

# Annual Report (17-A)

# Testing

## 1. Types of Tests

There are various standard classifications of tests which are appropriate for use when testing a AEM project.

### Units Tests

Tests (usually) made by the development team to ensure that the individual elements behave correctly - albeit in isolation.

### Integration Tests

Tests modules when combined. These tests are made after Unit Testing, but before System Testing.

### Smoke Tests

These are quick-and-dirty tests used to prove that the software is running and high-level functionality is available. The details are not tested.

### Functional Tests

These are used to test the functionality of the software. A series of tests will be designed to cover all functional details, with both expected and unexpected and/or erroneous input.

Black-box tests are functional tests of a complete unit / component / module, performed without knowledge of the internal workings of the element in question.

### System Tests

These test the entire system once it has been fully integrated and installed on a suitable platform.

They test the functionality on a black-box basis.

### Performance Tests

Performance tests are crucial when testing AEM.

They are used to illustrate the performance under differing conditions:

#### Normal

Conditions which the site will experience for say 90% of the time. For example, when only a proportion of the authors are using the system.

#### Peak

Conditions which will be experienced for a proportionally short time due to special circumstances; for example, when all authors use the system concurrently or when new content is published and a increased number of visitors view your site.

#### Extreme

Can be used to emulate the performance forecast when new, extremely interesting content is published on your website. Then an extreme peak may be seen - though this may not always be fully predictable.

These circumstances are sometimes seen when tickets for specific events are made available, or a much-awaited website is published for the first time.

The results are then used to tune the application.

#### Stress Tests

Stress tests are made to confirm how a component or application behaves under extreme conditions. In particular these tests are used to show how behavior deteriorates, when the element will fail - and how.

#### Regression Tests

Regression tests are used to confirm that functionality already proven in a previous release of the software is still operating correctly.

Regression Tests are good candidates for automation (if possible) to ensure they can be repeated quickly and consistently.

#### Acceptance Tests

Acceptance Tests are a special category as they are used to indicate the customer's acceptance of the project.

The list of acceptance tests may contain a combination of tests from the various categories above, and are selected to verify that the project fulfils the customer's requirements

## 2. Automated Testing Tools / Framework

Unit Tests : Junit, Mockito, Sling OSGi Mocks.

UI tests : Selenium runs tests in a real browser, hence, tests scripts are cross-platform and crossbrowser.

Web performance testing : Apache JMeter is recommended as it is free and satisfy most use cases. No additional server is required to be provisioned to simulate load.

## 3. Security Testing

Most of the time security testing is done by a 3rd party vendor to provide neutral feedback and running proprietary and sophisticated tools. The tools listed below are some tools which can be used to find vulnerabilities in web applications