

ASSURANCE

Static Testing Guide

The Science Systems Institute (IBM) reported that “the cost to fix an error found after release was **four to five times as much** as one uncovered during design, and **up to 100 times more** than one identified in the maintenance phase”



Static Testing promotes **prevention before detection**. Introduce quality at every stage of development and as early as possible. The cost savings along with the ability to deliver on time with the expected quality level becomes ever more predictable.

What is Static Testing?

Static testing is a quality assurance activity that can be performed without executing the application or the system. Typically this involves a desk reviews, workshops, or inspection of a key artifact associated with the delivery.

What artifacts are subject to Static Testing?

Static testing can be performed on key documents associated with the development process. Scope, requirements, design, and process documents are proven to enhance the quality and predictability of system delivery if static testing is incorporated.

Code can also be subject to static testing, either again through code reviews or various static code analysis tools available on the market. The selection of a tool will depend on the choice of language.

When should Static Testing be performed?

The benefits of static testing are maximised when performed early within the development lifecycle. Scope and requirement reviews and static analysis can identify defects very early on, and can also reduce the likelihood of unwelcome change requests late on in development lifecycles.

But static testing should not stop there. We recommend static testing principles should be applied throughout the development lifecycle.

How should the static test be performed?

Static testing should be performed through the organisation of both **Informal and Formal Reviews**. Ensure the correct stakeholder group is involved if you are to gain maximum value. **Walkthroughs** of the solution or document can really add value, the more the key stakeholder group can visualize a solution the more likely you are to eliminate the need for expensive change requests. **Inspections** can be more formal led by a nominated individual, or subject matter expert (but not the author), and can assist with early defect detection. We recommend inspections to gain approval of key documents.

The Benefits

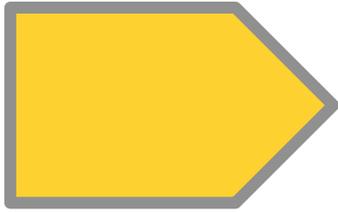
The benefits of these techniques are well documented. But in order to get the most benefit static testing must be consistent, well managed, controlled, and performed throughout the lifecycle. To help visualise the benefit it is estimated that **if a defect discovered during the requirements phase costs £1 to remediate, it would cost £100 to resolve** once the defect is introduced into a production environment.

Resources

See **Static Analysis Tools - [Wikipedia list of static analysis tools](#)**

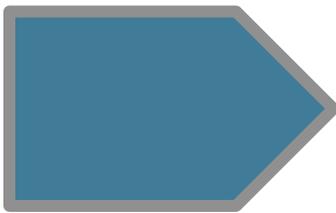
Also see our free reference guide below.

There are **six basic criteria** we recommend for static testing. These can be applied to any artifact subject to this level of testing, and provide an objective measurement of the quality of the artifact.



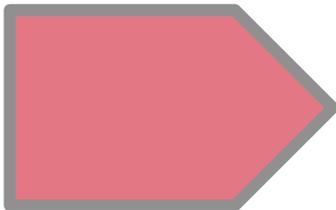
Correctness.

'Being free from error'. Is the requirement or design statement in scope for the project delivery, is it technically feasible, or relevant to the business objectives. Consider spelling and grammar as an indicator of quality.



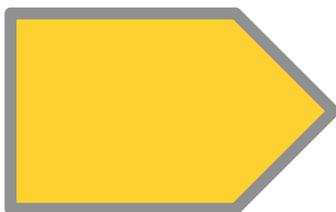
Testability.

Can a tester devise test scenarios and scripts to cover all aspects of the requirement or design statement, and can the expected results be clearly defined? Is the requirement or statement ambiguous and therefore difficult to articulate as an expected result?



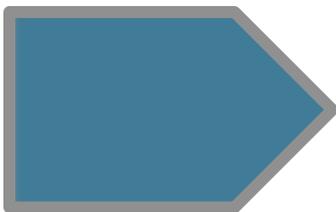
Clarity.

Sounds a little obvious this one, but is the requirement or design statement clearly defined. Does it have an identified source and owner? Does it clearly prioritise the requirements? Has the section under question been documented to be deliberately vague or open to interpretation?



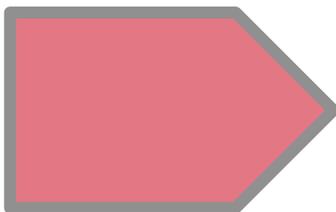
Completeness.

Key words that always raise concerns for us include: may, might, or maybe. Also keep an eye out for sentences that end 'etc' or 'i.e.'. Incomplete lists of values, or redirects to other documents, web links, or sites also raise concerns around artifact controls.



Consistency.

Are all requirements presented in a consistent manner, in the correct template, with a unique id? Does the design comply with company and best practice standards? Has a priority been applied, along with an owner of the requirement?



Traceability.

Is the requirement or design statement in line with the scope of the deliverable, can design artefacts be traced to requirements. The benefit here will ensure there is no scope creep.

Static Testing Reference Sheet

Correctness

Testability

Clarity

Completeness

Consistency

Traceability

Review

Walkthrough

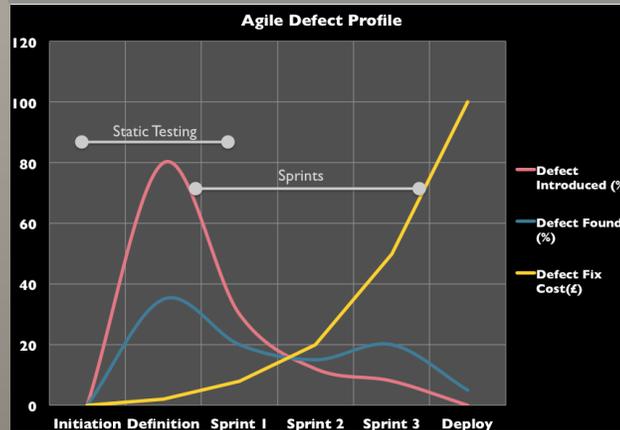
Inspect

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • Formal & Informal • Checklists • Review Logs | <ul style="list-style-type: none"> • Discussion Forum • Playback Options • Conference Room • Gain Agreement | <ul style="list-style-type: none"> • Formal • Moderator, Author & Inspector • Formal Output • Gain Sign-Off |
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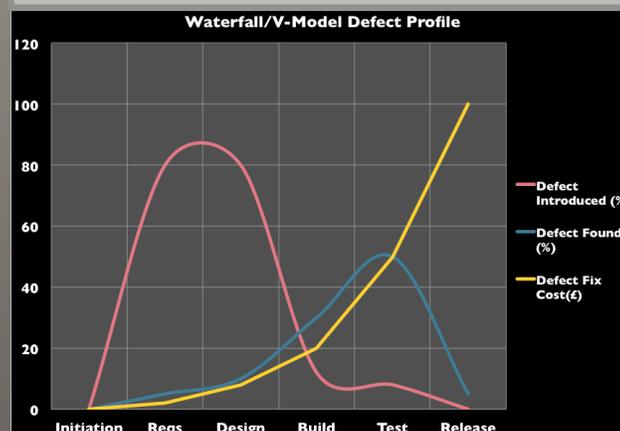
Process

- | | |
|---------------------|------------------------|
| ✓ Scope Definition | ✓ User Guides |
| ✓ Requirements | ✓ Training Guides |
| ✓ Functional Design | ✓ Code |
| ✓ Technical Design | ✓ Test Cases & Scripts |

Artifacts



Reduce the cost of defect resolution by identifying them early in the lifecycle (shift the defect detection to the left).



In relative terms the cost of resolving a defect in a production system is x100 when compared to detection in the requirements phase.

Benefits



Assurance

At tiQtoQ we are dedicated to supporting our clients to reduce their testing costs, improve the quality of their products, and provide confidence in the overall delivery.

Please contact us for further information

www.tiqtoq.co.uk

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