

Transition Consulting Limited

White Paper

Benefits Based Testing

Maximising your ROI

Version 1.00

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1 Document Information

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1.4 Distribution

Name	Role/Location	Version Number	Copy Number
TCL Library	Exeter	1.0	1
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1.5 Document History

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2 Introduction

The need for robust software systems delivered to market in increasingly challenging timescales has never been greater. From vendors of shrink wrap solutions to those offering bespoke solutions in niche markets the need to deliver sooner, but with no loss of quality, is being driven by our clients and their markets every day. Yet for the most part organisations and individuals continue with a risk adverse approach to solution delivery focusing on what's difficult rather than what's possible or more importantly what needs to be done.

An alternative to this traditional approach is to focus on the delivery of the solution benefits in order of importance rather than on the difficulties that might exist in the delivery cycle.

Furthermore, this approach we believe facilitates a staged delivery of large solutions potentially enabling early releases to fund later stages of delivery much as new out of town supermarkets build the petrol station early on to help fund the construction of the grocery store.

2.1 Purpose

The purpose of this white paper is to provide the audience with an insight into the strategic value that testing can bring to an organisation through the use of alternative methodologies such as Benefits Based Testing.

It has a target audience of senior business managers and testing professionals.

2.2 Scope

The scope of this document is limited to:

- Strategic value of software testing delivered through a benefits based approach
- The unique proposition of consultancy from TCL.

The document does not intend to explain in any detail the existing TCL solutions, but further information can be obtained from our website (www.TransitionConsulting.co.uk) or by contacting Steven Field (Steve.Field@TransitionConsulting.co.uk).

2.3 Terminology

Terminology	Definition
ROI	Return on Investment
SMaRT	The TCL test methodology. Acronym stands for: Structured, Managed and Realistic Testing.
TCL	Transition Consulting Limited – www.TransitionConsulting.co.uk

2.4 References

Reference	Name	Author	Version	Location/Filename
1.	PRINCE2 – a Practitioners Approach	OGC	2.1	TCL Library, Exeter



Reference	Name	Author	Version	Location/Filename
2.	Managing Successful Programmes	OGC	1.0	ISBN: 0113309171
3.	Risk based Test Reporting	Systeme Evolutif	N/A	www.evolutif.co.uk
4.	Enterprise Developer Testing	Agitar Software Inc.	N/A	www.agitar.com
5.	Will benefits based testing help achieve early ROI?	Barry Weston	N/A	TCL Library, Exeter
6.	Customer Centricity Inc	N/A	N/A	www.customercentricity.biz
7.	SMaRT – TCL Test Management Methodology	TCL	Baseline 4	TCL Library, Exeter
8.	Strategic Value of Testing	Barry Weston	1.00	Strategic Value of Testing V1.00 SDN 110406

3 What is Benefits Based Testing?

Benefits-based testing turns our traditional view of testing on its head. As testers, project managers or business analysts the focus of our testing activity tends to be on identifying the complexities of solutions to then deliver and test them first. We are driven by our experience which tells us this is where the majority of the defects are likely to exist. It's a perfectly valid view however it focuses on the architecture of the solution rather than the outcomes of the solution itself. In strategic terms this would be referred to as a 'resource based view'.

Benefits based testing changes the focus to the solution rather than the architecture and seeks to focus on those aspects of the solution that are going to provide the organisation with the greatest benefit first. This change of approach has far reaching implications across the whole project (or programme) of work and places testing as a facilitator of holistic change. The approach will ensure that:

- There is a benefits justified business case against which assessment can be made
- The project is going to be owned and driven by business need
- The focus of the solution is going to be around delivering business benefit
- The whole delivery lifecycle will be subject to ongoing assessment to ensure benefits can be delivered and have been delivered post live
- Testing transforms into technical project (or programme) assurance.

We are, therefore, trying to link what the business is expecting to achieve through what the technical team is delivering and it is worth considering this in the context of four factors:

1. Focus and Approach
2. Defect removal
3. Measures of success
4. Process ownership.

3.1 Focus and Approach

Benefits-based testing emphasises the importance of the features of the solution that are going to provide the most value to the business. As with all assessments of benefit, avoided costs and improved service both need to be considered not just the increased revenues.

The implications of this change in focus are firstly that the order of the development activity will be driven by the solution rather than the technology. Those features that are going to deliver the greatest benefit may not be those that are the most technically challenging. It would be wrong to assume that we can ignore the technology in the same way that we cannot ignore the lead times for equipment delivery but it shouldn't be the key driver.

Secondly, the traditional methods and techniques we use to identify and report the focus of our testing are different and require a different set of skills to implement and require more detailed interaction with the business owners and the user community.

The success of our benefits-based test approach relies on the early engagement of the test teams with the business owners and the project (or programme) manager to identify and quantify the solution's benefits in terms of financial value. This will potentially extend the time taken to create the business case as there will be a need to justify the basis of the anticipated benefits. This early on in the delivery lifecycle the project team will be basing the



benefits on best guesses as all the information required to accurately determine the benefits might not be available. The test team representative should, however, challenge these early figures to assess the confidence that can be placed on them and also to determine the amount of assurance that is likely to be needed for each identified benefit. Some benefits are going likely to need considerable assurance effort; others, much less. The amount of assurance isn't directly linked to benefit as it requires consideration to be given to the complexity of delivering that part of the solution. Those high value complex items are likely to require more testing than high value simple items. The priority of the testing is however driven purely by the benefit.

The effectiveness of a benefits based approach is entirely contingent on securing an appropriate and robust business case. Without this the approach will not succeed. This assured and quantified business case will also facilitate a more successful project (or programme) overall.

Our test planning needs a two pronged attack. Primarily we need to protect the benefits available from the delivered solution through our traditional dynamic testing activity. We then need to ensure that the business as a whole is ready to operate with the proposed system through static testing.

We can consider these two areas under the following headings

Testing Focus	Definition
Critical business processes	Those end-to-end processes that must be operational within the proposed solution which enable the core functionality to be achieved.
Critical transactions	Transactions which are essential to the operation of the key processes of the system. For example, in a commercial system one of the critical transactions is likely to be payments processing. Without this system performing correctly it can be considered to be incomplete. Critical transactions are likely to be technology focused and so the assurance activities around these transactions will reflect this.
Frequent operation	Those operations that occur most frequently within the system and whose failure is therefore most obvious to the user.
Key interfaces	Those interfaces which if non-functional prevent the system from achieving its primary objective. For example, when using an online credit card payments system, if the interface to the bank is non-functional payment cannot be made.

By using these headings as our assurance drivers are refining the benefits based approach to ensure that we further focus on those most valuable parts of the system. With this approach the low frequency, non-critical transactions will be given a lower priority than

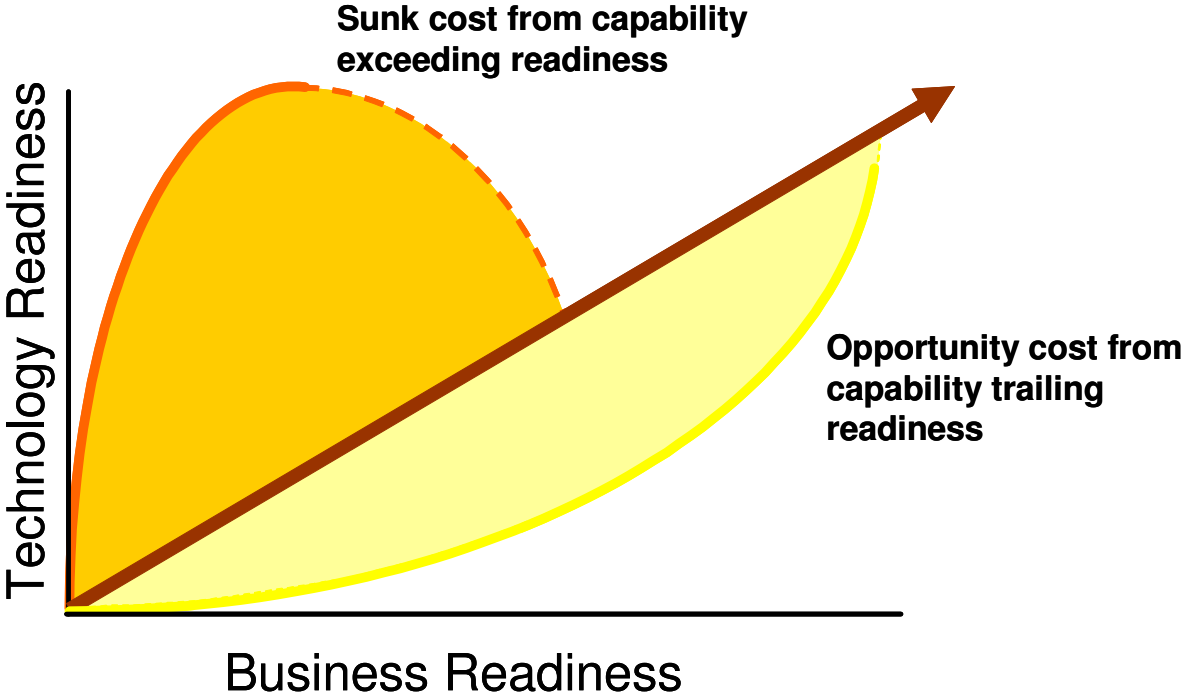


critical transactions or processes. It is also essential in all the assurance activities that the three fundamental components of the system are considered:

- **People** who are to use the system
- **Processes** required to enable the operation of the system
- **Technology** required to perform the detailed processing.

The assessment of these attributes throughout the development of the solution will help ensure that the final system is complete, integrated and fit for purpose. This is perhaps the most critical aspect of delivery assurance as it is all too easy for the readiness of the systems (technology) to surpass the ability of the organisation to utilise them.

Figure 1 - Ensuring Technology and Business Capability Remain in Step depicts this aspect of delivery with the arrow showing the ideal path.



³ Adapted from J. Thomas Gormley III & Jeanne Ross

Figure 1 - Ensuring Technology and Business Capability Remain in Step



The following techniques are recommended for the most effective assurance activities.

Technique	Critical Business Process	Critical Transaction	Frequent Operation	Key Interface
Dry Run	✓		✓	
End-to-End scenario based execution	✓			
Fagan Inspection	✓		✓	
Formal Review	✓			
Load and Performance Test			✓	✓
Model office	✓			
Readiness Assessment	✓			
Test Results Inspection		✓		✓
Transaction-based integration testing		✓		

3.2 Defect Removal

Testing is often seen as a late lifecycle activity that starts almost once development has completed. Even with our best intentions the test team rarely gets full engagement early on because the project focus is often around intangibles. This is particularly true when we are assessing the riskiest areas to focus on first or determining those areas of the solution where we need to focus our static testing.

This leads to a resourcing profile similar to the one shown in Figure 2 - Typical resourcing profile of a risk based test project.

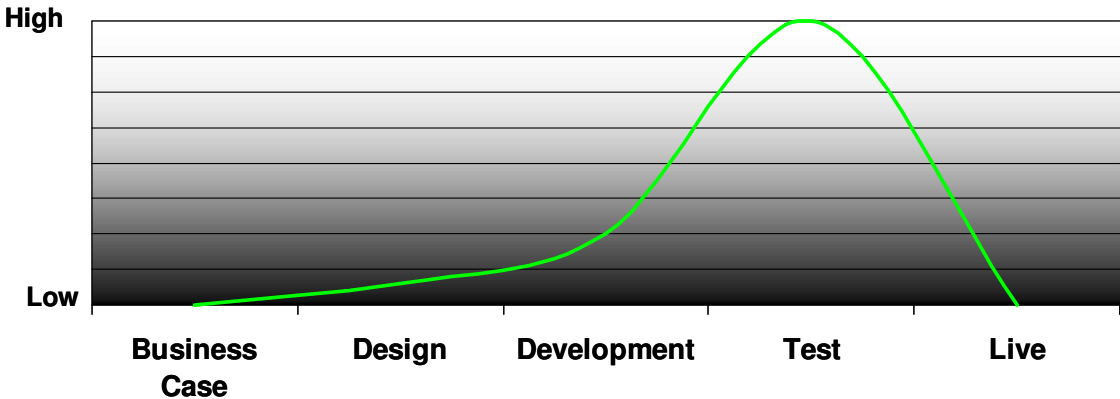


Figure 2 - Typical resourcing profile of a risk based test project

The late involvement of the test team undoubtedly leads to propagation of defects from the early development stages through to test and live. This often results in the need to reprioritise defects at the end of the test phase to get the project implemented. Reprioritisation in this instance invariably means downgrading the importance of defects to meet the specified test exit criteria. This is a time consuming, costly and inefficient approach which could be avoided.

Using the benefits-based approach the driver for all assurance activity is the business case. As this is where the benefits are determined the test team is engaged early on in the project. With the extended requirement for ongoing assurance and readiness assessment activity throughout the delivery lifecycle we arrive at a resourcing profile similar to the one shown in Figure 3 - Typical Resourcing Profile for a benefits based test project.

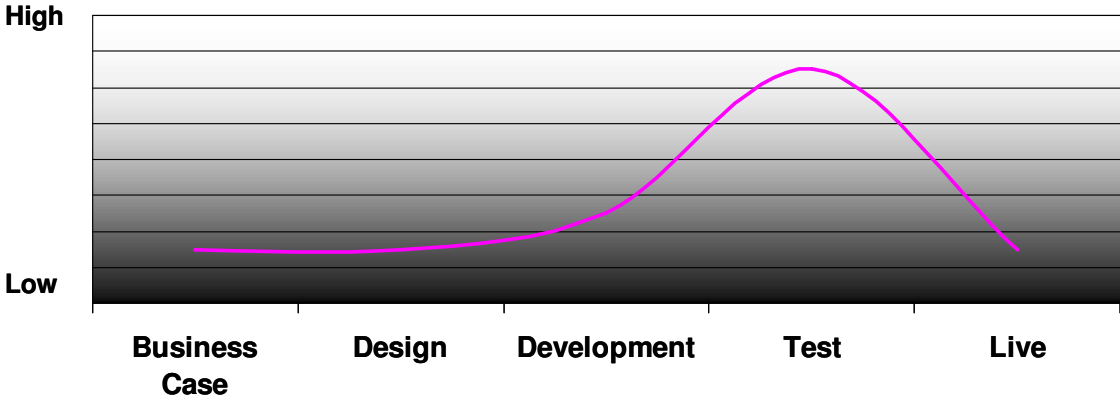


Figure 3 - Typical Resourcing Profile for a benefits based test project

With the focus of our approach being around the ongoing assurance of the overall solution there is more opportunity to identify defects earlier. Our defect categorisation is driven by

value and specifically to the business case. Those defects that are preventing the most benefit from being realised are allocated the highest priority for fixing.

The effect of this benefit based risk categorisation is that reprioritisation of defects at the end of the development lifecycle becomes less subjective. Our ongoing assurance activity will have confirmed as far as is possible the value of each requirement or process and so downgrading defects is an explicit acceptance by the business that they are willing to forego that amount of benefit in the delivered solution.

3.3 Measures of Success

Measuring the success of any project from a testing point of view is difficult to do and is often done simply in terms of the number of defects that are detected in the live environment. A benefits based approach allows us to be more sophisticated. Throughout the development of the system the assurance activity will have periodically refined the anticipated benefits of the solution and so success can be measured in terms of determining whether the anticipated benefits have actually been achieved within the specific timescale.

This will require some element of testing of the achieved business benefits, which should take place as part of the natural course of any business driven project. The test team itself would therefore have a limited involvement with those activities.

When these measures are combined with the more technical measures of success contained within the ISO 9126 standard, a rounded and objective view of the success of testing will have been achieved.

3.4 Process Ownership

The benefits based approach to testing frees the test team from the shadow of either the development department or the QA department as is prevalent in many organisations and the business will implicitly drive the testing through its ownership of the business benefits.

This ownership of the test team drivers is important to the success of the technique as the test team must be seen to be independent of all functional areas in order to deliver its assurance effectively. It is probably best to logically locate the test team within the project (programme) office as the project's assurance team as defined within PRINCE2 – A Practitioners Approach and Managing Successful Programmes, the UK Office of Government Communications handbooks on project and programme management techniques.



4 The Assurance Process

4.1 Overview

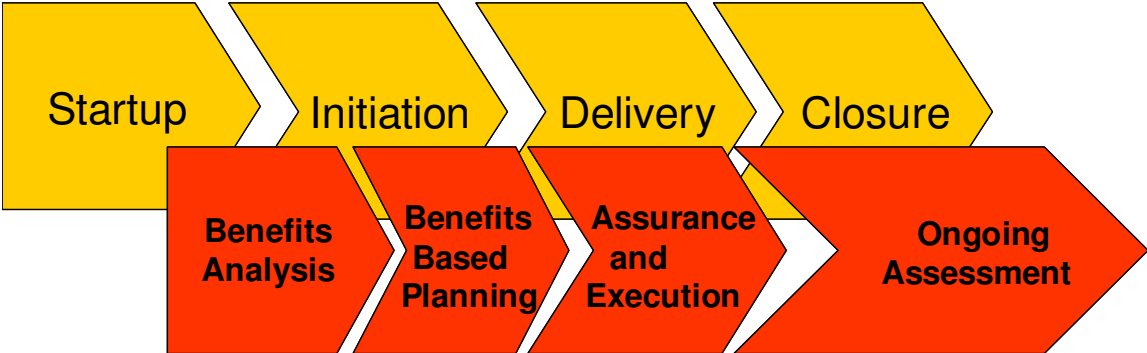


Figure 4 - Generic Development and Assurance Process

Using a simplified model of the PRINCE2 project delivery lifecycle we can overlay the assurance activities that need to be undertaken during the project from the initial analysis of the available benefits through to the ongoing assessment after project closure in the live environment. These activities are shown in Figure 4 - Generic Development and Assurance Process. The following sections identify the key activities that need to be performed in order ensure business benefits are realised and measurable post project completion.

4.2 Benefits Analysis

Benefits analysis and the ongoing refinement and justification of them is one area of project delivery that is often carried out in order to get project budget signoff. TCL however recognises that this is a critical activity in the development process and is the cornerstone of the ongoing business and project assurance activity.

In order to maximise the effectiveness of the analysis phase TCL recommends that benefits analysis workshops are carried out with all areas of the business affected by the change and the outputs of these workshops are recorded in a standard benefits realisation table which includes information on how the predicted benefits are going to be measured and by whom.

These workshops are best facilitated by senior members of the business assurance team familiar with running workshops with senior managers.

Included within the standard TCL benefits realisation table are the following attributes:

- Benefit description
- Financial value (either as increased revenue, avoided cost or improved service)
- Dependencies
- Responsibilities
- Measurement process.

[There other attributes included within the table which is available from TCL.]



Once the workshops have been completed and the project team is confident in the quality of the information recorded the benefits can be prioritised in order of their financial value (highest value first) to facilitate the planning process.

4.3 Benefits Based Planning

TCL’s benefits based test planning process is inclusive of all areas of the business that are affected by the project. In general terms the technology, the people and the underlying processes are all included within the test plan and considers both the static and the dynamic test techniques that are appropriate to the benefit to be tested.

On completion of the first draft of the test plan a thorough review of the test plan is undertaken with the project team to ensure remains consistent with business need. The output of the planning process is also recorded in the benefits realisation table. We believe that it is only by interlacing the testing and the assurance activities in this way that projects will maximise their chances of releasing the revenues available through the delivery of the project.

4.4 Assurance and Execution

Using the Benefits realisation table and the agreed test plan the assurance and traditional test activities are performed. TCL’s benefits based test execution process emphasises the importance of ongoing assurance within development phases as well as the traditional end-phase quality gates. The ongoing assessment processes are also used to periodically re-confirm the anticipated financial value of each of the business benefits which allows reprioritisation of testing if required.

Figure 5 - Business Assurance Validation, Verification and Test Activities shows the different mix of the assurance processes through the development process.

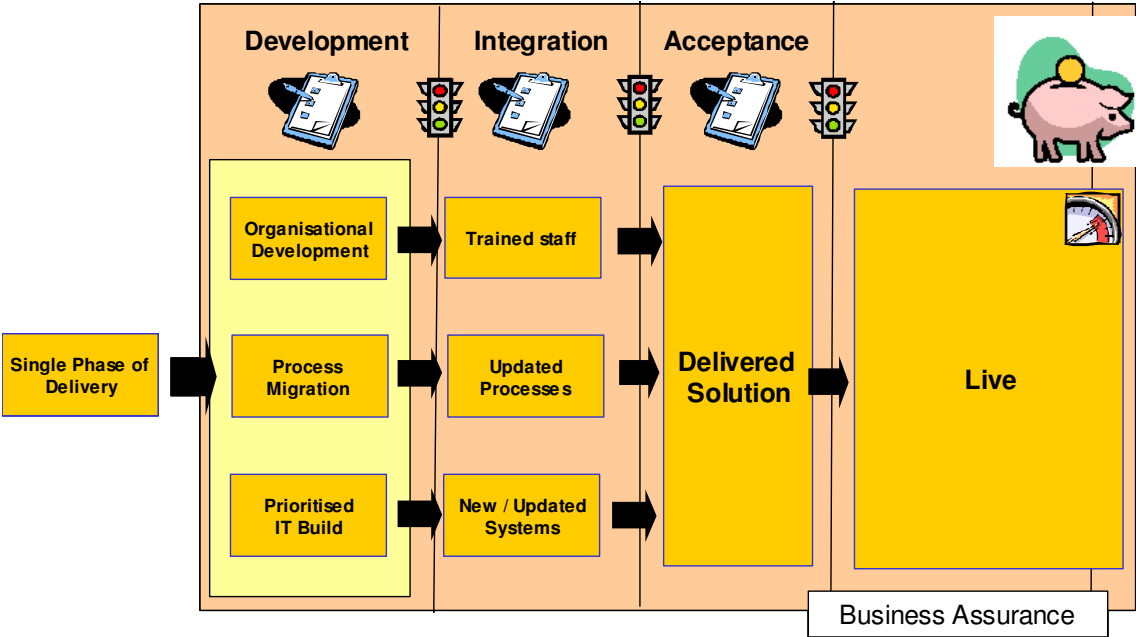


Figure 5 - Business Assurance Validation, Verification and Test Activities



The clipboard identifies that in addition to the ongoing test activities business readiness assessments are also undertaken to confirm that the business, especially the user community, is at the correct stage of readiness for the current stage of the project. This may be in terms of self assessment, reviewed by the test team or by inspection or test. The precise activities will, of course be driven by the solution being produced.



The traffic lights indicate the traditional quality gates that exist within most project environments. TCL believes these quality gates are points in the process where the benefits realisation table should be reviewed and reprioritised where necessary. This ensures that the focus of the test effort is always on the most important benefits of the solution.



Finally, there is the ongoing assessment post live where the actual benefits realised by the implemented solution are captured and recorded. This is discussed in more detail in the next section.

4.4.1 Defect Recording

In a similar way to defect recording and management in traditional testing, the benefits based approach priorities the order that defects should be fixed. The prioritisation for fixing defects is driven purely by the financial value blocked by the defect. TCL uses a defect reporting table modified from one originally created by Systeme Evolutif.

		B1	B2	B3	B4	B5	B6	B7	B8
Defect 1	Open	Black		Black			Black		Black
Risk 1	Retest	Yellow	Yellow						Yellow
Defect 2	Closed								
Defect 3	Open			Black			Black	Black	
Risk 2	Open							Black	Black
Defect 4	Closed								

As defects are raised the benefits that are “blocked” by the defect are added to the table and the status of the defect recorded. As defects are fixed their status is updated and when agreed as “closed” the benefit is then considered available again. The blocked benefits are shaded red, cleared benefits – those that are once again available – are shown in green.



4.5 Ongoing Assessment

The final stage of the benefits realisation test activity is the ongoing assessment where the test team will, at predefined points, reassess the benefits that have been realised thus far.

This information is fed into post implementation reviews to determine whether further actions of more detailed investigations are required. TCL's benefits realisation table is updated during these assessments and returned to the business on project closure.



5 Conclusion

TCL's approach to benefits based testing helps ensure projects deliver the anticipated benefits of major projects through the use of appropriate assurance techniques and transparent benefits recording involving all areas of the business involved in the change.

One of the significant and valuable side effects of using this approach is that project and programme managers can, perhaps for the first time, have confidence in the financial value recorded in the business case.

Clearly, this approach will not be appropriate for all projects or some industries. Those involved with safety critical systems where risk reduction is the key driver are less suitable, although the approach cannot be excluded from even their scope.



6 About Transition Consulting Limited (TCL)

Transition Consulting Limited (TCL) is a specialist consultancy in software testing. As a consultancy, our core purpose is to Deliver World Class Solutions in Software Testing that are Innovative, Structured and Professional – we are geared to deliver in all areas of software testing, from Unit Testing to Performance Testing, and everything in between.

Our competencies are best displayed in shaping test activities to the benefit of our clients, and assuring that the products are successfully implemented - not just tested. Our experience, and delivery process, has been repeatedly proven and reinforced in many challenging environments.

We provide strategic consultancy to organisations looking to establish mature practice and to measure the effectiveness of the testing approaches they are using. Through the provision of training services we are also able to share the knowledge and experience we have gained and provide support in the implementation of these concepts at our clients. Our training solutions include:

- All aspects of testing and test management
- ISEB Qualification courses
- Bespoke courses constructed to meet our clients' specific needs
- Coaching and mentoring
- Security Testing
- Automated and performance testing.

6.1 Contact for Further information

Further information on TCL can be found at our website (www.TransitionConsulting.co.uk) or by contacting Steven Field (Steve.Field@TransitionConsulting.co.uk).

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