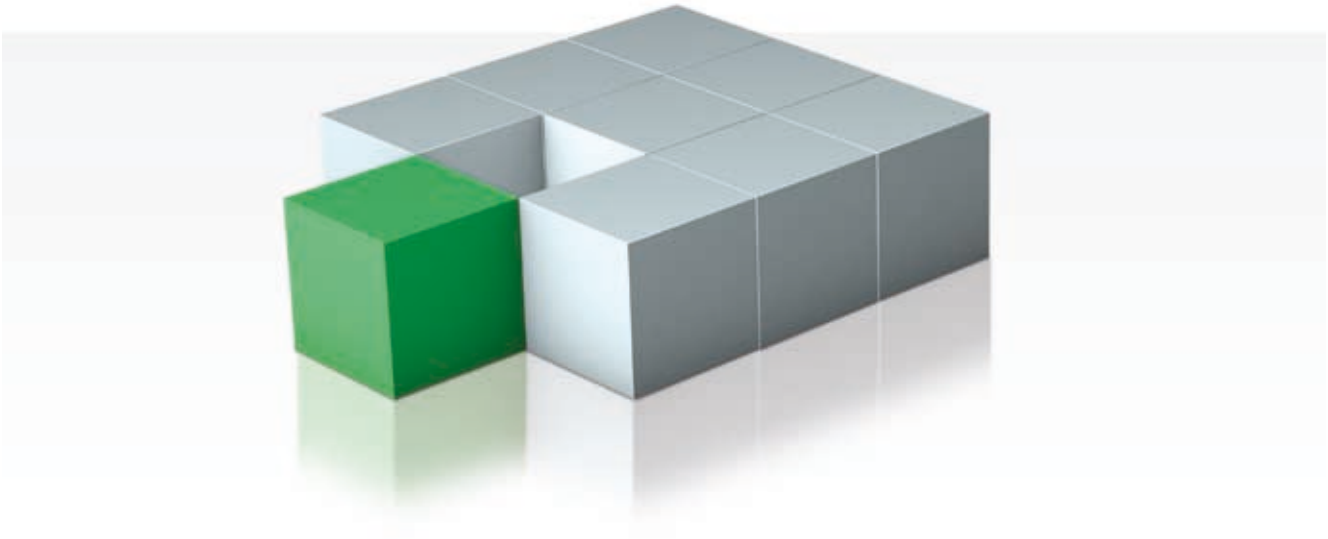
SQS. Excellence through Independence



White Paper

Managed Testing Services

September 2010

SQS Software Quality Systems AG

Excellence through
Independence

Contents

1. Introduction 3

2. Management summary 4

3. Market 7

4. The need for action and benefits 10

5. Areas of activity 16

5.1 Governance, transparency and control 16

5.2 Application areas 19

5.3 Requirements definition 20

5.4 Test automation 24

5.5 Performing tests 25

5.6 Security and legal requirements 27

5.7 Personnel management 28

6. Conclusion 29

7. Managed Testing Services – Checklist for project owners 30

SQS Software Quality Systems © 2010

1. Introduction

Managed Testing Services have firmly caught the attention of IT managers. By 2013, analysts at Ovum predict a global market volume in excess of US $56 billion for the software testing sector, which represents an average annual increase of 9.5 per cent. According to Ovum, by 2013 the market share held by outsourced testing services providers will increase from 53 to 58 per cent. In addition to significant savings, the companies surveyed expect this to result primarily in reduced time-to-market and increased test quality.

As with many other specialised IT disciplines, software testing is not one of the core business activities of most companies. Particularly in times of economic crisis, Managed Testing Services therefore present an attractive option for absorbing increased pressure on costs and quality. The trend towards Managed Testing Services has also been encouraged by a second development: companies are increasingly switching over to standard software, which is subject to ever shorter release cycles and increased test costs, not least through the need for repeated regression tests. Any company wanting to carry out quality assurance in-house, needs to equip itself with the right personnel on a permanent basis. However, such resources are rarely utilised to the full.

Managed Testing Services (MTS) involve the engagement of an external provider to conduct standard, repeated test services. Following an in-depth brief, the external provider assumes responsibility for testing. Contracts are generally drawn up for three to five years. The test provider assumes responsibility for conducting manual and automated tests, which are often set up to reflect processes and organisational structures within the customer organisation. The test provider also draws up detailed test documentation.

For MTS to be successful, the customer must ensure that it meets the basic technical requirements and has strict governance processes in place. MTS can be provided in connection with nearshoring, offshoring or homeshoring - either using the customer's infrastructure and tools, or using the service provider's tools in its own test environment.

This White Paper discusses the specific opportunities available to companies through the use of MTS, and uses different areas of activity to show how the introduction of MTS impacts on technology, processes and company organisation. The topics examined include contract arrangement, governance, monitoring and service levels, all of which further regulate the working relationship between the customer and contractor. The section entitled "Requirements definition" also focuses on the roles of those involved, as well as the handover and ongoing management of responsibility. "Requirements definition" also covers the methods, tools and infrastructure required by a service provider in order to offer a professional level of MTS.
This White Paper will then examine the key elements of MTS: testing and test automation. A brief discussion of security aspects and questions relating to the optimal use of personnel round off this paper.

2. Management summary

In terms of IT management, companies are currently faced with two major challenges that need to be overcome simultaneously: cost pressure and quality assurance. On the one hand, the increasing level of software integration means that IT management has to contend with an increased demand for test capacities, which is compounded by increasing peak loads and the requirement to make test processes shorter so that they may be completed more quickly (time to market). On the other, organisations are faced with increasing pressure to cut costs and bring about savings: testers, IT and specialist departments within companies often find that they need to "do more with less".

Following the completion of software implementation projects, IT managers often find that the costs of testing prior to live operation have caused their projects to miss cost reduction goals. The high level of integration also brings with it a risk of side effects which, in turn, further increase the pressure on quality assurance and management and require extensive testing. However, companies almost never have the required personnel, organisational structures or expertise. Despite this, the market expects a certain level of quality, which takes priority over cost issues.

In this situation, the Managed Testing Services (MTS) provided by external service providers pave the way for an improved cost/benefit ratio during testing. MTS involves the contractual transfer of standard, repeated test services to an external provider. Following the initial handover period, the external provider assumes responsibility for conducting tests. The test provider completes manual and automated tests and draws up detailed test documentation.

Companies that do not implement MTS are faced with considerable risks:

- Spiralling testing costs
- Quality shortcomings in the software
- Overloading specialist departments with testing duties
- No opportunities to cut costs through industrialisation and test automation
- Higher consequential costs caused by errors during live operation

IT managers at companies should never view test costs in isolation. The costs calculated for MTS should always represent the whole picture, in the same way as for a total cost of ownership calculation. They should also factor in the consequential costs for rectifying errors in later project phases or during live operation.

Through the use of MTS, companies prevent rising levels of test effort, costs and employee dissatisfaction. Company decision makers overcome the twin challenges of cost and quality described above and kill a number of birds with one stone. Companies also achieve cost benefits of at least 30 per cent through MTS; depending on the scope of the project and the level of offshoring, this can increase to 50 per cent. In addition to site selection, these benefits are brought about through the high level of standardisation and industrialisation of the services, as well as through maximising test case automation. This high level of test automation cannot usually be achieved in-house and is a strong selling point of Managed Testing Services. Test completion times are also usually reduced by 30 to 50 per cent. As a result, release tests that would usually require at least a month when conducted in-house can instead be completed within two weeks.

Advantages of Managed Testing Services

- Cost reduction of 30-50 per cent
- Reduction in test completion times of up to 50 per cent
- Increased level of test automation
- Removal of the burden on specialist departments

Managed Testing Services are provided by independent service providers. As specialists, they not only have wide-ranging expertise in testing, but also industry knowledge and an understanding of their customers' business. They are also able to present attractive financial proposals to their customers through the use of nearshoring and offshoring.

Former reservations about offshore test centres are increasingly disappearing. A large number of companies have gained experience of offshoring and nearshoring in the field of software development and have come to value its benefits. In addition to cost benefits, nearshoring in particular offers a small time difference and a working culture based on European practices.

The first stage of undertaking an MTS programme is to validate the business case for MTS by evaluating the testing required. The test experts start by identifying the savings potential. The calculations are then verified during a pilot project and form the basis of a customer-specific pricing model. This makes it clear that the service provider accepts responsibility for some of the project risk.

Alongside this, the individuals responsible for IT at the customer are involved in the test activities through precise and comprehensive governance rules. Not all tasks and responsibilities can be delegated to service providers through service level agreements (SLAs). Certain management roles must remain within the company. In addition, monitoring methods and tools such as dashboards showing key performance indicators (KPIs) and regular, standardised status reports on the ongoing collaboration ensure that companies retain control over their outsourced test activities at all times.

3. Market

Managed services have become established as an alternative to complete outsourcing for both large companies and SMEs. They provides a means of outsourcing specific individual tasks such as server operation, application management or software testing to specialised external service providers. Service levels define the scope of service and the responsibilities of the service provider, while control over the IT strategy, architecture and governance remain with the company itself. In their "IT Services Western & Eastern Europe Forecast, 2009-2010", analysts from the market research company Gartner expect a market volume for IT services of US $175.2 billion for 2010: an increase of 6.5 per cent on the previous year.

Growth in selected IT services segments

		Expenditure in million USD	
		2009	**2010**
Development and Integration	Application Development	31,514	32,889
	Integration	27,048	28,535
IT Management	Application Management	12,012	13,020
	Operations Management	64,896	70,120
Software Support	Application Software Services	8,363	9,036
	Infrastructure Software Services	8,709	9,388

Source: Gartner IT Services Western & Eastern Europe Forecast, 2009-2010

Analysts from other market research companies confirm this trend. IT decision makers are becoming increasingly interested in managed services which enable their companies to benefit from short-term cost savings and standardised processes, tools and services in economically difficult times without the need for large-scale investment in in-house expertise and IT services.

Growth market for testing services

Software testing is one of the managed services currently experiencing above average growth. According to forecasts by analysts at Ovum, the software testing business will achieve a global market volume in excess of US $56 billion by 2013, corresponding to an average annual increase of 9.5 per cent. The number of tests performed externally by outsourcing service providers will increase from 53 to 58 per cent. In addition to significant savings, the companies anticipate reduced time-to-market and improved test quality. In their analysis "Testing Services: Guidelines for Understanding and Using Testing Service Key Terms and Definitions", Gartner experts Gilbert van der Heiden and Frances Karamouzis agree with this assessment: "Testing services are much sought after on account of the additional savings, higher quality and reduced time-to-market they offer."

Managed Testing Services are suitable for any company with regular, recurring test requirements. One example of this would be companies with large SAP® systems for which updates need to be installed on a regular basis. The relevant tests are automated without significant expense and are therefore particularly suitable for outsourcing to external test centres.

Gartner expert van der Heiden sees the greatest potential for growth in the diversified sector of application testing. The establishment of cloud computing is also expected to result in strong demand for infrastructure testing. Additional challenges are also expected for product testing as increasingly complex software is used in the areas of manufacturing, retail and telecommunications. And software testing in general will also have to contend with additional legal and certification requirements (compliance) for products and applications.

Market participants

MTS is already experiencing great success in the banking sector in particular. Following large-scale software implementations, many banks have realised that the high degree of application integration and the resulting system complexity can lead to a massive increase in the time and effort required for testing. These test activities require industry experience and expertise, which is not always available from more generalist IT service providers.

As a result, IT generalists such as IBM, Accenture, Infosys, Wipro and others whose portfolios include testing services are usually only called on to conduct straightforward testing. More complex activities that also require a deeper understanding of the industry tend to be better suited to specialist service providers such as SQS.

The increasing complexity of testing means that the number of specialists in the market is also rising. However, not all of these providers are large enough to operate test centres on a nearshoring or offshoring basis. This requires a certain level of investment. Customers also appreciate that specialists invest in research and training on the subject of testing and promote its continued development. Last, but not least, customers also increasingly expect MTS providers to understand how their business works.

The decisive factors when selecting an MTS service provider are the scope and level of detail of its test activities, rather than its size. Large companies that need to arrange special testing and SMEs that lack the required personnel or expertise prefer to outsource work to experienced partners with access to suitable specialists via onshoring or offshoring.

Market drivers

Two major themes stand out as the key market drivers: cost pressure and quality assurance. This is evident from a number of projects completed at banks by SQS. Having completed the software build and test, managers often find that the cost of deploying and running the system in a live environment causes the project to miss its cost reduction targets. The high level of integration also brought with it a risk of side effects, which further increased the pressure on quality assurance and management and required additional extensive testing.

However, even large companies hardly ever have suitably qualified employees or the necessary organisational structures for such measures. And, since the market expects a certain level of quality, quality concerns overcome cost arguments in cases of doubt. If the integrated application environment is insufficiently tested, the final costs may be much higher than the savings initially achieved through cheaper, more limited testing.

4. The need for action and benefits

Companies are faced with a challenge: the increasing level of integration in their software means that they need to deal with an increased demand for test capacities. This is compounded by increasing peak loads and the requirement to make test processes shorter so that they may be completed more quickly (time-to-market). The organisation is also subjected to increasing cost pressure. The work completed by testers and by IT and specialist departments within companies is therefore often subject to the motto “Do more with less”.

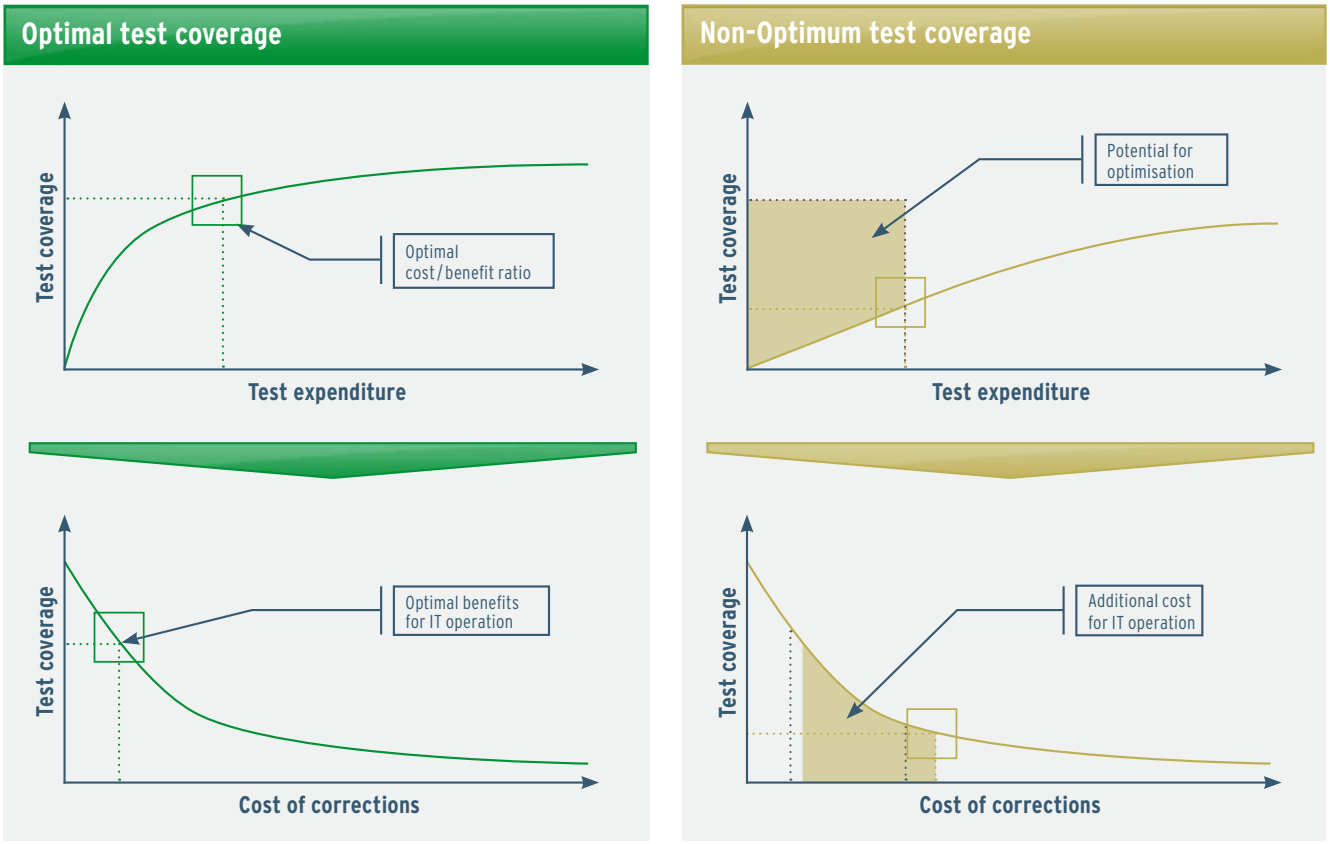
A further important task of an external service provider is the identification of potential improvements in the cost/benefit ratio for testing. This requires the clarification of procedural, technical and functional questions in order to reach realistic conclusions about the possible level of savings that are achievable by using MTS. This primarily involves a detailed examination of the customer's pain points. In no way does this simply involve performing as many tests as possible: when it comes to testing, quantity does not necessarily equate to quality. Testing is not an end in itself.

Risk factors

Companies that decide not to make use of MTS leave themselves open to the risk of both spiralling costs and reductions in quality. However, there is also a third factor which should not be underestimated: experience has shown that having to take on what are usually unpopular test activities tends to have a negative impact on employee satisfaction. Failure to use MTS also makes it practically impossible for companies to bring about the continual industrialisation of software development, together with the associated cost benefits. And, finally, companies can also be faced with the previously mentioned high level of consequential costs caused by faults occurring during live operation.

Companies should therefore never view test costs in isolation. If lacking or insufficient testing means that a fault is identified only during production operation, it will inevitably be much more expensive to rectify. The cost assessment for MTS should always take into account the big picture (as with a total cost of ownership calculation) and also consider the consequential costs for rectifying faults at a later stage.

Error correction makes a significant contribution toward reducing consequential costs



In summary, a failure to use MTS can result in increased effort, costs and employee dissatisfaction. In a worst case scenario, it will even have a negative impact on core business operations. In such situations, IT support teams are reduced to firefighting system failures to mitigate business impact.

Specifics of MTS

An experienced and specialist MTS service provider will help prevent such negative scenarios from occurring in the first place. In addition to conventional test outsourcing, MTS also includes a number of important new elements. It provides a comprehensive, holistic approach that goes above and beyond the purely technical outsourcing of tests. MTS service providers not only need to have a methodical and technical understanding of software, they also need to be familiar with their customers' business and know what needs to be tested and why. This requires suitably trained and educated personnel. MTS also goes beyond testing and enables companies to make improvements to their organisation and processes. Since MTS agreements are usually entered into for three to five years, they also facilitate long-term increases in efficiency.

The strongest selling point of external MTS service providers is their methodical and technical expertise. The criteria of the ISTQB® (International Software Testing Qualifications Board), for instance, have now become a standard in this field. The ISTQB® certified tester programme is a globally recognised training scheme for software testers. Unlike IT generalists, specialist service providers do not offer testing as a secondary line of business and instead make it the sole focus of their professional activities. Last, but not least, test specialists who offer onshore, nearshore and offshore services can also achieve significant cost savings for their customers.

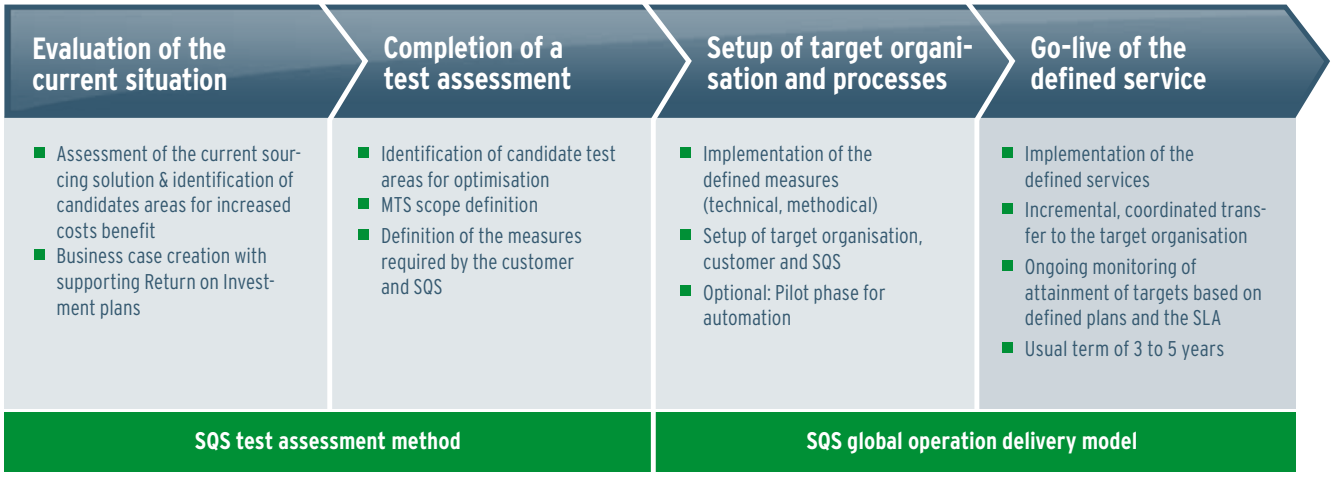
Success factors

These cost savings amount to at least 30 per cent, although they may be up to 50 per cent depending on the project scope and the level of nearshoring and offshoring. In addition to site selection, these savings are brought about through the high level of standardisation and industrialisation of the services, as well as through the greatest possible extent of test case automation. This simplification results in increased efficiency. Test completion times are also usually reduced by 30 to 50 per cent. As a result, release tests that would usually require at least a month when conducted in-house are likely to be completed within two weeks.

The long term nature of MTS contracts enables the service provider to carry out more efficient planning and capacity utilisation. Since multiple customers are served by the same offshore or nearshore test centres, the testers at these sites are well utilised and have no idle periods. This creates a win-win situation for those involved since certain basic elements relating to testing remain constant at all times, as is the case in similar industries such as banking and insurance. This is based on the shared service centre principle, which results in economies of scale from which both the service provider and customer profit.

Furthermore, MTS can improve the efficiency of internal company (business) processes by transferring work to external providers. However, to ensure that the agreed test activites can be completed the service provider must ensure a clear understanding of the responsibilities of both parties; including what products and information are to be handed over and by whom.

Pragmatic approach to sourcing solution



Ultimately, companies are able to optimise just about all associated factors, whether in terms of costs, effort, processes, company organisation or personnel. MTS can also, on occasion, result in the consolidation of tasks or streamlining of the company's organisational structure.

This enables employees from specialist areas to focus once again on their core activities, for example by using the time that would previously have been allocated to testing for additional support or consultation discussions with customers.

Offshoring

The type of offshoring solution adopted by a company is derived from many factors. Cost aside there are important considerations such as volumes and/or complexity of the product, frequency and type of interaction between customer and service provider. All of these inputs and more should be considered carefully when choosing which MTS vendor/offshore model is most suitable.

Offshoring can be challenging and the administrative effort may sometimes depend on factors such as language and cultural differences, but more so on the quality of requirements in terms of clarity, timescales and dependencies, effective communication links and assurance of delivery.

Product familiarity and domain knowledge is a common issue when selecting and offshoring model and SQS tackles this problem through offering an optimal on-site/off-shore mix; when used effectively this blend of local expertise and leadership can even make the offshore aspect of the service transparent to the customer.

SQS offshoring is undertaken in a number of regions worldwide including India, South Africa and Egypt. SQS offshore centres offer the same working hours and response times as those available to customers in Europe and the center in India offers around-the-clock operations enabling same time-zone working to clients around the globe. In addition, offshore specialists in many locations are bilingual or multilingual with excellent English, French or German skills.

In addition to same time-zone working, SQS offshore centres offer flexibility in terms of scale through their ability to rapidly ramp resource levels up and down at short notice.

5. Areas of activity

5.1 Governance, transparency and control

Governance

Company decision makers need to set down a clear governance structure in order to create transparency and retain control of all MTS activities. This structure regulates who is responsible for controlling and monitoring the test activities, and also sets out the required form and frequency of the associated reports. Such matters are best agreed during the transition phase during which the test activities are handed over to the service provider.

Maturity levels/milestones

To ensure that results are monitored across the various test phases, maturity levels or quality gates need to be defined for the individual project phases and tests. The entry or exit points for these quality gates can also be used to determine whether the required milestones have been met. Only once these have been reached is it worth progressing to the next project or test phase. Quality gates should also be established prior to the handover of test responsibilities to the service provider and prior to the return of the tests to the customer. Project phases and quality gates must comply with the process documentation.

Monitoring

Companies actively monitor an MTS project using a range of different monitoring methods and tools, the most common of which include dashboards with key performance indicators (KPIs) and regular reports on the ongoing collaboration. The reports must be accompanied by a set of lessons learned that document what worked well and the areas in which there is a need for further action.

Test centre service portfolio

Governance agreements should also provide for the regular exchange of information between company managers, test managers and the external project managers. Depending on the project phase, daily or weekly meetings should be arranged with the IT department and fortnightly meetings should be set up for the project steering committee. For company management, one strategic meeting per quarter is sufficient.

Service levels

One key factor when drawing up the contract is the agreement of qualitative service levels which need to be verified on a regular basis through system tests. The main objective of this is to prevent errors occurring in a subsequent test stage such as during integration testing or even during production. During test planning, SLAs must also be agreed for the test processing times and response times.

Regularly logging test cases enables them to be used as feedback for the next stage of testing. This must be done across the entire test process. Acting in this way creates a cycle of reporting and monitoring which is supported by the tools at the customer and the service provider. The market offers a large number of tools for error management, problem handling and operative project management.

Finally, the service provider must agree SLAs with its customer to ensure that its own plans are reliable. For example, the SLAs will specify on which day a certain customer system needs to be made available for testing.

Output-based pricing

Output-based pricing models provide a transparent system for invoicing MTS services. Payment is made strictly on the basis of the supplied output. Regular, systematic reporting enables the customer to monitor and flexibly manage the current project status, the results delivered and the associated costs.

In practice, customers often settle invoices per test case or per test case execution when using output-based pricing. If a company considers a test with fewer test cases to be sufficient, the amount it pays is reduced accordingly. In addition to invoicing by test case, customers can also pay per line of code or for a conceptual review aimed at early error detection (EED). This replaces base or fixed costs with a more flexible approach to pricing that breaks down the costs according to their origins.

5.2 Application areas

Test types and test activities

MTS is particularly well suited to regular, recurring test activities (regression tests) on standard systems, which need to be carried out in almost all project phases and following release changes or updates. The subsequent integration tests, which are designed to verify whether the software application environment continues to function correctly following the implementation of new software, can also be carried out at the test centres of MTS providers. MTS is used during software development projects only when the scope of testing and the technical requirements have been clearly defined in advance.

The most common application areas for MTS

- Test activity: Automated regression tests
- Test type: System and integration tests

Distribution by sector and company size

Banking and insurance companies are already making intensive use of MTS, as are the telecommunications sector and public-sector customers. There is also demand from some areas of industry, such as the process industry. In principle, MTS is suitable for all companies with high data security requirements that make use of highly complex software and are faced with an increasing level of interaction between systems. This has been shown by recent experiences in the insurance sector where the software used is becoming increasingly integrated into individual systems with each evolutionary step: a process which requires continuous testing.

The use of MTS may also prove beneficial to SMEs. For instance, banks operating in this sector are subject to similar regulatory requirements to the major banks and also require regularly recurring tests that are well suited to standardisation.

MTS is not, however, suitable for medium sized industrial companies that require software testing to be completed only twice per year - nor it is profitable for the service provider. The decisive criteria are the required scope of testing, the potential for recurrent testing and the associated regulatory requirements.

5.3 Requirements definition

Requirements management

When defining requirements, the individual test and process steps must never be viewed in isolation, but rather within the context of the overall project. Requirements are always interrelated. In principle, both employees from specialist departments and IT managers need to be involved in defining the requirements. Since a number of large companies already work in line with ISTQB® guidelines, test service providers can build upon a shared basic understanding of testing, which makes the formulation of requirements definitions significantly easier.

Larger companies such as banks also often have their own test or quality departments, which means that service providers have to contend with a "triumvirate" of testing, IT and specialist departments. In order to derive a working structure from this, the service provider must be able to call upon its own tried and tested methods and tools, as well as organisational experience.

Accordingly, an agreement setting out the roles and responsibilities must first be reached between the customer and the service provider. These are then set down in formal service definitions. This should be done in line with a best in class process model that covers all phases in a development or change project from its inception through to live operation (setup, design, implementation, operation, control, monitoring and reporting).

Transfer of responsibilities/transition

As set out in the governance guidelines, responsibilities are transferred from the customer to the service provider using quality gates and SLAs during a transitional phase. As part of this, the service provider should first carry out a "health check" to determine which technical or functional IT requirements that are required for the transition are currently lacking at the customer. Only once this is complete can the service provider set up the test services and put the customer in a position to use these internally following the completion of the project. The complete handover of responsibility therefore also requires all test processes to be properly established.

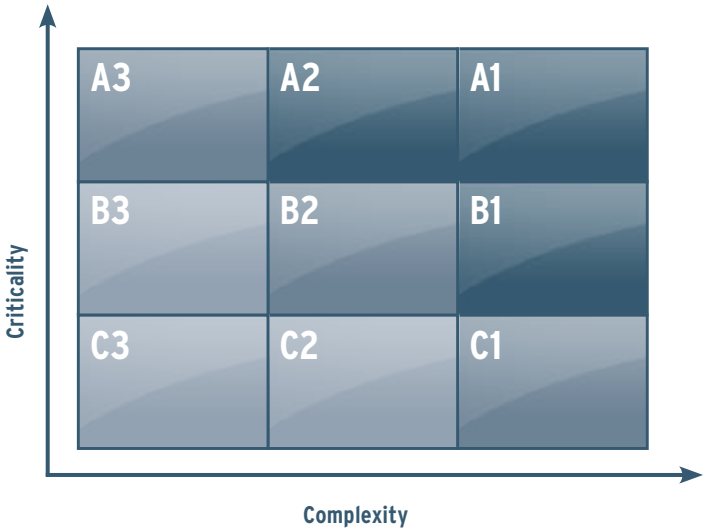
The methods, processes and tools for requirements management should also be specified at the earliest possible opportunity. Although experience has shown the need for fine-tuning the test services, processes and organisation during the transitional phase, this nonetheless proves more cost effective and less time-consuming than in later phases.

Test depth and test coverage

The required test depth and coverage can also be determined early in the project. A suitable methodical tool for this is the complexity/criticality matrix (CCM) which evaluates and classifies test objects and test activities based on their complexity and how critical they are to business operations. CCM allocates a rating to the requirement under evaluation, with A1 representing the highest level of criticality/complexity and C3 the lowest.

This rating is then used to decide which objects should be included in the MTS process (and which should be excluded) to ensure the optimal level of test coverage. This decision should also be based on the economic principle of covering the greatest possible number of activities with the smallest possible outlay. CCM therefore specifically helps customers to overcome the challenges arising from cost pressures without sacrificing software quality.

The complexity/criticality matrix



- The CCM allocates test procedures to test objects in a manner commensurate with risk
- The second dimension (complexity) dictates the expense required to perform the test procedure in question
- The test procedures determines factors such as the depth of testing in the test case design
- Proven in practice

The result: Test object lists with the expenditure required for upcoming test activities

Required infrastructure at the service provider

In addition to methods such as CCM, the service provider must also meet a number of other prerequisites in order to offer MTS at a professional level. These include:

- A full range of testing services
- Requirements documentation
- Test case documentation
- Test automation tools
- Test management
- Test reporting

In brief: a service provider must cover the entire value creation chain relating to testing, which includes the use of tools. This also requires an infrastructure and data centres that meet legally required safety requirements and standards in areas such as the backing up of data, business continuity and disaster recovery. The service provider must also be capable of creating synthetic data for testing purposes in order to meet requirements pertaining to data security that are primarily in place at banks, insurance companies and public-sector customers.

In addition to technical sustainability, a service provider should also ensure that the same employees are used throughout the project and that these employees receive regular training in order to remain abreast of new developments. The various certifications held also enable customers to gain an impression of the capabilities of an MTS provider.

The following also result in improvements to test processes:

- Standards (including ISO 9001:2000; ISO IEC 15505 Part 5/SPICE))
- Assessment methods (INCLUDING CMM AND CMMI, ISO IEC 15504/SPICE/INTACS)
- Procedural/phase models (European Space Agency, V model, rational unified process, agile methods)
- Holistic approaches
- Total quality management

5.4 Test automation

Prerequisites for test automation

The customer needs to meet certain technical prerequisites and conditions for test automation to be carried out as part of MTS. The software to be tested must have reached a certain level of stability and maturity, and must permit a clear definition of the scope and depth of testing.

Automation of manual tests

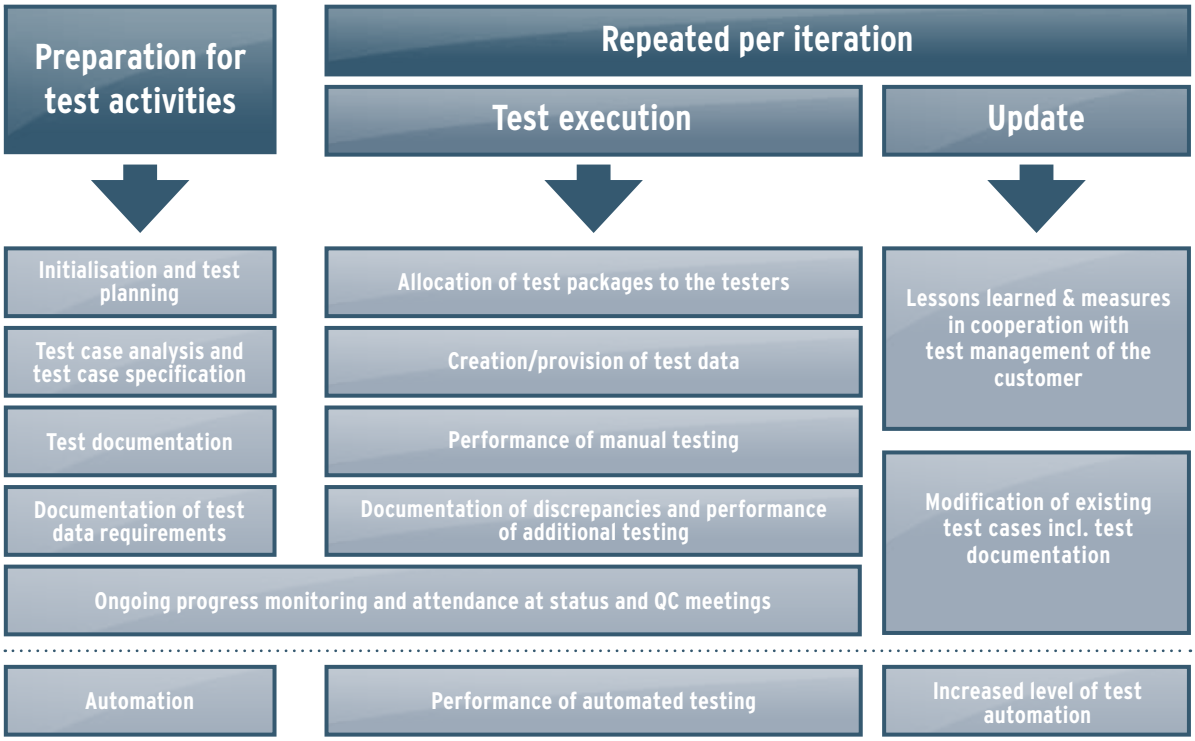
The same approach generally applies to the automation of functional, integration, system, performance and regression testing. Manual tests must first be carried out and documented in detail. Suitable tools are then used to automate the tests. Only once this has been done is the automated test demonstrated to and approved by the customer. This ensures that the customer is also capable of using the test and knows how to interpret the automated results monitoring.

The service provider is generally responsible for performing the tests in full, with the customer‘s role limited to test acceptance. However, it is also possible to transfer the automated tests to the IT and testing team at the customer, enabling the customer to take responsibility for those tests.

5.5 Performing tests

When performing the tests, there is no difference in principle between standard software such as SAP® and in-house developments. In both cases, certain routines are used to check the software's ability to run correctly. For this, business and industry knowledge plays a more important role than the software's technical level of detail. In contrast to standard software, for which the test types are often specified by the customer, in-house developments often require much more intensive testing and the writing of a number of new test cases. However, companies willing to carry out costly in-house developments are also usually prepared to accept the associated high level of costs associated with this type of testing.

Test centre service portfolio



Test service centres and test environments

Test service providers use their test infrastructure and tools to access the customers' test environments. This is done in both onshore and offshore scenarios, for example using a Citrix terminal server application. Providers can also set up dedicated test environments in their test centres based on simulations of the individual customer's system environment. Customers tend to prefer remote access because it provides more transparency of the work being completed by the service provider.

Test documentation

In order to create clear and traceable test documentation, all steps and processes must be recorded using a suitable tool and the actual outcome must be compared with the expected results. Properly drawn up documentation should also enable the reconstruction of earlier test states (audit trail).

Integrated toolchain in a test centre (example)

5.6 Security and legal requirements

IT and data security

MTS service providers and their test centres are subject to the same regulations on data protection, security and integrity, as well as those relating to IT security in general, that apply to all data centres. In addition to regulations on encryption methods, backups, business continuity and disaster recovery, these also include access protection, access control for employees, physical/spatial security and the provision of an uninterruptible power supply.

Security standards

The data centres used by the service provider should be certified in line with the internationally recognised standard ISO/EC 27001. This certification confirms the existence of an information security management system (ISMS) that includes security and risk-management processes, as well as a comprehensive security framework. Other factors tested in connection with this include physical security and environmental safety, access control, data security, logging and monitoring. The independent auditors also inspect the structures forming the basis for networks, platforms, operating systems and security architectures, business continuity and disaster recovery. Certification to ISO/EC 27001 also includes an evaluation of employee selection, training and skills.

Companies concerned about security aspects when outsourcing work through MTS should view the service provider's references, especially those relating to the banking and public sectors. After all, these are areas with the highest possible security requirements. For example, an MTS service provider for banks and the public sector must be capable of working with synthetic data during test automation so that it is not using actual employee or customer data.

Compliance with legal requirements (IT compliance)

An MTS service provider should ensure that its employees constantly focus on issues relating to security and compliance (legal requirements) in the field of testing and that they keep up to date with new developments. This means that customers benefit from existing knowledge and do not have to learn about these areas themselves, which is particularly beneficial for SMEs without large IT departments. SMEs are usually well advised to rely on MTS for their test activities. For instance, a service provider uses specialised tools to ensure that its software tests meet audit requirements by creating an audit trail that enables the reconstruction of all earlier test states.

5.7 Personnel management

Tasks relating to governance

MTS results in almost no additional tasks for companies, although they will still have to address areas relating to governance and reporting. The managers responsible for testing continue to order the required tests, they simply entrust their completion to an external service provider rather than internal company departments. In some cases, it may be necessary to establish provider management measures in connection with the new provider. The committees entrusted with company management must also carry out regular reviews of the service quality delivered by the new service provider.

Removal of the burden on specialist departments

MTS noticeably reduces the additional burden on specialist departments and enables them to focus on their core activities, rather than the often unpopular task of testing. For example, MTS releases business analysts to address new topics or optimise existing processes. The implementation of MTS generally results in the more optimal use of personnel.

Employee training

ISTQB® training to become a certified tester, foundation level, quickly creates a mutual understanding between the individuals responsible for testing at both the customer and the service provider. Certified ISTQB® testers are also even better placed to conduct automated tests.

6. Conclusion

Managed Testing Services provide companies with an opportunity to improve the quality of their software and processes while simultaneously saving on costs. By removing the burden of IT testing, MTS plays an important strategic role in enabling managers to focus on running their businesses rather than developing and maintaining IT systems. Further, because MTS is usually delivered based on an output-based pricing model, managers can manage budgets for testing more effectively and confidently.

The increasing standardisation and industrialisation of software means that system and application environments are becoming ever more complex and closely integrated, which leads to the requirement of more intensive testing. Changes made to earlier, simpler stand-alone system interfaces would have relatively little effect on overall operation. In current software architectures, however, everything is interconnected in the truest sense, resulting in 'side effects' throughout the system, which in turn, increase the scope of testing.

These interdependencies require constant checks to verify that the entire IT environment is operating correctly.
Many companies come to realise this only during live operation once the relevant development, implementation and test phases have been completed. This means that the test series need to be started earlier and conducted more systematically in preparation for upcoming release changes, updates or follow-up projects.

This is the point at which external service providers apply their testing expertise and industry knowledge. MTS enables them to provide an answer to the increasing level of industrialisation, complexity and integration exhibited by software by providing a cost-effective and efficient alternative to in-house testing through the use of a high degree of test automation and industrialisation. By performing standard, repeated test services (regression tests), service providers with test centres in nearshore and offshore regions can achieve savings of up to 50 per cent and cut test completion times by up to a half. Research conducted by prominent analysts confirms that the market has accepted this service offering and is utilising it to an increasing extent.

7. Managed Testing Services – Checklist for project owners

Governance

Distribute roles and responsibilities between the customer and the service provide, draw up service level agreements (SLAs)

Monitoring

Implement tools for monitoring the MTS project: key performance indicators (KPIs) and regular, standardised reporting

Requirements management

Determine the scope and depth of testing, as well as the required methods and tools

Transition phase

Draw up the terms for handing over test responsibility to the service provider and set these down formally in governance

Test automation

Automate manual tests and document them in detail, including automated results monitoring and customer acceptance

Test documentation

Ensure that test documentation is clear and comprehensible and includes the reconstruction of test states to ensure that the tests meet audit requirements

Tools and methods

Use a combined approach to exploit the full functionality of tools, methods and standard processes

Personnel

Plan MTS in agreement with the IT department and specialist areas, with the involvement of management in part

Employee qualifications

Align training and education measures to international standards such as ISTQB®

Excellence through
Independence

Contact

Do you have any questions or do you need more information?

Please do not hesitate to call us or send an E-mail:

Yann Gloaguen

Phone: +44 (0)20 7448 4620

E-mail: yann.gloaguen@sqs-uk.com

www.sqs-group.com

SQS Software Quality Systems © 2010