



# Careers in Software Testing

Software testing has broken free from the shackles of being just a part of software development process to a full fledged industry domain. If you have the ability to think out-of-the-box, can look at a situation from zillion different angles, can withstand work related stress and crack an application using stress tests then you can look at this domain as a sound career option. It not only provides tremendous opportunities for career growth but also decent remuneration

Rahul Sah with inputs from Isha Gakhar

Those who say software testing as a career is inferior to software development need to get a sanity check done. Software testing is as important as software development activity. Do you know how much a simple software mistake can cost you? Rs 1 lakh, 2 lakhs, 3 lakhs...?? No clues?

\$125 mn!! Yes, in the year 1999 when NASA lost the \$125 million Mars orbiter, a spacecraft that was meant to be launched in space to study Martian climate, weather, CO<sub>2</sub>, etc. This happened due to a flaw in its software.

Actually, there were two different teams involved in the mission—Lockheed Martin Engineering which built and developed Mars Orbiter for NASA and the other was the NASA flight team—both of which used their own units of measurement during the operation. Lockheed Martin engineering team used English units of measurement while NASA's team used the conventional metric system for a key spacecraft operation, which caused the navigation information to go haywire and the spacecraft crashed. Had proper procedures for the navigational

A Testing professional needs to understand the technicalities of databases, languages, GUI frameworks and OSes. He also needs to have analytical sense of mind and the ability to break open applications that seem to be perfect, and that how he can find loopholes in the applications. Today, organizations don't just want testers to have knowledge of testing but also require to have business domain knowledge, as well.



**Arun Rao**, Vice President, Global Human Resources, AppLabs

The demand for niche skills like SOA testers are on the rise. Also, there are lot of avenues in test automation areas - scripting skills in the tools languages like VB, Java and other scripting languages like Perl, Shell, Python etc. Technical resources with capabilities to evaluate automation tools, create automation framework and reusable components are on demand. There is always a demand for good performance testers who can analyze performance test results, identify the bottlenecks and recommend tuning techniques.



**Mukesh Sharma**, Founder & CEO, QA InfoTech

Software defects are so prevalent and detrimental that they cost the U.S. economy an estimated \$59.5 billion annually -about 0.6% of the GDP, according to a study commissioned by the Department of Commerce's National Institute of Standards and Technology (NIST) in 2002. So Quality assurance is a very decisive stage as testers should guarantee that all functional needs are met even when there's higher load.



**Ramanan R V**, Head of Global Delivery and Chief Software Architect, Hexaware Technologies

software been followed, this irregularity might have been detected and the loss could have been averted. This is a classic example that shows the importance of having good software testing practices at place and the consequences one might have to face for not following them.

Today organizations have realized the importance of software testing and they do not want to face the embarrassment of their product or solution failing just because of a small mistake that gets overlooked.

**Ananda Rao Ladi**, Vice President, MindTree

Nowadays companies work at avoiding such defects from the start, so it is not just about detection of defects anymore. That's why they adopt standards like CMM, ISO, Six Sigma etc and taking all these developments as a cue, some IT companies have begin to leverage the power of good quality assurance practices, which has opened several new avenues in the field of software testing. Some companies have started positioning themselves as Independent Software Testing (IST) service providers who provide specialized software testing services to other organizations, to test their products or to device software testing practices for their processes.

Looking at the pace of the recent developments happening in this field, there is no denying the fact that software testing is fast emerging as a lucrative career option; it enables rapid career growth, and has substantially moved away from the myth that if somebody can't make a career in development, then only does he settle down into testing.

## Opportunities

Although testing is an integral part of SDLC, emphasis is given to keep it independent from development. In the past, testing was carried out after development was over. Today this has changed and the testing activity starts right from the requirements definition stage. In many organizations today, 'test driven development' is the norm. This increased focus on quality has greatly increased the scope of testing activity. Testing has become a serious career option for software engineers; in fact a fresher or some one with 2-3 years of experience, might eventually find testing to be the fastest way to gain domain expertise. This niche area created demand for testers and quality assurance professionals for myriad of opportunities. Careerwise and also remuneration wise, the growth opportunities for a professional in testing domain has increased. Testing is now compared at par with other IT services in terms of revenue for companies and also for the kind of remuneration and career growth it has on offer for a professional to enter this domain.

However, software testing should not be taken as an alternative to software development. And as a career option it

is not just open for software professionals but also for professionals from other industry domains, as today software testing has not just been confined to application testing but to the whole process of development and also the need to adhere to quality norms. Because of that, testers do not have to look at the propriety of the software code, but have to look at all the scenarios that the software will be subjected to when it is deployed across production systems or when it will be deployed at the client's end. This not only requires software knowledge but also requires you to have to have the knowledge of the domain itself. For example, if you have to test a BFSI application, you not only have to check the UI or security or load but the actual requirements of the domain you are testing the application for. For eg, for the BFSI domain, you can use your knowhow of user requirements in banking and the various working procedures to create test scenarios for the application.

### Skillsets required

The primary skill that one expects from a software tester, apart from computer science fundamentals, is good problem solving and analytical skills, ability to understand patterns in problems and creative thinking to fulfill requirements of a million customers. They should also have skills on test automation tools for regression automation and performance testing, database skills, analytical and lateral thinking skills, programming skills, knowledge of test management and test processes (including test planning, test design, test execution, defect management and testing metrics), knowledge of the platform used for developing the application (Microsoft, Mainframes, Java, etc). Software test engineers need to have knowledge of programming languages like C, C++, VB and scripting languages like VBScript, Shell, Python, Perl. These skills are in demand with the increasing demand for automation engineers. The technical skills should be supplemented with domain expertise also to form a holistic team for testing. Gaining prior exposure to usage of some of the prominent automation testing tools from companies like IBM, HP, Mercury etc can boost chances of employability especially for fresh graduates who aspire to become professional testers.

Nowadays domain knowledge is being preferred from software testers by the companies. Professionals coming from different industries like banking, Finance, Insurance, Retail, etc have strong understanding of business knowledge and business processes. These people can work as business analysts in software organizations. They can also help to validate business processes and provide valuable comments during software re-



**Specializations like security testing, SWOT testing, performance testing are the ones one can pursue in addition to create**



**a lane for himself in the industry. There is a lot of need for testers to have industry domain specialization. For example, if you have been testing in the insurance world, you will be valued very high. Specializations with respect to type of testing or specialization with respect of the industry domain can be a good thing to pursue.**

**Unlike developers, testers are expected to know everything about the product and application. Therefore, testers can even become a domain specialist, or a business analyst or even a product manager.**



quirements and design phase and also devise requirements for the end user for an application or product.

Automation, non-functional testing (performance testing, security testing, usability testing, localization testing) are niche areas in testing. One can learn these skills after getting expertise in the basic testing area. Test professionals can also learn new test case designs and optimization techniques to boost their career in this domain.

### New trends in testing

New and emerging technologies such as Service Oriented Architecture (SOA), Software-as-a-Service (SaaS), Cloud Computing, virtualization and advent of mobile technologies are radically changing the trends in application testing. Some of the recent trends in software testing domain indicate an upsurge in:

- a) SOA Testing
- b) Security testing
- c) Testing in Cloud Computing environments
- d) Tool based regression automation and performance testing
- e) On-demand testing services
- f) Risk-Based testing
- g) VoIP application testing
- h) Health care

Risk-based testing is a new concept. As software organizations face increased pressure to complete testing in available time, risk-based testing approach is followed. Due to increase in business complexity, testing scope has been steadily increasing, but at the same time the testing window remains the same or is shrinking. In risk-based testing, areas having major business risks are tested before others. This way, it is ensured that at least business critical functionality is tested properly.

Professionals from these domains can become business analysts and quality testers by lending their expertise for creating test bases for applications. Having the domain experience helps an individual to understand user requirements and also to devise test scenarios for applications based on experience, thus going beyond the manual testing of a code for a given application.

### Career path

Software testing professionals have many interesting options today to design their career path based on individual preferences. One can take a plunge into the world of business applications by moving into functional testing or keep in constant touch with technology by focusing on automation testing. They also have the option to get into ground-breaking areas such as professional

Today clients are very cognizant of the cost implications of poorly tested products or solutions and strive to avoid this situation under all circumstances, since these directly result into financial as well as opportunity loss. Comprehensive and effective testing is the only "knight in shining armor" that could help businesses to plug these holes successfully. The only challenge is the current gap between demand-supply of Professional Testers which is widening across all geographies.



**Shreyas Merchant,**  
PMP Associate  
Practice Director -  
Applications &  
Integration  
Services, Fujitsu  
Consulting India

In software testing area any knowledge which is gained as part of courses can just act as a starting point; however the major evolution happens on the job. Testing pros should look for opportunities to get hands-on experience which will help them sharpen their software testing skills. Software testing is more about being applied and pragmatic rather than just following academic experience. My organization while assuming that pros have a good academic background looks for a good attitude & ability to work in fast-paced environment.

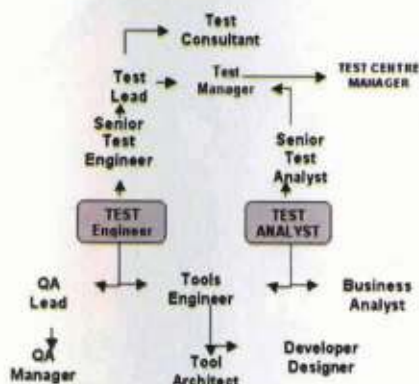


**Manish Rathi,**  
Head - Delivery  
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GlobalLogic

"Understanding different types of testing (performance, stress, security, etc) as well as knowledge of a few testing techniques, experience in creating test plans and test cases, knowledge of different software development cycles are a plus for a fresher. If one possesses the right skill set with a good technical background the opportunities are plenty. At Microsoft, the developer to tester ratio is 1:1. About half of our annual hiring for Software Development Engineer in Test (SDET) comes through the campus recruiting pipeline.



**Harini Raghavan,**  
Senior Software  
Test Development  
Engineer, Microsoft  
India Development  
Center



Courtesy: SQTIL

The visual shows a typical career path for a fresher who can choose either Testing or QA has the growth path.

games testing and mobile device testing.

A fresher who enters the industry as a test engineer, can choose the testing line or else move towards the quality assurance line where he can become QA lead and then QA manager. A typical career path for a professional tester would unfold as a junior test engineer, test engineer, test analyst, test lead, QA manager, followed by program manager/COE head.

## Certifications

Academic knowledge in software testing is the starting point which brings in more awareness of the available career options in IT industry. This needs to be further augmented with specialized trainings in different areas of testing based on individual

**“Although there is an economic slowdown, focus on software quality has not been reduced. In many cases there is a tremendous pressure on IT services providers to do more testing in lesser time. This is resulting in testing attracting some of the finest talent as we see many game-changing methodologies being introduced that are bringing greater efficiencies and provide opportunities to testing professionals. Product testing is a very big market, and many product companies spend upto 50% or more of product development costs on testing products. This trend is a good one for software testers.**



**Anthony D'souza,**  
Director-Testing  
Business Unit, Tech  
Mahindra

**“The knowledge gained in academia software testing is not sufficient as chances of the person going in depth to study a specific topic is rare. For example, topics like GUI testing, database testing, systems test design may not be taken up in their curriculum.**



**Shashikant Mohite**  
Chief Manging  
Director, SQTIL

**Certifications for software testing help them in gaining additional knowledge about the subject and also in terms of employment. Certifications like CSTE (QAI), CSTP (IIST), ISTQB Foundation Level, ISEB Foundation Level are some of the recognized certifications recognized worldwide.**

preferences and market needs. Certifications in testing also play a major role in meeting the industry trends. A stamp of approval from a credible institute by means of certifications improves the confidence of the employers as well as clients on the testing professionals. There are several institutes such as, International Software Testing Qualifications Board (ISTQB), American Society For Quality (ASQ) and Quality Assurance International (QAI) that offer vendor neutral certifications. Tool specific certifications are available from OEMs such as IBM, HP, Borland, etc. Obtaining certifications like CSTE (Certified Software Test Engineer) from recognized institutions or from online certification site like Brainbench can help a professional get a competitive edge over others during recruitment.

There are institutions like Edista Testing Institute dedicated for Quality and Testing curriculum. Professionals who want to seek their career in software testing or want to enhance their understanding of various quality standards can gain certifications from these institutes. For freshers, the organizations themselves train them on various testing tools and quality standards. But, a test engineer who has already gained some experience can look forward for a specialized certification to jump-start his career.

Talking about the requirements in Indian IT industry for software testers, Pradeep C, CEO of Edista Testing Institute (ETI) says, “Indian market itself requires 35,000 testers approximately to bridge the gap. And, that gap is continuously increasing to almost 1,65,000 in the year 2013, as per the projection.” Thus a professional can safely bet on this niche domain for his career and having some domain experience behind can be of much demand by software testing organizations. □