highly geared to accepting responsibilities. The spirit often is – the job is not done until we accomplish what we set out to accomplish! There is a strong sense of sharing of lessons learnt and they often rewrite the rules of engagement and the process if they feel they no longer serve the purpose. When each individual assumes the role of a Quality champion, Quality does not happen by chance but gets designed into the probability of success. It is under such conditions alone, that *Quality Is Free*. Otherwise, quality is everybody’s pain in the neck! In such an orientation, not only does everybody think about “*what*” they do, but they also reflect upon “*how*” they do and make the day-to-day changes that are necessary for optimal performance. It will be considered taboo to get a work-product to go through formal peer review, if the author of the work product feels it is not up to the mark! Extreme care is exercised while creating the intermediate work products that become inputs to phases later in the life cycle, to ensure that the hand-off is clean – clean room software engineering. The means employed are as important as the end objectives. They are naturally oriented to continuous exploration of best practices and force a change when things get too comfortable. The exhibited characteristic of such teams of individuals is that they take ideas from inception to closure by brainstorming and rapid prototyping. They normally visualize through the customer’s eye by keeping a customer perspective in all of their peer reviews. Their sense of pride in their work and the organizational affiliations to which they belong is often exhibited in the way they dress, in the way they carry themselves and the manner in which they hand out their business cards!

An organizational sponsor who is supportive of proactive growth:

Ideas that have business value are often actively sought by the organization and rewarded suitably. Sponsorship is in touch with everything that is happening in the organization.

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Sponsors are found communicating their dreams with clear deadlines, share their vision for the Company, coordinate action and facilitate collective understanding. The sponsor makes sure that process improvement is everybody's job – a community affair. There is clear focus on core competency and the will to do whatever it takes to support their growth. If building a world-class organization were cheap, quick and easy every organization would have been one. The thing that will differentiate the chaff from the grain is the essential ingredient – money. Since it is in limited supply, it has to be spent wisely in the creation of what I call product and technology innovation centers. This embodiment is truly the hallmark of a SW-CMM level 5 organization. An examination of the R&D spending of any Indian IT Company will reveal that, the problem of deftness and clever positioning is lacking because this investment is an insignificant percentage of the total revenues. This alone substantiates the claim I make that Indian IT industry is functioning in a non-learning, non-creative oriented environment. The sponsor must show keen interest in – “From where is my next \$10 or \$10 million going to come from rather than how will the \$10 or \$10 million I have in hand be protected”! Invariably, since protecting the bird in hand is what is being followed, the initiative that gets the axe 9 out of 10 times is – process improvement! When, in fact they should plough more money into it! You can only improve your process and increase the probability of putting the best product out. In the coming days, what will become crucial for the Indian IT establishment is to project a face of “innovative excellence”. Innovate or perish will be the battle cry and it is through the establishment of such product and technology innovation centers, will the blossoming of the Indian IT industry into a world-class organization bear fruits of labor.

Establish gymnasiums for continuous personal competency development:

Setting up gymnasiums and learning laboratories to exercise the brains of individuals where leadership and management lessons are taught by recognized Gurus and internal mentors is an absolute must. Personal competency development is oriented toward building organizational core competencies. Personal competency development plans have to be laid out with a – stick to your knitting approach. The pace with which technology changes; one is often tempted to keep moving to newer and newer stuff. That has been the single most important contributor to mediocrity and dilution. The only meaningful way to overcome the impact from this shifting terrain is to make sure that organizational core competencies have a long-term focus. Most world-class organizations have individuals at all levels pursuing personal learning as an obsession. In other words, to be competitive, *train, train, train and train.*



About Raghav Nandyal

Raghav S. Nandyal is an SEI authorized Lead Assessor on Software and People CMM. He has numerous years of software engineering and management experience and as prime consultant and assessor on Software and People-CMM based process improvement initiatives in leading multinationals.

As the founding CEO and Chairman of the Board, SITARA Technologies Pvt. Ltd., he is actively involved in enhancing the state of software practice and management through strategic management consulting using the most advanced software management paradigms. SITARA is a transition partner with the Software Engineering Institute on the CMMI-SE/SW and SCAMPISM method. SITARA's Strategic Management Repository includes some of the best and world-class practices of the most admired companies such as Motorola, NYNEX, and LG-EDS Systems where he spent significant years as an employee and a student of management excellence.

His current research interests in software management are in mitigating software risks and building self-sustaining software process improvement programs in development environments working on emerging technologies. He has a number of technical papers in international conferences to his credit. He is on the international review panel for IEEE Software in the areas of Software Engineering and has guided students as an external guide on their Master's project work. He is a donor alumnus of Indian Institute of Science, Bangalore.

As Chief Process And Quality Officer, Intelligroup, Inc. he was responsible for creating and innovating process & product solutions addressing their core competencies in ASP+, ERP and Internet based application development. He mentored and coached the Company on software and people process improvement initiatives – and created a Level 5 Software Process infrastructure in the shortest recorded timeframe of 12 months, while transitioning them through Level 3 in 8 months from an ISO 9000.

He held several senior management positions at LG Software Development Center (India) ranging from program manager to Head-Emerging Technologies. He was the prime consultant to LG-EDS Systems, Inc. a 2000 person company in South Korea where as a consultant to the senior management of LG-EDS Systems, Inc., he mentored and coached the Quality Management Team in addition to facilitating outsourcing of project development activities to LGSi.

He worked as senior manager at NYNEX Science and Technology Asia (P) Ltd., in their Bangkok and New York locations. He was responsible for project management and user acceptance testing of several software modules involving intelligent field access service of telephony applications. He facilitated the software process improvement program based on the SEI-CMM model at NYNEX S&T. He was a Research Assistant at Illinois Institute of Technology during his Master of Science program in Electrical and Computer Engineering and a project associate in the VLSI CAD Laboratory at Indian Institute of Science, Bangalore before joining Motorola. He worked in a software engineering position at Motorola India Electronics Pvt. Ltd., where he developed systems software using structured methods for the Motorola Cellular Infrastructure Group. He also published several papers and developed innovative award winning software tools in an attempt to automate the software development life cycle.

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