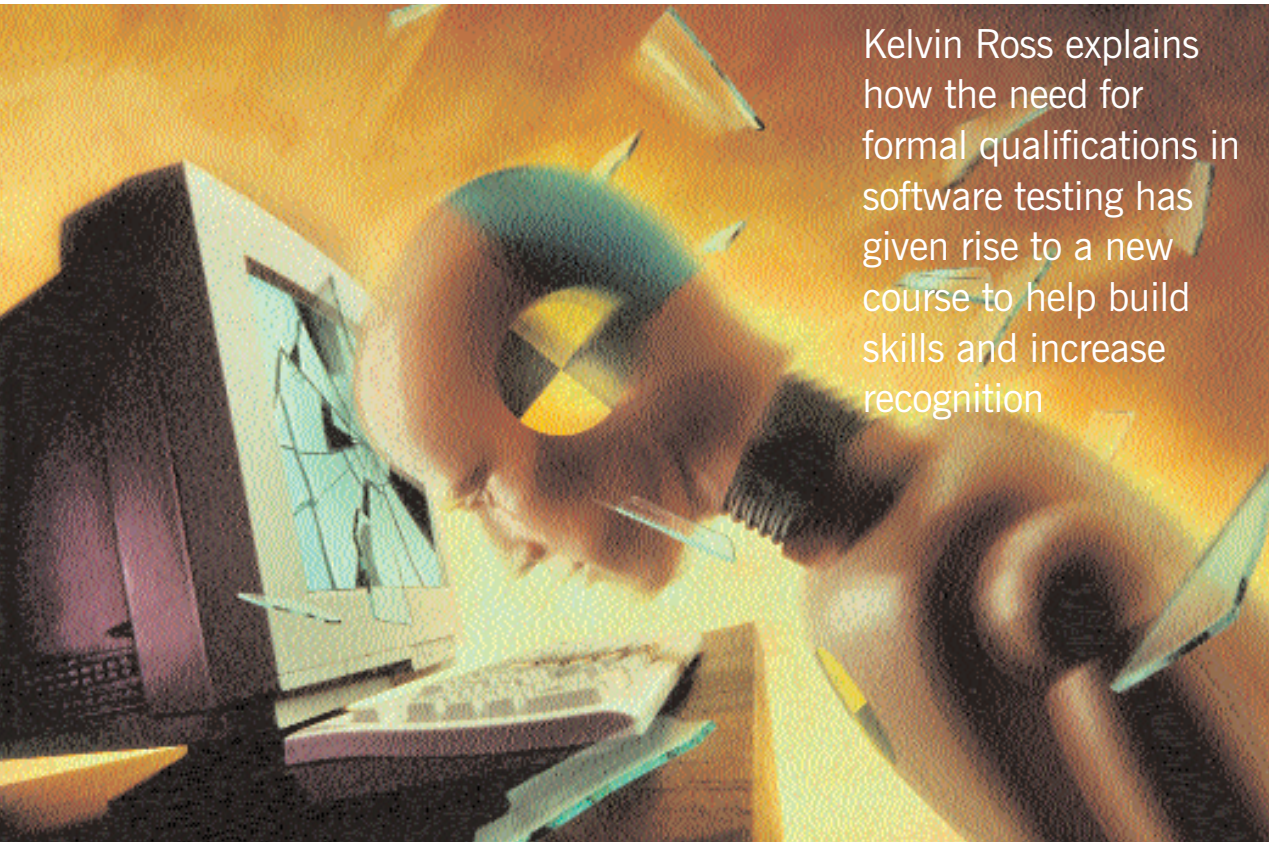


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Software Testing

from test dummies to test professionals



Kelvin Ross explains how the need for formal qualifications in software testing has given rise to a new course to help build skills and increase recognition



Dr Kelvin Ross holds a PhD in the area of configuration management and high-integrity software development. He started his IT career with DSTO and established K. J. Ross & Associates in 1997. Ross is renowned for his expertise in software testing, including shrink-wrapped software, web-based applications, and safety-critical medical, defence and transportation systems. E-mail: kelvinr@kjross.com.au

Long gone are the days when a software development organisation could get by with test dummies. You know the kind of testers, those that have no experience with testing techniques, little understanding of the software development process, and only limited experience with the technology involved.

In the past many testers were simply end-users, seconded into the development team because they had a 'knack' for breaking the system. However, with the complexities and size of modern-day applications it is becoming increasingly difficult to master testing.

Using ad-hoc manual processes does not leave enough time to suitably cover the system. More structured approaches must be used, test automation needs to be adopted to increase effectiveness, and difficult

decisions must be made as to what gets tested and what is left out due to budget and schedule pressures.

In some organisations developers are assigned part-time to the testing group. These people have a good depth of technical knowledge, but often are limited by experience with testing techniques and processes. Often it is seen as a part-time role, before getting back into the development group – unfortunately in some cases it is often seen as a demotion. Without commitment to the testing role, developers will not be motivated to learn more effective techniques, to improve their processes, and undertake further training. Part-time developers in the test group will not help the team grow to increase effectiveness and efficiency through adoption



SKILLS OF A PROFESSIONAL TESTER

- ✦ Know the best places to find bugs and defects and most effective methods for uncovering them
- ✦ Know how to prioritise testing based on risk exposure

- ✦ Develop test strategies that balance testing needs against management budget and commitment
- ✦ Apply testing methodologies, processes and analysis techniques
- ✦ Possess basic technical skills to aid testing (e.g. scripting in VB/Perl/batch files), fundamentals of SQL, MS Office tools for data collation, and report generation
- ✦ Understand test automation tools and frameworks, including the advantages, disadvantages and adoption process
- ✦ Know inspection and review techniques
- ✦ Understand non-functional test issues, such as load and performance, availability, failover/recovery, compatibility, useability and security
- ✦ Manage and coordinate testing projects
- ✦ Build a test team and foster an effective test team culture
- ✦ Collect metrics and measurements to assess effectiveness of testing and quality of the product, and reporting mechanisms to inform management of outcomes
- ✦ Know approaches to improving test processes

Not everyone in the team needs to have all these skills – in fact, it would be quite uncommon to be experienced in all areas. However, there should be a strategy to ensure that a team can be assembled with a diverse cross-section of these skills.

If you are an employer, consider including these skills in the tester's position description. If your staff are lacking in some of these areas, ask yourself what it is costing your projects, and plan a strategy for increasing the skills of your existing team and/or seeking additional staff.

If you are a tester, do a quick check to see whether you have these skills, as well as experience in these areas. If you are missing some, develop a strategy to increase your skills base – you will reap the rewards.

of best practice techniques, tools and processes.

Today employers want test professionals – not test dummies. There are unique skills of testers that are highly desired by employers to make the testing process more efficient and effective. See the checklist (left) for a cross-section of the desirable skills of a test professional.

It is possible that Certified Software Testing Professionals with unique skills in test management, test automation, and load/performance testing, may increase their prospects of employment and income.

While some developers avoid the testing role, there are many that enjoy the analytical 'big picture' element of software testing. They like building automated testing frameworks to examine the system. With greater salary equity between software testing and development we see more developers migrating into testing as the financial inhibitors are disappearing.

However, even with a bright future for a career in software testing, the biggest impediment has been the lack of formal qualifications in the area. Skilled testers from a non-IT area often do not have a formal technology qualification such as an IT degree. Yet, despite sometimes many years of experience, these testers without formal qualification are bypassed for promotion in their organisation. Similarly, testers who were previously developers also lack qualifications that differentiate them as highly skilled testing specialists from those that just have 'vanilla' IT qualifications.

Until recently there were few qualification mechanisms that allowed the employer to differentiate the test professional from the test dummy. Many of the training and qualifications previously available in this area have been limited. Short courses are not extensive enough to cover the range of skills. Even university degrees often pay very little attention to testing as a specialisation.

The Certified Software Testing Professional (CSTP) program aims to build skills and increase recognition of software testers. The program is a joint initiative of Software Engineering Australia and K. J. Ross & Associates.

The CSTP program is a combination of skills development, assessment, and workplace accreditation, which qualifies graduates as test professionals and recognises their capability as a software testing specialist. The program is made up of the following:

- ✦ 11 modules of theory and hands-on practical sessions that cover the diverse range of testing skills. The modules are covered over a seven-month period, which provides the candidate with the opportunity to gradually transfer their skills into the workplace

K. J. Ross & Associates provides specialist services in software verification and validation, including test management, risk assessment and test strategy, test process improvement, test outsourcing, automated testing, load and performance testing, independent test laboratory, and training and mentoring. Visit: www.kjross.com.au

- + Exams to assess understanding of testing skills
- + An individual testing project where the candidate completes a concise, yet in-depth, analysis of a particular facet of software testing
- + Workplace assessment that determines whether the candidate undertakes their testing duties in the workplace in a way expected of a test professional

Upon completion there is also scope for obtaining further qualifications. The CSTP has been recognised by a number of universities in the form of credit for undertaking further studies

towards masters and postgraduate diplomas.

The CSTP program will commence nationally early in 2003 and will be conducted in Canberra, Melbourne, Sydney and Brisbane. This follows two successful trials in Brisbane in 2001/2002. ■

FURTHER INFORMATION

Contact S|E|A| for dates of the CSTP program. Dr Kelvin Ross is the coordinator for the CSTP program. E-mail: kelvinr@kjross.com.au



IN PROFILE: STUART MACKAY

SYSTEMS ANALYST/TEST MANAGER. COMPANY: DIALOG INFORMATION TECHNOLOGY

Software: What was your background before testing?

Stuart Mackay: My career in the Australian Defence Force was primarily focused on project management where I was responsible for the acquisition and delivery of communication equipment for the Australian Army. In that role I experienced first hand the problem of schedule slippages imposed by complex software development associated with the state-of-the art development in packet switching technology.

S: Why did you get involved in testing?

SM: In 1995 I did some postgraduate studies at the Software Quality Institute (Griffith University). The course helped me identify the issues in software quality management and software quality engineering. After my studies I was posted to the Defence Test and Trials Unit (part of the Defence Science and Technology Organisation), where I became involved in the user acceptance testing of communications equipment being developed for the Australian Army.

S: Why did you choose to undertake the Certified Software Testing Professional course?

SM: Having left the army, I took up a consulting role with Dialog IT (an IT services company). There, I explored how I could understand better the testing associated with software development. I had already attended a number of short courses associated with software test management and acceptance test planning but found that those courses were high on theory but lacked the practical approach that I was looking for.

S: Can you briefly explain the benefits you enjoyed as a result of this additional testing training?

SM: The practical approach to test management allowed for exploration of the various techniques available to test managers. It allowed me to put into practice many of the testing methodologies and to build up my own practical knowledge

of software testing, through worthwhile weekly exercises. One of the greatest benefits was the practical application of some of the better known testing tools.

S: What are your most valuable lessons learned from the Certified Software Testing Professional course?

SM: Test planning is one of the keys to successful software testing, yet it is frequently omitted because of time constraints, lack of training or cultural bias. Testing without a plan is analogous to developing software without a project plan, yet such an approach would be inconceivable. Attempts by organisations to measure development progress by lines of code delivered, and in testing, by the number of test cases run, overlooks the fundamental need to undertake adequate software test planning. Test planning is a lot of work and can be time-consuming. If you're under pressure to get the next release out the door you might argue that you can't afford to spend time creating a test plan. But as the old adage goes – 'if you fail to plan, you plan to fail'.

S: How has the course changed your job in terms of the company as well as your own personal job?

SM: I have taken on a somewhat unique role within the company as a consulting test manager. The CSTP qualification has helped raise my profile and I am now called upon to conduct initial test analysis for a variety of projects. By being involved and developing a software testing tool, the company has been able to champion the idea of improved testing and is now pursuing the approach to improve software testing techniques from its developers. The software tool has been successfully adopted as part of the company's testing methodology.

S: Has the course impacted on your job prospects?

SM: Overseeing a transformation of a company's testing methodology will help me in the area of developing my strategic goals in IT project management. ■