2/6/2017

Software Quality Plan

EXIT6 – Trip Planning Application for Singapore

Delivered by,

EXIT6 Team

Sim Long Siang(U1522053H)

Seshadri Madhavan (U1322790J)

Huang Jian Wei(U1521567A)

Lim Zi Yang(U1522218E)

Lim Hao Zhe(U1521589B)

Tan Jun Qiu(U1321638C)

Document Change Record

Revision	Description of Change	Approved by	Date
0.1.0	Initial Template	Sim Long Siang	06/02/17
1.0.0	Updated Version	Seshadri Madhavan	06/02/17

Contents

Problem Definition

Purpose

The purpose of this Software Quality Assurance (SQA) Plan is to establish the goals, processes, and responsibilities required to implement effective quality assurance functions for the **EXIT6 Trip Planning Application** project.

The Software Quality Assurance Plan provides the framework necessary to ensure a consistent approach to software quality assurance throughout the project life cycle. It defines the approach that will be used by the QAM and Software Quality (SQ) personnel to monitor and assess software development processes and products to provide objective insight into the maturity and quality of the software. The systematic monitoring of products, processes, and services will be evaluated to ensure they meet requirements and comply with policies, standards, and procedures, as well as applicable Institute of Electrical and Electronic Engineers (IEEE) and ISO standards.

Scope

The purpose of SQA is to ensure that the software developed does not deviate from the original intended product. SQA is also concerned to identify any errors, omissions, inconsistencies, and alternatives, enhancements or improvements that can be made at any stage of development.

The target of EXIT6 trip planning application is intended for all age ranges that are new to traveling and planning overseas trip. Beside the normal functionality of building a trip itinerary, the application enhances user's planning process by displaying current event happening at the place of interest during their travel period.

Reference Documents

1. IEEE STD 730-2002, IEEE Standard for Software Quality Assurance Plans (http://standards.ieee.org/reading/ieee/std_public/description/se/730-2002_desc.html)
2. ISO IEC 90003:2004 Software Standard (http://praxiom.com/iso-90003.htm)

3. Project Plan
4. System Requirement Specifications

Management

This section describes the management organizational structure, its roles and responsibilities, and the software quality tasks to be performed.

Management Organization

Role Allocation

The following role allocation was assumed in the project.

Roles	**Member**
Project Manager	Seshadri Madhavan
Quality Assurance Manager (QAM)	Sim Long Siang
Lead Developer Manager	Huang Jian Wei
Front-End Manager	Lim Hao Zhe
Back-End Manager	Lim Zi Yang
Release Manager	Tan Jun Qiu

Role Responsibility

Project Manager

The tasks of the project manager are the following –

- The system requirement specification document.
- The overall time scale for the project.
- The choice of system development life cycle.
- The choice of software development tools and techniques utilized.
- The selection of project teams.

Quality Assurance Manager

- Defines quality standards to be followed by writing quality assurance plan.
- Provides visibility into the processes being used by the software development teams and the quality of the products being built.
- Ensures that reviews and audits are carried out.
- Conduct SQ activities and record results and issues.

Lead Developer Manager

- Defines architecture for the system.
- Approve choice of framework used for the system.
- Delegates task to respective Front-End and Back-End personnel.

Front End Developer

- Design the user interface design of the system.
- Create Lo-fi/Hi-fi prototype.
- Review prototype design through design notebook.
- Co-ordination with Back-End Developer for integration.
- Organize usability test through test groups.
- Record usability errors and suggest improvements.

Back-End Manager

- Handles the system's database and server creation.
- Integrate external data APIs into the system.
- Ensure smooth retrival of data by API interfaces..
- Minimise the retrival time of data.
- Co-ordination with Front-End Developer for integration.
- Write Software Test Plan (TP).

Release Manager

- Handles test processes by delegating it to team members.
- Documents all test that are carried out.
- Maintains a structure in the CVS repository by creating new directories and imposing establishing naming conventions.
- Manages the proof reading of all documents before release of system.

Tasks

This section summarizes the tasks (product and process assessments) to be performed during the development of software. These tasks are selected based on the developer's Project Plan and planned deliverables, and identified reviews.

Product Assessments

The following product assessments will be conducted by SQ personnel:

1. Use Case Specification Review
2. Code Walkthrough
3. Prototype Review
4. Black Box and White Box Testing

Process Assessments

The following process assessments will be conducted by SQ personnel:

1. Requirement Management
2. Project Planning Review
3. Software Project tracking and oversight
4. Quality Assurance

Documents

Purpose

This section identifies the minimum documentation governing the requirements, development, verification, validation, and maintenance of software that falls within the scope of this software quality plan. Each document below shall be assessed (reviewed) by SQ personnel.

Minimum Document Requirements

- Project Proposal
- Work breakdown structure and schedule
- System Requirement Specification (SRS)
- Quality Assurance Plan (QAP)
- Use Case Diagram
- Project Plan
- Risk Management
- Prototype Visualization
- Configuration Management Plan
- Release Plan
- Test Plan (Including test case, requirements and coverage report)

Standards, Practices, Conventions and Metrics

Purpose

This section highlights the standards, practices, quality requirements, and metrics to be applied to ensure a successful software quality program.

Software Quality Programme

These practices and conventions are tools used to ensure a consistent approach to software quality for all programs/projects. EXIT6 Trip planning application focuses on the following quality attributes:

1. ***Functionality*** – The idea of a trip planning application is to assist users with his/her travelling plans by recommending locations and schedules given the interest selected. Thus, the system should be able to produce basic recommended trip schedules or itinerary to speed up the user's planning process. While most traveler's objective is to visit popular or famous location of a particular country, the algorithm used in the system must be able to filter out those places of interest and display for the user.

2. ***Usability*** – For the large age range of our target audience ranging from adolescence to elderly, a high level ease of understanding must be achieved for the system. User should be able to learn the workings of the application through a simple walkthrough on its first start up.

3. ***Efficiency*** – Given the high reliance on external location APIs and the algorithm required of a trip planning application, the time required for a query result to be produced is vital for the system. Users should be able to get the results he/she queried given a standard query timing.

Standard Metrics

The following standard metrics are the minimum planned metrics that will be collected, reported, and maintained in software quality assurance:

1. Usability Rating by test group during usability test
2. Query Execution Time
3. Length of Codes (LOC)
4. Cyclomatic Complexity (CC)
5. Number of completed functional requirement
6. Number of Error Message

Standard

1. **Documentation** – All project documentation relating to EXIT6 Trip Planning Application will follow and comply to IEEE standard software documentation.
2. **Reference Citation** – All documentation Citation will follow the IEEE Citation Reference format.

Procedures

Routine Meeting

EXIT6 Routine Meeting is carried for the whole software development team on a weekly basis. It is conducted on Tuesday, 10:30AM. Every issues and opinions discussed during the meeting are documented in meeting minutes for review. The conduct of the meeting are as follows:

1. Review on previous meeting minutes
2. Individual update of team member
3. Progress tracking of overall project
4. Discussion of current issue encountered
5. Resolution searching of issue
6. Task allocation
7. Conclusion and set next meeting details

Reviews

- Reviews are conducted on completion of each milestone as stated in the Project Plan (PP).
- The review process requires ALL team members (less the initiating member) to be inside.
- All final reviews must be approved by project manager before closure.

Testing

All procedures of system testing will be strictly followed per the Test Plan (TP) Document.

Conventions

File Naming – All documents saved are required to follow the file name convention as such: "EXIT6 – Filename"

Document Conventions – All documents relating to this project must comply to the follow conventions:

1. Documents are to be written using the standard font, Times New Roman

2. Titles and Sub-titles are set to be of Font Size 15/13. The remaining text inside the document will be at a minimum font size of 11.
3. Titles and Sub-titles must be bold and if necessary, underlined.
4. All titles and sub-titles must be correctly numbered and updated on the content page
5. The use of bullet points is applicable only if the overall content can be separate and are longer than 5 sentences long.

Software Reviews

Purpose

This section identifies the number and type of system/subsystem reviews and engineering peer reviews that will be supported by the SQ Personnel. The project milestone chart, and the SQ Personnel resource levels determine the reviews that are supported.

Minimum Software Reviews

For each review, SQ will assess the review products to assure that review packages are being developed per the specified criteria, the review content is complete, accurate, and of sufficient detail, and Requests for Action are captured, reviewed, and tracked to closure. In addition, SQ will assess the processes used to conduct the reviews to determine if appropriate personnel are in attendance, correct information is presented, entry and exit criteria are met, and appropriate documents are identified for update.

The following software reviews will be assessed by SQ:

- Project Plan Review
- Requirements Analysis Review
- Software Design Review
- Test Plan Review

- Acceptance Review

Testing

SQ personnel will assure that the test management processes and products are being implemented per Test Plan (TP). This includes all types of testing of software system components as described in the test plan, specifically during integration testing (verification) and acceptance testing (validation). SQ personnel will monitor testing efforts to assure that test schedules are adhered to and maintained to reflect an accurate progression of the testing activities. SQ will assure that tests are conducted using approved test procedures and appropriate test tools, and that test anomalies are identified, documented, addressed, and tracked to closure. In addition, SQ will assure that assumptions, constraints, and test results are accurately recorded to substantiate the requirements verification/validation status. SQ personnel will review post-test execution related artifacts including test reports, test results, problem reports, updated requirements verification matrices, etc.

Problem Reporting and Corrective Action

SQ personnel generate, track, and trend assessment findings and observations in a excel spreadsheet titled “EXIT6- Problem Reporting and Corrective Action”. On every routine meeting, QAM will raise all reported observation to the ground and solutions will be discussed as a whole.

QAM will be responsible in keep tracking the progress of the action taken on the reported problem and observation. He is to ensure that there is no backlog for the reported problem that may hinder the progress of the system development.

Tools, Techniques and Methodologies

SQ personnel will require access to the following:

Software Quality Tools

- Microsoft Office tools (i.e., Word, Excel, and PowerPoint)
- Visual Paradigm 13.2 and above for diagram review
- Android Studio for code review
- Google Drive for documentation storage

Media Control

SQ deliverables will be documented in one of the following Microsoft software applications: Word, Excel, or PowerPoint. Deliverables will be in soft copy, except for completed checklists from process and product assessments.

Record Collection, Maintenance, and Retention

SQ personnel will maintain records that document assessments performed on the project. Maintaining these records will provide objective evidence and traceability of assessments performed throughout the project's life cycle. There are two types of records that will be maintained: Hardcopy and Electronic. SQ personnel will maintain electronic or hard copies of all assessment reports and findings. SQ Project folders will contain hardcopies of the assessment work products such as completed checklists, supporting objective evidence, and notes.

The table below identifies the record types that will be collected, as well as the Record Custodian and Retention period

Record Title	Record Custodian	Record Retention
SQA Assessments	SQ Personnel	**6 months**
SQA Checklists	SQ Personnel	**6 months**
Deliverable Defects	**SQ Personnel**	**6 months**

Risk Management

SQ personnel will assess the project's risk management process and participate in monthly risk management meetings and report any software risks to the QAM and the project manager.

SQA Plan Change Procedure and History

SQ personnel are responsible for the maintenance of this plan. It is expected that this plan will be updated throughout the life cycle to reflect any changes in support levels and SQ activities. Proposed changes shall be submitted to the Quality Assurance Manager (QAM), along with supportive material justifying the proposed change.