Transport for London

Guide to Testing requirements

This document describes the test strategy for TfL Online projects. It identifies the possible set of test activities to be undertaken across the complete project lifecycle, and for each test activity defines the process to be undertaken, entry and exit criteria.

Audience

- Developers
- Testing team
- Project managers

Overview

On completion of code development, code is deployed to the test environment and subjected to further validation testing. This examines the behaviour of the code as a whole. The scope of this testing is dependent on the code, but will include one or more of the following:

- **Functional testing:** Testing the operation of business scenarios to ensure functional correctness
- **Integration testing:** This testing will validate that all the individual software modules function cohesively when combined and tested as a complete system
- **Accessibility testing:** Testing against web accessibility standards, such as Web Content Accessibility Guidelines (WCAG 2.0) AA/AAA rating
- **Compatibility testing:** Test within a range of browsers and operating systems to ensure correct operation

On completion of the code, the product itself is deployed to the like-live environment and subjected to Product Implementation testing. This examines the behaviour of the product as a whole to ensure it is of sufficient quality to release into live operations. This testing will comprise one or more of the following test phases, dependent on the scope of the product:

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- **Business scenario testing:** Testing against real-world business scenarios, including edge cases

- **Penetration testing:** Targeted testing to identify any vulnerabilities which can be exploited to attack the system, attack other users, bypass controls, escalate privileges or extract sensitive data.

- **Compatibility testing:** Ensures correct operation in a range of browsers, operating systems and devices.

- **Accessibility testing:** Testing against web accessibility standards, and also tests by a range of disabled users using assistive technologies. This will form the disabled component of a wider Equality Impact Assessment.

- **Operational acceptance testing:** Testing the operational readiness of the product in terms of resilience and supportability

- **Load testing:** Operation under conditions of peak loading, including verification that the product meets its load and performance non-functional requirements.

Once a product has completed Product Implementation testing, it undergoes User Acceptance Testing. This involves simulating live operation with end-users which, when successfully completed, meets the entrance criteria for acceptance by Service Management as being ready for live deployment.

Environments

The four environments below are deemed the minimum requirement for testing:

- **Development:** Unit and associated technical testing
- **Test:** Validation testing of a completed code
- **Pre-live:** Validation testing of a completed product
- **Live:** Products are deployed to live after acceptance into service management

Defect management

Defects **must** be managed using a defect management tool and classified as one of four general severity levels, as described below. The specific definition will be dependent on the type of testing being undertaken:

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Sev 1: Critical; a 'showstopper' that renders a solution unusable from a business point of view,

Sev 2: Major; serious issue causing a major part of the solution to be unusable, but a workaround is in place.

Sev 3: Standard; errors that do not significantly degrade the operation of the solution, but need to be fixed.

Sev 4: Minor; errors that provide minimal impact to the operation of the solution; cosmetic errors.

Defects will link to the code/product for which they were identified, and will be assigned a type to indicate which test activity they occurred in. This will allow reporting on numbers of open defects across code/products and test phases.

Why we do this

We want TfL's digital services to be accessible and usable for everyone. This means ensuring our services are predictable, consistent and defect-free.

Testing in a range of environments against a range of validation requirements also ensures we can identify and resolve potential problems early in the design process, rather than trying to make costly changes after a service has been built.

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Version History

Version	Date	Summary of changes
1.0	06/11/2013	First issue

Review History

Name	Title	Date	Comments

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