

## Quality Assurance

The Quality Assurance team works closely with the Communications and Development teams from the very beginning of a project. Team leaders meet regularly to discuss a project's progress, resolve product issues and to coordinate scheduling.

The QA process begins by developing a test plan, which is based on a functional specification and any associated documentation. The test plan describes the test objectives, establishes a strategy for testing and provides a framework for detailed test planning. Additional QA documentation is created during the development process and includes checklists, matrixes, manual and automated testing scripts.

In general, testing is targeted at specific features and functional areas as they are completed by the Development and Communications teams. Product defects, or "bugs," are recorded in the bug tracking system (FogBugz) shared by Communications, Development and Quality Assurance teams. As cases are resolved, their FogBugz status is updated to indicate progress and readiness for testing.

QA milestones are scheduled to anticipate development milestones, and testing is coordinated to target specific features and functional areas as they are completed. QA performs Basic Acceptance Tests, re-tests "resolved-fixed" bugs (known as regression testing), and then begins exploratory testing as well as manual and automated scripted testing of specific functional areas. These scripts exercise the product's features, as well as providing guidelines for performance, boundary, load and compatibility testing.

### *Types of Tests Performed*

#### **Basic Acceptance Tests**

Basic Acceptance Testing verifies that each major feature of the Collective has basic functionality. These tests are sometimes referred to as Smoke Tests.

#### **Exploratory Testing**

Exploratory testing is unscripted, unrehearsed testing (these tests are not planned in advance and are not carried out according to a plan). The effectiveness of this testing depends on several intangibles: the skill of the tester, their intuition, their experience, and their ability to follow hunches.

#### **Feature Tests**

Feature Testing verifies that given feature operates according to the functional specification. Feature testing is often guided by scripted testing (written test cases and scenarios). It can also be as general as a verbal guideline for Exploratory Testing, or as specific as an Automated Test script.

#### **Boundary Tests**

Boundary Testing verifies that only valid data can be entered. This involves entering values that are too long (large), entering values outside defined limits, as well as inputting "garbage" characters and data.

#### **Compatibility Tests**

Compatibility Testing ensures that the Collective functions correctly in all supported browser/operating system combinations. Compatibility tests are run after the first round of Functional tests has been completed and functional errors have been corrected.

#### **Performance Tests**

Performance Tests are tests that determine end to end timing (benchmarking) of various time critical processes and transactions, while the system is under low load, but with a production sized database. This sets 'best possible' performance expectation under a given configuration. It also highlights changes that may be needed before load testing begins.

**Concurrency Testing**

Concurrency testing is performed after Functional and Performance tests have been run. Concurrency testing verifies correct behavior with multiple users.

**Automated Tests**

Automated Testing ensures that frequently repeated tests requiring exact repetition (such as Smoke Tests) are performed quickly and are free from human error. Automated testing is performed by the use of automation software (such as Selenium or WATIR). Scripts are coded to represent a series of commands or operations and are executed by the automation software. Automated tests can also be used for Performance, Load and Concurrency testing.

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