Writing The Business Case for Automated Software Testing and Test Management Tools

How to successfully research, plan and present a convincing business case that will justify the budget and resources you need to implement an automated software testing strategy and/or test management tool within your organisation.

Obtaining management support for any new IT project can be a daunting and difficult task.

But by clearly presenting a well-researched understanding of the goals, scope, risks and resources required by your project and then justifying those with tangible financial, procedural and quality benefits, you will significantly increase the probability of gaining the management commitment you need to get your project underway.

This report gives you a step-by-step guide that will enable you to successfully understand, research, plan and present a solid business case. One that will hold management attention and justify your project.

After reading this report you will:

- know why you need to write a business case
- learn how to research, plan and present a convincing business case to your management
- discover the 8 critical success factors that make a good business case into a great one
The Opportunity for Software Testing Tools

Software testing is a relatively low-key part and generally invisible part of the overall software development lifecycle. But in some of today's organisations, testing activities can account for up to 60%-75% of the total cost of software development\(^1\).

That's a staggering amount of time and money.

BUT, by implementing an enterprise-wide software testing strategy with the right tools, an organisation can benefit from reduced costs, accelerated delivery and improved software quality:

- use of live environment hardware for ‘out of hours’ testing without impacting the business
- significantly reduced cost of running repeat tests
- the ability to run tests that are not physically possible without automation
- freeing the test team to become involved earlier in the software development lifecycle, thus encouraging earlier detection of bugs in the development cycle and reduced costs to fix
- reduced test resources required - human, hardware and infrastructure
- increased test coverage
- increased quality of test metrics through consistent test execution and results collection
- greater motivation, higher morale and lower turnover of test team members: staff are relieved of monotonous, repetitive tasks and can concentrate on activities that add value such as test planning and earlier involvement in the software development lifecycle earlier
- greater bandwidth of testing capability with the same resources (i.e. the ability to test more in a shorter time), frequently a bottleneck in the overall software development lifecycle

Automated software testing is also certainly the only option for certain types of testing - in particular stress, volume, load and performance testing of large systems where it would be unfeasible to provide the staffing and hardware resources.

The Need for a Business Case

Obtaining management support for any new IT project can be a daunting and difficult task.

In today's financially tough climate business leaders are keeping an even closer eye on the 'bottom line' than ever before: every IT project must be clearly justified in business terms or it does not get approval.

This particularly applies to a project with no immediately evident business benefits such as replacing a manual software testing strategy with a new one based on automated software testing.

The answer is a well-written business case.

In general automated software testing has higher upfront costs (including software licences, training, working practice changes, test environment setup, test script development and subsequent maintenance) but then significantly lower ongoing costs for each repeat cycle of testing, particularly lower resource costs.

\(^1\) Software debugging, testing and verification by Hailpern and Santhanam, 2002
Clearly document and present a well-researched understanding of the goals, scope, risks and resources of your project. Then justify these with measurable financial, procedural and quality assurance (QA) benefits. Present the results clearly in a non-technical document that the business team can easily understand and you will have created the perfect argument to support and justify your project.

As a result you will significantly increase the probability of gaining the management commitment that you need to get underway. And, as a basic planning document, you will have an invaluable tool to help you manage the project until successful completion from the outset.

**Why Write a Business Case?**

The business case provides evidence that the software test automation project is a good investment for both the test team and the business. Preparing a business case is an integral part of the planning process for any software test automation project. It becomes more important as the cost and complexity of the project increases.

This white paper will help you prepare an effective business case for securing the resources — both within the test team and with senior management.

A business case is similar to a business plan prepared for private business. Its purpose is to outline the business rationale for undertaking the project and to define the parameters and management factors involved in the project itself. It will also provide the project manager with a tool to manage the software test automation project.

The business case serves four purposes. It will:

1. help the test team think through the project in a systematic, step-by-step manner
2. explain to parties external to the test team why the project should be undertaken
3. help the business to understand the financial value of the project
4. provide a framework for completion of the project on time and on budget

An effective business case is one that matches the overall goals of the business as well as the goal of the test team.

In short, an effective business case justifies:

- why the test automation project should be undertaken
- why the business should invest resources and time in the project
- why the project makes good financial sense for the business

While the business case may be presented in various formats, there are certain elements to include. The guidelines that follow will allow you to build a logical, well-structured business case.

This template can be adapted to almost any project. Be sure to present your business case in clear, simple terms. This will create a good impression on the management team by providing all of the key information (costs, benefits, timescale) in a format that is easy to read and easy to understand.
The Elements of a Business Case

1. Title Page
The title page is the first impression a reader gets of a business case. Make sure it is neat and orderly, simple, balanced and easy to read. It should contain as a minimum, the following:
   - title of project
   - project designation (number, location, etc.)
   - name of the organization
   - date of approval.

2. Table of Contents
The table of contents lists the major headings in the business case, and the page on which each is found. Do not forget to number the pages in the document.

The table of contents can usually be generated automatically by your word processing software: if not, then do not forget to bring it up to date once you have finished the whole document and carefully check over the headings and page numbers to ensure it is 100% correct.

3. Management Summary
This is the most important selling tool. It is where you create the critical first impression of the project so it is important to summarise the most important elements of the project in a concise, compelling manner using non-technical terms that are easy to read and easy to understand.

Guidelines for writing the executive summary are listed below.
   - describe the project precisely and concisely, avoiding excess descriptive words
   - avoid any technical terms, jargon and abbreviations (especially TLAs: three-letter-acronyms) that will lose the attention of your audience
   - explain why the project is necessary and why it is the best solution
   - outline the most important benefits of the project to the business
   - outline the costs and major disadvantages, if any
   - summarize the most important reasons for recommending the project
   - limit to one page in length only
   - write after the business case is completed

Keep the executive summary to one page or less. A busy senior manager should be able to read through the management summary and have all the critical information needed (cost, benefit, timescales) to make a decision there and then.

4. Mission Statement
This is a concise and general statement of what the test team intends to achieve by completing the test automation project. It explains what is to be done, for whom, and why. If possible do not exceed one sentence.

For example: the test team will implement a test automation framework in order to reduce the time taken to regression test applications thereby increasing the consistency of our regression testing efforts and releasing testers to concentrate on more critical testing tasks.
5. **Project Objectives**

What, precisely, will be achieved by completing the project? State the objectives clearly - one short statement for each, without accompanying arguments or documentation. These appear in the body of the report and in the project summary. It should be clear to the reviewer how these objectives relate to the mission statement of the test automation project.

Objectives are Specific, Measurable, Achievable, Realistic and Timely (S.M.A.R.T.). These define the results expected as a direct consequence of the project’s completion. Such hard data verifies the value of the project and will justify the project **in business terms** to senior management.

They can include such goals as:

- increasing product release quality by
  - running more regression tests
  - performing tests which are impossible to run manually (e.g. load tests)
  - improve the consistency and repeatability of tests
- reuse of tests over different releases and products
- improving use of resources by automating boring and menial tests
- speeding up time to market by completing tests quicker
- increasing confidence in release quality when automated tests complete successfully
- earlier identification of problems and issues
- increasing tester motivation through learning new skills
- freeing up test resources to work earlier in the software development life cycle
- removing barriers and bottle necks to release

Some test automation projects have long- and short-term objectives. Identify these as such if it adds to the understanding of the project. For example, the short-term objective may be to increase the amount of regression tests run before a release. In the long term, the objective may be to attract better quality test team staff due to the advanced status of the test environment.

Sample objectives:

- to automate 60% of regression tests by (date)
- to reduce time required to complete a full regression test by 3 days
- to execute load testing on every version of the product delivered to the test team
- to identify 30% of all high priority defects raised earlier in the test cycle
- to attract 7 new, highly qualified, testers by (date)

The discussion following each objective should clarify the analysis or rationale for arriving at the objective.

For example: Currently our full regression test suite takes 2 weeks to run. A fully automated regression test suite would take 1 day to run and 2 days to analyse the results. This will reduce our regression testing resource requirements by 7 man days. On a typical project this will increase the product release quality and reduce our time to test by 1 month.
6. Key Performance Measures
Performance measures evaluate the success of the project. They indicate how the project will meet the objectives listed at the beginning of the business case. The business case will:

- list the plan objectives
- state the evaluation criteria for each objective
- outline how or by whom each will be evaluated

7. Needs Assessment
The needs assessment analyses the problem and explains why the problem needs to be corrected. It provides the information as to whether the project should be undertaken at all. The needs assessment should be broken down into two sections:

1. The Problem
   - what is it?
   - why does it exist?
   - who is affected?
   - what is the extent of the problem?
   - what is the damage (liability) if the problem is not fixed?

2. Benefits from Correcting the Problem?
   - financial: Added Returns
   - financial: Reduced costs
   - increased quality
   - time saved

8. Technical Analysis
The technical analysis outlines the technical information used to make the decision and tells why the proposal represents the best or most cost-effective solution. It describes:

- technical problems encountered with any existing solutions
- what alternative solutions were considered
- why this is the best course of action to choose
- why this is the most cost-effective solution, or if not, why
- what innovative technologies are being used

9. The Project Plan
The work plan spells out the terms that will form the basis of any contracts, including the jobs to be done, the time frames and milestones. It will help the project manager by including the evaluation criteria for each step or milestone here. Name those responsible for managing the project and contracts as soon as they are known.

- describe key activities and locations
- outline milestones and timelines for completion
- identify risks to project completion and contingencies
- list project staff and consultants if known, and their responsibilities

Although you will create a detailed work plan listing tasks, detailed processes and reporting mechanisms to manage the project, it is not necessary to include this level of detail in the high-level project plan forming part of the business case.
10. The Financial Plan

The financial plan shows how the project will be financed and how returns will be achieved. Give an explanation of why project funding is necessary and how funds will be used in the introductory paragraph. Elements of the financial plan should include:

- detailed budget
- sources of funding
- returns from project performance (with time)
- operating and administrative costs
- cash flow statement.

Critical Factors for Success

As with any important proposal, paying attention to a few key areas in your business case can dramatically increase the chances of it being authorised by management.

Here are EIGHT top tips that will turn a good business case into a great one:

- **have a clearly presented document**: open with a single page summarising all of the important points; continue with a logical sequence; ensure that the document can easily be understood by the business team - avoid technical terms, jargon and acronyms/abbreviations
- **start out with realistic expectations**: when planning take into account potentially 'invisible' costs such as the learning curve, time taken to setup the automated test environment and ongoing maintenance of automation scripts/tests
- **strategy vs tactics - identify the right project to start with**: on small or fragmented projects the benefits may well not be significant enough to even nearly justify the business case. Test automation is best approached as an enterprise strategy where immediate benefits can be identified from large-scale, highly repeated tests such as regression, stress/loading, performance, reliability/resource leakage, structural/API/unit and integration. Tests that are either run frequently or require high levels of resources. Even as part of a such an organisation-wide strategy, selecting the right 'pilot' project can be critical to success or failure. Once the benefits have justified the cost of software licences, skills and working practice changes, it will then pay to cascade the automated testing strategy down to smaller projects that could not have been justified from the outset
- **test automation is merely a tool**: like all tools its effectiveness depends on the skill of those that use it. Correctly used it will support the test process but it is certainly no replacement for methodical test planning, process or execution
- **what to automate and what not to automate**: even with an enterprise-wide automated software testing strategy in place one of the key decisions for the test team is what to automate. There is absolutely NO point automating a test if the cost of doing so outweighs the benefit: for example, a test suite that is only run rarely and/or is quicker to run manually. Other tests simply are not suitable for automation, particularly those centred around usability and customer acceptance where it is 'fitness for purpose' that needs to be tested
- **honesty is the best policy**: ensure that any cost savings and benefits are fully defensible and are, above all, realistic and achievable. If anything building in contingency and understating benefits is preferable to overstating cost savings that will be challenged by management, undermining confidence in your entire business case
- **measure the benefits of test automation**: the costs of any project is immediately visible to management team from day one. But the financial, procedural and quality assurance (QA) benefits must to be tracked by the test team and made visible to senior management to demonstrate the value delivered by the project to the 'bottom line' of the business
- **check, check and check once more**: having finished the business case, take a break. It is easy to become 'word-blind' working on the same document for a while. Then, proofread it carefully again the next day with a fresh brain. Check the grammar, spelling, figures, totals, page numbering and the table of contents. Get at least one other person to proofread it as well. Any mistake, no matter how small, will erode the confidence of your management in your business case and threaten it being signed-off.
Conclusion
By creating a complete business case such as the one described here, the business will know that the test team has thought through the entire project thoroughly.

The business will be confident that the right decision has been made and that designated people are in charge of each step of the process.

Funding sources will be confident the project has been well planned, will provide the expected return and is in the best interests of the business.

What Next?
Traq Software specializes in providing software testing tools and test automation resources to the software testing industry.

We would be delighted to support you with your automated software testing project - please simply contact us to find out more: