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Software Quality Assurance Plan

# Introduction

## Purpose

The purpose of this software quality assurance plan is to define the techniques and methodologies which will enable SegFault Software to enforce the standards required to make L&R a high quality product. The format of this document follows the requirements of L&R’s Software Quality Plan .

## Scope

This document will assure that: (1) Language & Roles is a fully functioning and robust application; (2) the program suits the client’s needs; (3) documentation is of a high standard; (4) the development process cycle itself is high quality with all components acting in a professional manner.

# Applicability

This document will be used throughout the: analysis, design, implementation, testing and evaluation of Language & Roles. This SQA is in effect until all deliverables including the L&R program, documentation, installation, presentation and 2 years of phone support have been delivered to the client in their entirety.

This plan applies only to software developed by SegFault Software. Products and services provided by third parties may not abide by the same quality standards.

# Applicable Documents

Template used: <http://acis.mit.edu/acis/sqap/>

# Project Management and Planning

## Organisation



The L&R Project Team consists of 4 team members, 3 software developers and 1 technical author. All these members have been put under the direct management of Mark Robinson, a Java development team leader, for the development of this project. Mark acts as the point of contact for the client and reports directly to the Erin Anttila, Executive Director of European Software Development. Mark is acting software producer for this project and so is responsible for the overall project and managing contact with any other departments as required.

## Tasks

All tasks related to the development of the software including all documentation will be managed and completed by the L&RPT. Administration tasks such as accounting and payment processing will be handled by the appropriate departments. Interfacing with these other departments will be the responsibility of Mark Robinson.

## SQA Personnel

### SQA Training

No additional training is expected to be required as all staff members are already sufficiently trained to deliver a quality product. In the case of new staff being recruited or contractors hired it will be ensured that they have the necessary qualifications and that they become familiar with this SQA.

### Quality Software Developer - Training Certification

Every developer in the project team has already been assessed and provided QSD Certification by SegFault Software prior to joining the project team. This assessment is repeated annually to ensure compliance.

# Program Requirements

## Program Performance and Resource Allocation Monitoring

This will be included in the usability testing as exceeding latency limits may not make the program a technical failure however will make it difficult to use in practice.

## SQA Program Audits

SQA will review and approve all design documents prior to development to ensure that the proposed system fits the client’s needs and SegFault Software’s quality standards. This will include L&R but not any third part dependencies, though dependencies shall be checked for adequate compatibility with the client’s computer systems.

### Scheduled Audits

Audits will occur at the end of each development phase before delivery and at each stage of testing the software.

### Unscheduled Audits

Unscheduled SQA audits will occur both at random and when issues arise to ensure constant compliance.

### Audits of the SQA Organisation

Audits of those responsible for the SQA will be completed by SegFault Software’s Internal Audit department at random and on completion of each phase before delivery. This will ensure that the project team’s SQA has been effective; results shall be delivered to the Executive Director of European Software Development and archived by the Internal Audit department.

### Audit Reports

Audit reports contain the current status of the project, its quality level and recommended corrective actions. These reports shall be delivered to the project team and the corrective actions will be brought to the attention of the member of the team responsible for that section of the project.

## SQA Records

Audit reports will be held by both the project team and the Internal Audit department. Change and meeting logs shall be kept by just the project team and will be transferred to Internal Audit on the date of delivery of the software deliverables.

## SQA Status Reports

SQA status reports will include the current quality of the project, the current progress of the project and a summary of any SQA audits accomplished since the last status report. These reports will be delivered directly to the Executive Director of European Software Development and archived by the Internal Audit department.

## Software Documentation

SQA will review all documentation including those about L&R and those about the development process itself.

The essential documentation includes:

* Software Requirements Specification
* Costing Analysis
* Risk Analysis
* Quality Assurance Standards and Plan
* Conceptual Design
* Technical Design (UML, data storage,)
* Test Plan
* Testing
* Project Evaluation
* Client Presentation

Software documentation must be based on well-established standards or templates.

Documents will be audited to ensure they comply with the standards and templates used. Corrective recommendations will be issued if they do not comply which will be routed to the team member responsible. Documentation audits will be held by the project team and then transferred to Internal Audit for archiving.

## Requirements Traceability

SQA will audit requirements traceability via a spread sheet matrix to ensure all requirements are met at each stage of the development cycle. This will tie requirements from the SRS to lower level designs and tests of the resulting program.

## Software Development Process

SQA will audit deliverables between each phase of the software development lifecycle. This will not preclude any other audits from being carried out.

## Project Reviews

### Formal Reviews

All deliverables must be submitted for formal review at latest the day before they are to be delivered. Any deliverable revision submitted after this time will not be formally reviewed and so will not be delivered to the client. During formal review any discrepancies will result in modification without consultation however corrective recommendations will be sent to the team member responsible post-delivery to assist in increasing the quality of future projects.

### Informal Reviews

#### Design Walk-throughs

SQA will be invited to any and all design walkthroughs to help ensure that the design complies with: the quality standards of the project, the software requirements specification and ensures the design process is of a high quality.

#### Code Walk-throughs

SQA will be invited to any and all code walkthroughs to help ensure that the code complies with: the quality standards of the project, software requirements specification and ensure that the code is peer reviewed.

## Tools and Techniques

SQA will assure that the quality of all program critical components does not affect the quality of L&R. This includes third party libraries, frameworks and compilers. Case tools and tools used to create documentation need not be controlled.

## Software Configuration Management

Software configuration management is the management of the progression of the software’s definition from general concept to strict technical requirements. This ensures that all stages are client focussed and that there are no discrepancies between documents from different stages.

This will take the form of change logs and the policy that when a document is altered all dependents must be checked for consistency. Consistency shall also be checked as part of the formal audit at the end of a development phase.

## Release Procedures

Internal version control will use the .NET convention of: major version, minor version, revision number and build number i.e. 1.0.5.20042. This number will be removed prior to delivery to the client

External version control are identified by the number after the title, the first version will not have a number.

## Change Control

Change control will be managed using Git which whilst it has not been audited by SQA it is well established as a quality product.

When a release is sent to someone outside of the development team for testing purposes it will be sent with a short version description which will describe the scope of the current version, any known faults and the version number of the software.

## Problem Reporting

Any problems will be reported to the lead programmer and must include the test number that corresponds with what the user was doing, a description of the problem and the version number of the software. A copy of all problems reported will also be kept by SQA and transferred to Internal Audit on delivery of software deliverables for archiving.

## Software Testing

### Unit Test

Unit tests are necessary to ensure that each individual class functions properly these will be carried out by the lead programmer due to the fact it is a form of white box testing and therefore requires intimate knowledge of the code.

### Suitability Testing

Suitability testing will make sure that the functionality of the program fits the initial spec received from the client and the software requirements specification. It will be the responsibility of SQA to test this and cannot involve any team member which has programmed the software.

### Usability Testing

Usability testing will check that L&R is usable by young children and non-IT professionals. It will be the responsibility of the project manager to arrange these tests with an entity external to the entire project.

### Integration Testing

This will be the last round of testing to occur and will ensure that L&R will run on the client’s systems. This will be conducted by the programming and software installation team.