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Is IT Quality In Crisis?

Crisis, what Crisis?

I don't think of myself as an alarmist. I've learnt the hard way that bad things happen and getting worked up about them or panicking does little to change that. It uses up vital energies that are best utilised on finding solutions to the problems.

But I am inexorably being driven towards the fact that there is a crisis emerging in IT Quality of monstrous proportions and it's a crisis that will have an impact on everyone who works in IT and who has to rely on IT to run their business. It is a global crisis, and its effects are already being seen, and have been for some years.

In recent months we have seen some of the mainstays of the quality movement plagued with problems. Toyota stands out as the prime example, but other 'quality' organisations have also seen quality issues on a scale not generally associated with them. I'm thinking of companies like Apple whose 27inch iMac has been the subject of much criticism by its customers. These two companies are regularly used as examples of businesses at the forefront of successful "right-shifting". "Right-shifting" is the term used for making improvements in the value delivered from software intensive systems to the business customer, the consumer, and the tax-payer.

We've also seen the predictable types of quality failure associated with ruthless deskilling of the organisation through job cuts, a notable event being the failure of EDS/HP owned mainframes at the Royal Bank of Scotland. Not only did the primary system collapse for over 12 hours, due to maintenance fixes not being installed because of lack of qualified staff, but the backup failed for the same reasons.

These are high profile aspects of the Quality Crisis currently facing IT. Companies like Apple and Toyota are cash rich and resilient enough to absorb their short term pain. They also have the internal knowledge and expertise to come out stronger as a result of their problems. Organisations such as HP that have massively reduced headcount are likely to find that their efforts to protect profit in the recession will put them in a position where they will be less able to compete as the market picks up and they no longer have the staff and knowledge required to rebuild some of their core competencies.

What you don't read about in the daily press are the organisations which are decimating their quality departments in favour of automated back-end testing tools or the businesses which have replaced their improvement programmes with aggressive staff reductions to reduce short-term profit loss rather than focus on long term survival post recession. You don't read about the loss of identity of quality departments as the concept of quality assurance becomes more and more synonymous with Testing. You don't read about the academic discussions on the LinkedIn forums about the difference between Software Quality Assurance and Quality Control. And what I very rarely read about, anywhere, are any signs of concern by quality practitioners, and that is what gives me the greatest cause of concern.

Three Underlying Problems

I believe that there are three underlying problems that are contributing to the crisis in IT Quality and the decline of the role of the quality team in IT businesses. These are:

* ✶ Poor Perception - the perception by management and staff regarding the role and value of the quality team within the organisation

* ✶ Outdated Attitudes - the apparent lack of ambition of quality people to rise up the management chain in such a way that they can genuinely make things better

✳   Abuse of Language - referring to the IT industry's habit of using real world

terminology and downgrading it through constant misuse or reinvention

While it is easy to sit back and blame boardroom executives for all the problems, quality people must also hold themselves somewhat accountable for the situation they now find themselves in. These three contributing sicknesses have been allowed to fester away in organisations and we now find ourselves in a position where if we don't stop the rot, the foundations of quality will completely collapse.

Poor Perception

I worked in the software development business for nearly ten years before I really had any concept of Quality Management within the industry. In the three organisations I joined after graduating in 1984, one was a multi-million pound autonomous group within a large US Merchant bank, one was a start-up supplying financial data to the Unit Trust and Insurance Fund world, and the third was the largest credit rating company in the world at the time. None of these had anything vaguely resembling a Quality Management System let alone a quality department. The lifecycle in all cases was design, code, test, release and fix, but not necessarily in that order and most of the managers, including the development managers had domain expertise rather than software engineering or even project management expertise. These were all truly recognisable, in today's terms, as CMMI Level 1 organisations. At the time, on reflection, it didn't matter too much as they were all at the fore-front of their game as there was virtually no competition. Today, two of the businesses no longer exist, and the third became part of a global merger in order to maintain its market lead.

It wasn't until I joined a global outsourcing enterprise that I really began to understand what quality was really about. To be fair, I had been tasked to introduce some basic development methods and quality processes in my previous role but despite some successes,

the organisational culture was not geared up for such change and there was unwillingness to adopt such changes at all levels of staff and management alike.

But now I was seeing industrial strength quality - a fifteen volume local QMS (supported by UK, European and Corporate QMSs), project and process audits based on ISO 9000 and TickIT standards, and dedicated quality staff. These were the boom years for quality. SW-CMM was a management goal, on-line web-based quality management systems were the next best thing, and quality was at the forefront of every executive presentation both internally and externally. Now, twelve years since I joined, and four years since leaving, virtually nothing remains other than the skeleton crews required to maintain ISO certification.

What went wrong? In those boom years the quality teams almost universally failed to shake off the perception of them. The perceptions of interference, intervention in the creative process, added overhead cost, lack of value, resistance to change and a nanny state requirement to comply with excessive process and procedure. In other words, everything we detest about bureaucracy. Sadly it was a perception shared by both management and staff. Quality was a necessary evil, and was only tolerated because it was generally contractually required to do business.

Unfortunately perception is the reverse of reputation which takes years to build and seconds to destroy. Perception grows and grows until it is virtually impossible to change without doing something very radical. Traditionally conservative quality staff elected not to rock the boat until it was too late, but ultimately got swept away in the inevitable tidal wave associated with recession.

Of course the sad truth was that much of this perception was valid. A fifteen volume local quality management system is not necessarily a good thing in an organisation constantly failing to deliver on time and within budget. Much of the material was outdated, ir-

relevant, and in some cases actually wrong. But the QMS had its own maintenance lifecycle, and only a few things could be fixed in each cycle. Audits were often conducted as pure documentation compliance activities, without helping projects or staff understand how to improve in material terms and completely failing to be proactive at finding potential downstream issues. Data collection served little purpose other than to prove that the job was being done. Quality briefings were dull and tedious and poorly attended without a three line whip.

There were some places and some people who were looking forward to a better future: a leaner and more value added future (before these terms became management speak). Unfortunately we were often too slow, and corporate machinations often stopped initiatives before they were able to demonstrate results. In other places, old habits were much harder to kill, and leaner systems were being dragged down by cottage industries creating new local processes and procedures to replace the ones being stripped out at the higher levels.

So ultimately the "quality revolution" was crushed and died under the weight of negative perception.

Outdated Attitudes

For years IT quality staff have taken relatively passive roles in the running of the organisation. They do what is asked or expected of them, and they facilitate quality activities within the business; performing reviews, undertaking audits, assisting testing teams, and participating in quality or process improvement initiatives.

What I very rarely see in IT organisations is the quality team working in a true management position and leading from the front. I often meet Chief Executives or Heads of Department who tell me that they started off in the quality team. But in many large organi-

sations, lots of new starts end up in the quality department, or as the quality representative on a project because no-one knows what else to do with them, so that doesn't usually impress me too much. I also rarely seem to find senior quality staff with real management experience. Individuals seem to percolate into senior positions within their departments through length of service, but, crucially, they fail to be promoted to manage the big quality initiatives for which senior managers bring in the big hitters. Once again, quality staff are used in a passive advisory or consultative capacity but have little real clout in the decision making process.

I tend to think of IT quality as being split into old school and new school and I think some of the distinction lies in how individuals position themselves. I think of old school quality staff as being just that - Quality staff. They choose or retain job titles such as Quality Specialist or Quality Manager. They are experts in their chosen subject and can recite standards and quote ISO paragraph and clause numbers. They know every code for every category of non-compliance in their systems. Some of them come from a development background, but very few have any management experience other than team leading. These are the through and through quality people. To a certain extent, I think the "QA" testing professional also fits into this school. Although they are technically adept they often only see the technical aspects of testing, and are oblivious to the other aspects of quality and process management.

New school quality folk don't label themselves with the quality tag. They think of themselves more as change agents, visionaries, evangelists and leaders. They see the bigger picture and do not feel constrained by the details of models or standards or even limited by the disciplines of their own industry. They look elsewhere for enlightenment and good practice. They almost certainly have management experience and have held numerous different roles but are still passionate about doing things right and making a difference.

In summary, old school practitioners do things while new school folk make things happen. People who truly believe that quality is the key to improvement need to become more forward looking and thinking and more aggressive in the way they behave and promote their beliefs. They need to add to their arsenal of tools, techniques and skill sets and move out of their comfort zones, whilst retaining and improving their existing expertise.

Abuse of Language

For some years I've been increasingly concerned about Quality terminology and how it is chronically abused in the IT industry and in software development in particular. Somehow in software development, the term quality is now generally taken to mean testing, and worse still it is often limited to testing after the event. In other words, once the code has been written and integrated, a group of people run a batch of test scripts using an automated tool and look for problems. Without wanting to belittle the role of the testing team, this is not quality or quality assurance. This is testing, and it is a part of the software development lifecycle just like analysis, design and build phases. Any book on Software Engineering will explain this. Nowhere is it written that quality equals testing. You don't test for quality, you build quality into the system and you build an organisation based on quality principles. Once you move away from those central tenets you may as well pack up and go home.

But look through the job adverts on any recruitment page and you will find positions such as Quality Engineer, Quality Assurance Manager, and in ninety percent of cases the associated job description talks about testing; developing test scripts, using testing tools, and more often than not having ISEB qualifications. At one large organisation they used to run testing bootcamps for graduates, which turning them into certified testers in four weeks. In my opinion, any organisation that works in such a fashion is certifiable itself.

If you read the ISO 9000 set of standards, which despite its faults, is still a reasonable place to start in a discussion about quality, you'll read about Quality Management which incorporates Planning, Control, Assurance, and Improvement. You really have to dig quite deep into the standards before you get to any serious mention of testing, and by that time you should have worked out that it is one of a set of tools available to an organisation, along with reviews, audits, inspections, and other verification and validation methods.

At the heart of these issues is the failure of the organisation to really address what it is trying to achieve in terms of its quality objectives. If the organisation sets itself objectives it needs to consider how to achieve those objectives, and it's very rare for one activity to work in isolation. Different methods and techniques (and tools where appropriate) need to be considered, and each needs to be evaluated from a value and cost benefit perspective. This is where the Planning element of Quality Management fits it. It's not enough to create a Test Plan or an Audit Schedule. A Quality Plan needs to align to organisational/ programme/project objectives and customer requirements and it needs thought and expertise. If we, as an industry, continue to devalue the role of Quality Management in favour of Quality Assurance, namely Testing, we are heading straight into a downward spiral of project and programme failure and ultimately the failure of the business itself.

Fixing the Issues

1. Take the Initiative - It's vital that quality teams take the initiative and start to adopt a more collaborative approach to quality by working with project teams and management to establish what is really important to them. Doing things the way you've always done them doesn't make them right or useful in a modern environment. Engage with your quality lead and offer suggestions on how you can make your activities more valuable

2. Become more generalised - I've worked with many quality staff who have no first hand experience of the domain in which they operate. They audit programmer and project

managers but have never been either. I remember being at a European quality meeting some years ago where I was the only person in the room who had any management experience. Without first hand understanding of the problems faced by the people you are dealing with you cannot realistically expect them to take you or your suggestions seriously. Quality staff must stop thinking of themselves as purely quality staff and get stronger exposure to the roles and functions they work with, especially the business aspects.

3. End the Checklist Mentality - The best auditors and reviewers use checklists to guide them and help them remember key areas for investigation. If they find a particular area of concern during the audit or review they will throw away the checklist and pursue that matter more rigorously. (In order to do this, they have already followed step 2 above!). Ticking boxes is fine for a pure compliance audit and reviews but this type of activity does little to help improve an organisation, rather it serves as a stick to berate delinquent areas of the organisation.

4. Proffer Solutions - I've seen so many quality reports highlighting issues, deficiencies and non-conformances but do nothing to help the target subject understand or fix the problem. In the case of some non-conformances, it makes little sense to fix them anyway, because the moment has passed, or the cost may be too high in terms of the return. Quality staff will be taken far more seriously if they can offer explanations as to why something is a non-conformance, and more crucially why a non-conformance may cause a problem later on in the lifecycle, in which case they should be able to proffer a solution, or better still, help the subject derive their own solution. In this way you become more of a coach and a collaborator and less of a witch hunter

5. Get Management Engaged and Involved - Quality activities in any organisation are always going to be at risk if they take place but no-one takes any notice of them. Executives and middle managers, only get interested when something nasty hits the fan.

These situations generate knee-jerk reactions such as a review of quality activities (usually too localised), a commitment to prevention rather than cure, or policy word changes (but without enforcement), but these tend to be short lived and ineffective actions which fail to address the real problems in the same way that a sticking plaster cannot fix a ruptured artery.

In almost every case where I have seen little real management commitment to quality, it turns out that managers have no realistic or measurable objectives set around quality. There are often collective objectives like "Maintain ISO 9000 compliance" or "Achieve level 3 of CMMI by quarter 3 next year" but these are fairly meaningless at the best of times. They are also Boolean objectives; "Achieved" or "Not Achieved". More useful quality related objectives might be "Improve resolution time of quality issues by 20%" or "Participate in 50% of quality incident reviews". Of course, this makes the assumption that quality reviews take place and quality issues are identified, but crucially they put the onus of responsibility onto individual managers and bring them into direct contact with quality activities. Failure to participate will have an impact on their bonus or salary review.

6. Use Data Wisely - Of course, an organisation that has a quality department almost certainly collects lots of data. The trouble is that this is often all that happens. Data collection is of no value unless the business actually does something with the data, and when I talk of the business in this context, I'm referring to the decision makers, not just the data collection team. In many cases the data collected is worthless even if anyone wanted to use it because it doesn't actually address any direct business requirements, or because the quality of the data is so poor that it is of no value.

Historically, data collection, analysis and data based decision making has been seen as a good thing. Sadly, many organisations collect data that they think they need collect,

without understanding what it is to be used for, who it is to be used by, or how it is going to be used. Vast amounts of time are spent providing numbers because the system says you must. Often the same numbers are demanded by different people, often in different formats and at different times. At one company I worked for we had three time recording systems, one electronic and two paper based (all of which required predicted clock-in and out times as well as actuals). To my knowledge only one of these was actually used to determine anything of any importance (namely overtime pay!), but that was the way things were done.

Regardless of whether they like it or not, executives and managers need good diverse data to make good decisions. There are still an extraordinary number of managers who are either consciously or subconsciously oblivious to this fact. The real problem is that too managers believe that the only data of any importance is financial data because they are measured on their ability to manage P&Ls or to meet their financial targets. What they fail to understand is that financial data alone is useless in getting to the root cause of problems and trying to resolve them. For that, they need other information that can then be used in the context of the financial data to better understand why there are issues and what their causes are.

In too many organisations I've seen lots of potentially useful quality data wasted because of a lack of imagination both on the part of the quality team and that of management. Data is presented in drab and meaningless charts which really only try to demonstrate that the quality team is doing stuff. At the same time managers fail to ask the necessary questions to be able to understand how quality data can help them improve their business.

Quality managers need to initiate the dialogue with management and coach them into understanding how they can make data work for them. Think of different ways to present

the data, and think of useful things to say about it. Quality data taken out of context is meaningless. For example present audit or defect data alongside financial data to highlight potential correlations. Encourage managers to ask the difficult questions about your improvement or quality programmes, and be prepared to lift yourselves out of the status quo. Only then will management begin to sit up and take notice.

Conclusion

Most quality staff are hard working and passionate individuals who are prevented from achieving greater things because the system itself is broken, and quality is seen as a necessary evil rather than a value add activity. This piece is not intended as a criticism of those individuals, but as a challenge to those who have the power to make things better. So really it is a challenge to everyone who works in the quality field and everyone else who doesn't think they do.

In this article I've tried to set out my stall and ask the question about how organisations can get the best out of their quality departments and stop the looming IT Quality Crisis from becoming a reality. We, as people how care about quality, need to continuously ask one question, namely how can we add value to the organisation through our activities? This is the question that should be on all our lips, everyday when we go to work, all day as we perform our daily activities, and we should be constantly alert and on the lookout for new ideas and concepts that we can bring to the organisation to help it help itself.

Once we have answers to the problems, it is then incumbent on us to act as thought leaders and active drivers of change. It is no longer enough to be the guardians of quality. We need to become the collective conscience of our organisations and businesses.