**SERIS**

Solar Energy Research Institute Singapore



Cloud Based Realtime Analytical Monitoring of Photovoltaic Systems and Weather Parameters Project

Quality Plan

|  |  |
| --- | --- |
| Filing Reference | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP/QualityPlan.doc |
| Document Title | Quality Plan |
| Version | 1.1 |
| Prepared by | Nay Lin Aung |
| Date Created | 11/03/2018 |

|  |  |  |
| --- | --- | --- |
| **Approved by:** | | |
| Name | Designation | Date |
| Treza | System Architect | 23/03/2018 |
| **Authorized by:** | | |
| Name | Designation | Date |
| Kaung Myat Bo | Project Manager | 25/03/2018 |

**Document Reference** : SE25PT7SERIS/SERIS/MGMT/QUALITY/QP/*QualityPlan.doc*

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Author** | **Description** |
| 1.1 | 11/03/2018 | Nay Lin Aung | Initial version |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **For Internal use** | | **Date** | **Department** |
| Authorized By | Kaung Myat Bo | 20/03/2018 | Project Management Dept |
| Released By | Nay Lin Aung | 25/03/2018 | QA Dept |

**Distribution** :

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Organization** |
| Kaung Myat Bo | Project Management Dept | SE25PT7 |
| Nay Lin Aung | Quality Assurance Dept | SE25PT7 |
| Treza Bawm Win | System Design Dept | SE25PT7 |
| Vincent Agnes Evangelin | System Design Dept | SE25PT7 |
| Gao Zhiyu | System Design Dept | SE25PT7 |
| Bala | Change ManagementDept | SE25PT7 |
| Soe Pyae | Technical Specialist | SERIS |
| Dr.Zhao Lu | Head of Solar System Technology Group | SERIS |

Table of Contents

1. **INTRODUCTION**.………………………………………………………………………...5
   1. Purpose....……………………………………………………………………….........5
   2. Audience.………………………………………………………………………..……5
   3. Organization………………………………………………………………………….5
   4. References……………………………………………………………………………5
2. **PROJECT ORGANIZATION**....…………………………………………………….……..6
3. **LIASION WITH CUSTOMER**....………………………………………….………………7
4. **DOCUMENTATION ORGANIZATION**………………………………………………….7
5. **WORK PLAN DELIVERABLES**…………………………………………………………8
   1. Work Plan…………………………………………………………………………….8
   2. Deliverables……………………………………………………………………….….8
6. **PLANNING and PROGRESS CONTROL**………………………………………………10
   1. Project Planning……………………………………………………………………..10
   2. Project Control………………………………………………………………………10
   3. Delegation of Work………………………………………………………………….10
7. **QUALITY CONTROL**…………………………………………………..………………...11
   1. Schedule of Reviews………………………………………………………………...11
   2. Software Testing…………………………………………………………………….11
   3. Acceptance Procedure……………………………………………………………….12
8. **STANDARD METHONS AND TOOLS**……………………………………………..…...14
9. **USER CONTROL**……………………………………………………………………..…..15
   1. Prototyping………………………………...………………………………………..15
   2. System Specifications……………………………………………………………….15
   3. Acceptance Test Plan………………………………………………………………..15
   4. User’s Manual……………………………………………………………………….15
10. **CHANGE CONTROL**……………………………………………….…………………....16
    1. Control of Requirements…………………………….....……………………………16
    2. Documentation Control………………………..…………………………………....16
    3. Software Configuration Management………………………………………………17

**APPENDIX: PROJECT PERFORMA**……………………………….………………….18

1. **INTRODUCTION**

SERIS requires the development of cloud-based real-tiime monitoring system for photovoltaic and weather parameters .This will involve implementation of cloud-based backend server system and front-end web application.This system will be deployed in AWS Cloud. Users will be able to view, analyze, supervise and control different systems ranging from small rooftop systems to large ground-based PV power plants across different time zones.

**SE25PT7 team** will be taking care of implementation for cloud-based back-end application and front-end web applications.

This document is the project quality plan of SE25PT7 for development of back-end application and front-ent web application system.Thefollowing sections describe the plan in terms of its purpose, audience, organisation and related documents.

* 1. Purpose

This document defines the following:

* team organisation;
* deliverables and sign off procedures;
* planning and control procedures;
* standard methods and tools;and
* ensure the delivery of system of high quality
  1. Audience

The intended readers of this Quality Plan are all the participants in the project, to provide them with a plan for the activities that they are to perform for minimizing risk and ensure that they deliver a high quality system.

* 1. Organization

Section-2 presents the project structure, and section-3 describes the interfaces between the SERIS project management.Section-4 specifies the organisation and filing structure of project documentation. Section-5 outlines the work plan and the deliverables to be produced. Section-6 defines the methods to be used to plan and controls that are to be employed. The standards to be applied to the work programme are presented in Section 8. Finally, the procedures to be adopted to control changes are specified in Section-9.

1.4 References

To fully understand this document, the reader should also be familiar with:

|  |  |
| --- | --- |
|  | File Reference |
| User Requirement Specification | SE25PT7SERIS/SERIS/SPEC/REQUIREMENT |
| Project Plan | SE25PT7SERIS/SERIS/MGMT/PLAN/PP |
| High Level Design | SE25PT7SERIS/SERIS /TECH/DESIGN/HLD |

1. **PROJECT ORGANISATION**

**SE25PT7**

**ProjectManager**

**SE25PT7**

**System Architect**

**SE25PT7**

**Quality Assurance Manager**

**SE25PT7**

**System Analyst**

**SE25PT7**

**Software Engineers**

**SE25PT7**

**Lead Developer**

**SERIS**

**Head of Solar System Technology Group**

**SERIS**

**Technical Specialist**

**SE25PT7**

**Change Manager**

**SE25PT7**

**Software Testers**

1. **LIAISON WITH CLIENT**

The points of liaison between project management of SE25PT7 performing the software development and the client (SERIS), translation and manual writing are as given in the following table.

Table 3.1 Points of liaison

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SE24PT7** | | | **SERIS** | |
| **Responsibility** | **Name** | **Deputy** | **Name** | **Deputy** |
| Project Manager | Kaung Myat Bo |  | Soe Pyae/Dr.Zhao Lu | None |
| Project Liaison | Kaung Myat Bo |  | Soe Pyae/Dr.Zhao Lu | None |
| System Architect | Treza Bawm Win |  | Soe Pyae/Dr.Zhao Lu | None |
| Quality Manager | Nay Lin Aung |  | Soe Pyae/Dr.Zhao Lu | None |
| Technical Leader | Gao Zhiyu |  | Soe Pyae/Dr.Zhao Lu | None |
| System Analyst | Vincent Agnes Evangelin |  | Soe Pyae/Dr.Zhao Lu | None |
| Change Manager | Bala |  | Soe Pyae/Dr.Zhao Lu | None |
| Developers/Software Engineers/Testers | Kaung Myat Bo, Nay Lin Aung, Treza Bawm Win, Gao Zhiyu, Vincent Agnes Evangelin, Bala |  | Soe Pyae/Dr.Zhao Lu | None |

1. **DOCUMENTATION ORGANISATION**

Project documentation will be organized in a number of files according to the guideline field at **SE25PT7SERIS/SERIS*/MGMT/QUALITY/PFP***. Files will be maintained up-to-date according to the procedures defined in section 10.2. Two basic types of files will be maintained:

1. Management files and
2. Technical files.

The master file directory (MFD) and the file contents form for each file will be kept up to date at all times.The initial filing structure to be setup by the project is shown in the following tables. Other files will be added (and documented in the MFD) as and when required.

Table 3.2 Management Files

|  |  |  |
| --- | --- | --- |
| **File Category** | **File Reference** | **File Description** |
| Project Communication | SE25PT7SERIS/SERIS/MGMT/MEETING/EC  SE25PT7SERIS/SERIS/MGMT/MEETING/ /IC  SE25PT7SERIS/SERIS/MGMT/MEETING/AUM  SE25PT7SERIS/SERIS/MGMT/PLAN/WIF | External Correspondence  Internal Correspondence  Audit Minutes  Work Instruction Forms |
| Plans | SE25PT7SERIS/SERIS/MGMT/PLAN/PP  SE25PT7SERIS/SERIS/MGMT/QUALITY/MTP  SE25PT7SERIS/SERIS/MGMT/QUALITY/UTP  SE25PT7SERIS/SERIS/MGMT/QUALITY/STP  SE25PT7SERIS/SERIS/MGMT/QUALITY/ATP | Project Plan  Master Test Plan  Module/Unit Test Plan  System Test Plan  Acceptance Test Plan |
| Quality | SE25PT7SERIS/SERIS//MGMT/QUALITY/QP  SE25PT7SERIS/SERIS/MGMT/QUALITY/PFP  SE25PT7SERIS/SERIS/MGMT/QUALITY/CP | Quality Assurance Plan  Project Procedures  Configuration Procedures |
| Reporting and  Progress Control | SE25PT7SERIS/SERIS/MGMT/PLAN/TR  SE25PT7SERIS/SERIS/MGMT/PLAN/PR | Time Reports  Progress Reports |

Table 3.3 Technical Files

|  |  |  |
| --- | --- | --- |
| File Category | File Reference | File Description |
| Work Files | SE25PT7SERIS/SERIS/TECH/TWORK/KMB  SE25PT7SERIS/SERIS/TECH/TWORK/NAYLA  SE25PT7SERIS/SERIS/TECH/TWORK/TREZA  SE25PT7SERIS/SERIS/TECH/TWORK/GAOZY  SE25PT7SERIS/SERIS/TECH/TWORK/BALA  SE25PT7SERIS/SERIS/TECH/TEST/UT  SE25PT7SERIS/SERIS/TECH/TEST/ST  SE25PT7SERIS/SERIS/TECH/TEST/UAT | Kaung’s Workfile  Nay’sWorkfile  Treza’s Workfile  Gao’sWorkfile  Bala’sWorkfile  Module/Unit Testing Workfile  System Testing Workfile  Acceptance Testing Workfile |
| Technical Specifications | SE25PT7SERIS/SERIS/SPEC/REQUIREMENT/URS  SE25PT7SERIS/SERIS/SPEC/REQUIREMENT/UIS  SE25PT7SERIS/SERIS/TECH/DESIGN/HLD  SE25PT7SERIS/SERIS/TECH/USER/API  SE25PT7SERIS/SERIS/TECH/DEPLOY/DPC | User Requirement Spec  User Interface Spec  High Level Design Specification  Programmer’s Manual  Deployment Document |
| User Documents | SE25PT7SERIS/SERIS/TECH/USER/UG | User’s Manual |
| Software  Configuration  Management | SE25PT7SERIS/SERIS/TECH/LOGS/TC.1 SE25PT7SERIS/SERIS/TECH/LOGS/TC.2  SE25PT7SERIS/SERIS/TECH LOGS/TC.3  SE25PT7SERIS/SERIS/TECH/LOGS/TC.4 | Observation Reports/Error Log  Change Record in Change Log  Testing & Verification Log  Configuration Log of all versions |

5.**WORK PLAN AND DELIVERABLES**

The following sub-sections summarise the work programme to be carried out by the project and the deliverables that will be produced.

5.1 Work Plan

Work on the development of the user requirement specifications and prototyping has beenin progress for last three months. Some initial requirements and data analysis have been undertaken, and wire-framing of user interfaces and prototyping is currently under progress.The remainder of the work (to which this quality plan applies) will involve coding the application, testing, preparation of user documentation, integrationtest, system test, user acceptance test and user training.The work plan described in detail in the project plan is briefly described as follow:

Activity-1: User Requirement Specification

Activity-2: Prototype Development

Activity-3: System Design

Activity-4: Development

Activity-5: Software Testing

Activity-6: User and Programmer Documentation

Activity-7: Acceptance and Installation

Activity-8: Configuration Management

Activity-9: User Training

Activity-10: Management and Administration

5.2 Deliverables

Deliverables will fall into one of the two categories detailed below:

1. System deliverables; and
2. Management deliverables

Table-5.1 and 5.2 define the deliverables and acceptance procedures for all end products.

Table 5.1: System Deliverables

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Deliverables** | **Reference** | **Acceptance Procedures** |
| 1 | User Requirement Specification | SE25PT7SERIS/SERIS/SPEC/REQUIREMENT | See section 7.3.1 |
| 2 | Use Case Model Survey | SE25PT7SERIS/SERIS/TECH/ANALYSIS/UCMS | See section 7.3.1 |
| 3 | High Level Design | SE25PT7SERIS/SERIS/TECH/DSIGN/HLD | See section 7.3.1 |
| 4 | System Prototype | SE25PT7SERIS/SERIS/TECH/PROTOTYPE | See section 7.3.1 |
| 5 | System Specification | SE25PT7SERIS/SERIS/TECH/DESIGN | See section 7.3.1 |
| 6 | User’s Manual | SE25PT7SERIS/SERIS/TECH/USER/UG | See section 7.3.1 |
| 7 | Programmer’s Manual | SE25PT7SERIS/SERIS/TECH/USER/API | See section 7.3.2 |
| 8 | Module/Unit Testing Workfile | SE25PT7SERIS/SERIS/TECH/TEST/UT | See section 7.3.2 |
| 9 | System Testing Workfile | SE25PT7SERIS/SERIS/TECH/TEST/ST | See section 7.3.2 |
| 10 | Acceptance Testing Workfile | SE25PT7SERIS/SERIS/TECH/TEST/UAT | See section 7.3.2 |
| 11 | Software Configuration  Management Documentation | SE25PT7SERIS/SERIS/TECH/LOGS/TC.1 SE25PT7SERIS/SERIS/TECH/LOGS/TC.2  SE25PT7SERIS/SERIS/TECH/LOGS/TC.3  SE25PT7SERIS/SERIS/TECH/LOGS/TC.4 | See section 7.3.2 |
| 12 | Source and Executable Code | SE25PT7SERIS/SERIS/TECH/PROTOTYPE/PC | See section 7.3.4 |

Table 5.2: Management Deliverables

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Deliverables** | **Reference** | **Acceptance Procedures** |
| 1 | Project Plan | SE25PT7SERIS/SERIS/MGMT/PLAN/PP | See section 7.3.2 |
| 2 | QA Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP | See section 7.3.2 |
| 3 | Master Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/MTP | See section 7.3.2 |
| 4 | System Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/STP | See section 7.3.2 |
| 5 | Acceptance Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/ATP | See section 7.3.2 |
| 6 | Progress Report | SE25PT7SERIS/SERIS/MGMT/PLAN/PR | See section 7.3.3 |

1. **PLANNING AND PROGRESS CONTROL**

This section describes the methods that will be used by the project to plan the development of the system, delegate planned work to project team members, and monitor and control progress against the plan.

* 1. Project Planning

The overall plan for the work to be done on the project is described in the Project Plan (reference: ***SE25PT7SERIS/SERIS/MGMT/PLAN/PP***). More detailed plans will also be produced for significant technical areas of the project.

Briefly, these detailed plans address the following:

1. Quality assurance (this document);
2. Testing strategy;
3. System testing and
4. Acceptance testing.
   1. Project Control

To monitor and control progress against the project plan, the following methods will be used:

1. Each week, project teams will have meeting and discuss about tasks and issues assigned and blocking points.

Project team member will record the time (in hours) they have spent on each project subtask on a (monthly) Time Reporting Form (TRF).

1. At the end of each month, totals for the month and cumulative totals to date will be calculated and entered onto the form.The sheet will be filled at ***SE25PT7SERIS/SERIS/MGMT/PLAN/PP***.
2. At the end of each month, estimates to complete each task will be calculated for each project team member using Situation Report Form (***SE25PT7SERIS/SERIS/MGMT/PLAN/PR***). These reports/estimates will be used to assess whether the milestones specified in the project plan can be met or whether they need to be revised.
3. Progress report will be submitted every two weeks by System Architect to Project manager.

Each report will be produced using Progress Report Form (***SE25PT7SERIS/SERIS/MGMT/QUALITY/FORMS/PRF.docx***). The report will briefly summarize technical progress, itemized milestones that have been obtained, highlight problems such as milestones which are not expected to be attained on the planned dates, and list plans for the next two week period.All the progress reports will be filed at ***SE25PT7SERIS/SERIS/MGMT/PLAN/PR***.

1. A project log will be maintained throughout the project to record all significant events associated with the project, such as the issue of deliverables and decisions made by Soe Pyae/Dr.Zhao Lu (SERIS), Technical Leader and ProjectManager. The log will be filed at ***SE25PT7SERIS/SERIS/TECH/LOGS/***.
2. Monthly progress meeting will be held and attended by Nay Lin Aung(QA manager), Kaung Myat Bo(Project Manager),Treza Bawm Win(System Architect) and AGnes(System Analyst), Gao Zhiyu. Brief meeting minutes of the meetings will be produced by Bala (Change Manager) and filed at ***SE25PT7SERIS/SERIS/MGMT /MEETING/AUM.***
   1. Delegation of Work

The major task assignments for each project team member will be formally defined using a Work Instruction Form (***SE25PT7SERIS/SERIS/MGMT/QUALITY/FORMS/WIF.docx***) issued by Kaung Myat Bo (Project Manager). The use of these forms is specified in the guideline filed at ***SE25PT7SERIS/SERIS/MGMT/QUALITY/PFP***.

1. **QUALITY CONTROL**
   1. Schedule of Reviews
      1. Code Review

* Developer has to request review number form QA after development of the module.
* Use the ORM form (***SE25PT7SERIS/SERIS /MGMT/QUALITY/FORMS/ObjectReviewMinutes.docx***).
* Code review has to be performed by at least 2 reviewers and include their names in the ORM form. (Respective coding standard, respective comments for each interface, module name as prefix for interfaces/methods,etc)
* Reviewers have to perform review on the code and write review comments on the findings using ORM form.
* Reviewer sends the ORM form back to developer.
* Review comments have to be incorporated by developer.
* After incorporation of review comments, developer has to request closure for the review.
* QA will check whether incorporation is done as per review comments.
* Module can be released only after closure by QA Manager.
  + 1. Document Review

The document reviews to be carried out are shown in Table 7.1 below.

The actions which result from each review will be recorded in brief minutes (***SE25PT7SERIS/SERIS/MGMT/QUALITY/FORMS/ObjectReviewMinutes.docx***).

* 1. Software Testing

7.2.1 Module Test/Unit Test

* Module level/Unit test will be performed.
* Module functionality check will be performed according to module specifications and it has to fulfil module requirement specifications.
  + 1. System Test
* Software System Test is the next level after having successfully finished the integration test.
* The purpose of the Software System Test is to test the integrated software that will satisfy the software requirements. The focus is the functionality of the software system. The software system test has to be performed.
* To complete the Software System Test, test must be performed based on TestCases derived from customer requirement.
  1. User Acceptance Test Procedures
* Need to liaise with users
* This test basically needs to fulfil user requirements and prove that the software system works according to its requirement specifications.

7.3.1 Customer Deliverable Documents

A draft version of the documentation will be internally reviewed by Kaung Myat Bo (Project Manager) and Treza Bawn Win (System Architect), and Agnes (System Analyst), and changes will be made according to what is specified in the review. Soe Pyae (SERIS) will be issued with the reviewed document. A meeting will be held with Soe Pyae (SERIS) to explain the document and determine any required changes.A final version of the document will then be issued incorporating these changes.

Table 7.1: Schedule of Reviews

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Reference** | **Reviewer(s)** | **Approximate Date** |
| Project Plan | SE25PT7SERIS/SERIS/MGMT/PLAN/PP | Kaung Myat Bo, Treza & Nay Lin Aung | Refer to WBS in Project Plan |
| Quality Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP | Kaung Myat Bo & Treza | Refer to WBS in Project Plan |
| User Requirement Specification | SE25PT7SERIS/SERIS/SPEC/REQUIREMENT | Kaung Myat Bo, Treza & Agnes | Refer to WBS in Project Plan |
| Use Case Model Survey | SE25PT7SERIS/SERIS/TECH/ANALYSIS/UCMS | Kaung Myat Bo, Treza & Agnes | Refer to WBS in Project Plan |
| High Level Design | SE25PT7SERIS/SERIS/TECH/DESIGN/HLD | Treza & Gao Zhiyu | Refer to WBS in Project Plan |
| System Prototype | SE25PT7SERIS/SERIS/TECH/PROTOTYPE | Gao Zhiyu | Refer to WBS in Project Plan |
| System Specification(1st Draft) | SE25PT7SERIS/SERIS/TECH/DESIGN/ | Kaung Myat Bo & Treza | Refer to Review System Specifications of WBS in Project Plan |
| Master Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/MTP | Kaung Myat Bo & Treza | Refer to Review Master Test Plan of WBS in Project Plan |
| Unit Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/UTP | Kaung Myat Bo & Treza | Refer to Review Unit Test Plan of WBS in Project Plan |
| System Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/STP | Kaung Myat Bo & Treza | Refer to Review System Test Plan of WBS in Project Plan |
| Unit Testing Work File | SE25PT7SERIS/SERIS/TECH/TEST/UT | Nay Lin Aung, Gao Zhiyu & Bala | Refer to WBS in Project Plan |
| System Testing Work File | SE25PT7SERIS/SERIS/TECH/TEST/ST | Nay Lin Aung, Gao Zhiyu & Bala | Refer to WBS in Project Plan |
| Acceptance Test Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/ATP | Kaung Myat Bo & Treza | Refer to Review Acceptance Test Plan of WBS in Project Plan |
| User’s Manual | SE25PT7SERIS/SERIS/TECH/USER/UG | Kaung Myat Bo & Treza | Refer to Review User’s Guide of WBS in Project Plan |
| Acceptance Testing Work File | SE25PT7SERIS/SERIS/TECH/TEST/UAT | Nay Lin Aung & Gao Zhiyu | Refer to WBS in Project Plan |
| Programmer’s Manual | SE25PT7SERIS/SERIS/TECH/USER/API | Gao Zhiyu & Agnes | Refer to Review Programmer’s Manual of WBS in Project Plan |
| Software  Configuration  Management. Doc. | SE25PT7SERIS/SERIS/TECH/LOGS/TC.1 SE25PT7SERIS/SERIS/TECH/LOGS/TC.2  SE25PT7SERIS/SERIS/TECH/LOGS/TC.3  SE25PT7SERIS/SERIS/TECH/LOGS/TC.4 | Gao Zhiyu, Agnes & Treza | Refer to WBS in Project Plan |

* + 1. Internal Project Documents

A draft version of the document will be internally reviewed byKaung Myat Bo, Treza and Nay Lin Aung. The changes specified by the review will be made, and a final version will be produced. Soe Pyae/Dr.Zhao Lu (SERIS) will be issued with the document.

* + 1. Progress Reports

These documents will be deemed “accepted” on their receipt by Nay Lin Aung (QA Manager).

* + 1. Software

The project will liaise with Soe Pyae/Dr.Zhao Lu (SERIS) to determine an agreed approach to demonstrating the acceptability of the software.The agreed strategy will be documented in an Acceptance Test Plan which will include detailed descriptions of the acceptance tests to be performed. These tests will then be performed and presented for analysis by

Soe Pyae/Dr.Zhao Lu (SERIS). When the agreed criteria are met, Soe Pyae/Dr.Zhao Lu (SERIS) will be invited to accept the software.

1. **STANDARDS , METHODS AND TOOLS**

The work plan section of the project plan defines the work to be carried out under each task.Where necessary and appropriate, pre-specified procedures (in the form of ,for example, standards, methods and tools) will be applied to the technical and management activities.For activities which no procedure has been specified, it is assumed that project team members will use their own judgement to choose appropriate methods.The procedures that will be applied area specified in Table 8.1 and 8.2 below.

Table8.1: General Project Procedures

|  |  |  |
| --- | --- | --- |
| **Activity** | **Procedure** | **File Reference** |
| Work Instruction | A Guide to the Use of WIF | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP |
| Filing System | Project Filing Procedure | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP |
| Document Control | See section 10.2 of Quality Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP |
| Requirement Control | See section 10.1 of Quality Plan | SE25PT7SERIS/SERIS/MGMT/QUALITY/QP |

Table8.2: Software Development Procedures

|  |  |  |
| --- | --- | --- |
| **Activity** | **Procedure** | **File Reference** |
| Prototyping and Wireframing | WireFraming Tools | N/A |
| Software Coding | TBD |  |
| Module/Unit Testing | Master Test Plan | SE25PT7SERIS/SERIS/TECH/TEST/UT |
| System Testing | System Test Plan | SE25PT7SERIS/SERIS/TECH/TEST/ST |
| Acceptance Testing | Acceptance Test Plan | SE25PT7SERIS/SERIS/TECH/TEST/UAT |
| Software  Configuration  Management | section 10.3 of Quality Plan | SE25PT7SERIS/SERIS/TECH/LOGS/TC.4 |

1. **USER CONTROL**

To ensure effective liaison with Soe Pyae/Dr.Zhao Lu (SERIS), the following procedures will be applied.

* 1. Prototyping

The detailed requirements for the software to be developed will be determined by creating a series of prototypes using Wireframing Tools under Windows or Mac.Each prototype programme will be demonstrated to with Soe Pyae/Dr.Zhao Lu (SERIS) to determine the acceptability of screen layouts , report formats and methods of operation ( menu, function keys ,etc.). As a result of each prototype demonstration, agreed changes will be made. The final/agreed prototype represents the full detailed requirements for the software to be deployed.

9.2 System Specification

Soe Pyae/Dr.Zhao Lu (SERIS) will be issued with the 2nd draft of the document. Meeting will be held with Soe Pyae/Dr.Zhao Lu (SERIS) to explain the document and determine any required changes.

A final version of the document will be issued incorporating these changes.To signify final acceptance, Soe Pyae/Dr.Zhao Lu (SERIS) to sign in the space provided at the front of the document.After the system specification has been accepted Soe Pyae/Dr.Zhao Lu (SERIS), any changes required to the detailed software requirement will need to be processed by the CHANGE CONTROL procedure described in section 10.1.

System software will be separated into several different modules and relevant specifications will be filled into ***SWMODxx\_MRS.xlsm*** which is available at ***SE25PT7SERIS/SERIS/MGMT/QUALITY/FORMS***.

Items mentioned in Checklist for software module design should be considered when designing software module.

9.3 Acceptance Test Plan

As described above for the System Specification.

9.4 User’s Manual

As described above for the System Specification.

9.5 Acceptance of the Software

The project will liaise with Soe Pyae/Dr.Zhao Lu (SERIS) to determine an agreed approach to demonstrating the acceptability of the software.The agreed strategy will be documented in an Acceptance Test Plan which will include detailed descriptions of the acceptance tests to be performed. These tests will be performed and presented for analysis by Soe Pyae/Dr.Zhao Lu (SERIS). When the agreed criteria are met, Soe Pyae/Dr.Zhao Lu (SERIS) will be invited to accept the software.This will be formally achieved Soe Pyae/Dr.Zhao Lu (SERIS) stating that the system is acceptable in an internal memorandum to Kaung Myat Bo (Project Manager).

1. **CHANGE CONTROL**

The procedure that will be used to control changes to requirements, project documents and software are described in the following subsections.

10.1 Control of Requirements

Change control procedures will only apply after the system specification has been signed off by by Soe Pyae/Dr.Zhao Lu (SERIS). Any change request after this time will be processed using the following procedure:

1. A change control request will be submitted by Soe Pyae/Dr.Zhao Lu (SERIS) in the form of an internal memorandum to Kaung Myat Bo(Project Manager).
2. Kaung Myat Bo (Project Manager), Treza and Agnes will evaluate the financial, technical and timescale impacts on the project, and will discuss these issues with Soe Pyae/Dr.Zhao Lu (SERIS).
3. Kaung Myat Bo (Project Manager), Treza and with Soe Pyae/Dr.Zhao Lu (SERIS) will jointly decide whether to action the change request; and
4. If they decide to action the request, then their approval will be confirmed in an internal memorandum from Kaung Myat (Project Manager), Treza and with Soe Pyae/Dr.Zhao Lu (SERIS), and copied to Nay Lin Aung (QA Manager).

All internal correspondence generated by the above change procedure will be filed at ***SE25PT7SERIS/SERIS/MGMT/MEETING/IC/****.*

* 1. Documentation Control

For all the system and management deliverable documents defined in Table 5.1 and 5.2, the following document control procedures will be applied.

* + 1. Reference Numbers

All project deliverable documents must have a reference number.These numbers will be allocated according to the rules laid down in the Project Filing Procedure (***SE25PT7SERIS/SERIS/MGMT/QUALITY/PFP***).

* + 1. Approval Procedures

The title page and the approval record must be completed by both an Approver and an Authoriser prior to the release of any new version of any project deliverable document.

* + 1. First Version

When the document is first produced, it is entered into the project filing system by entering its name into the file contents form of the appropriate sub-file (***SE25PT7SERIS/SERIS/MGMT/PLAN/PP***) – the sub-file for the project plans.At this stage, the document will have a title page which shows the document at version 1.1

(**major-version.sub-version**).

* + 1. Updated Version

When a minor update has been made on the document, the sub-version will be increased by 1.When there is a major update/amendment on the document, the major-version number of the document will be increased by 1.

Any amendment sheets created for previous versions will be discarded.The whole amended document will be re-issued.

* + 1. Filing

A copy of each document should be physically filed in the appropriate sub-file.

This includes ALL issued versions of each document.

* 1. Software Configuration Management

Throughout the coding and testing of the software, configuration management procedures will not be used. However, the software has received formal acceptance from Soe Pyae/Dr.Zhao Lu (SERIS), Version 1.1 will be issued and the following procedures will be used.

* + 1. Observation Reports

Reports of errors or problems incurred by users while using the system,or suggestions for enhancements will be recorded using a Change Request Form (***SE25PT7SERIS/SERIS/MGMT/QUALITY/FORMS/CRF.docx*).**

These will be filed at ***SE25PT7SERIS/SERIS/TECH/LOGS/TC.1*** and copied to Kaung Myat Bo (Project Manager).

* + 1. Change Authority

Kaung Myat Bo (Project Manager) and Treza (Software Architect) will review each observation report and will have the authority to decide whether to task Gao Zhiyu (Technical Leader) to implement the change. The approval of the change by Kaung Myat Bo (Project Manager) will be indicated by an internal memorandum to Soe Pyae/Dr.Zhao Lu (SERIS), copied to Gao Zhiyu (Technical Leader), Nay Lin Aung (Quality Manager) and Bala (Change Request Manager) .

* + 1. Record of Changes

Each change will be recorded in the change Log, filed at ***SE25PT7SERIS/SERIS/TECH/LOGS/TC.2.*** The log will specify the modules that were changed and present listing of the changed modules.The lines of code that were changed in each module will be highlighted.

Review has to be performed on the changes.Use ORM (***ObjectReviewMinutes.docx***) form from ***SE25PT7SERIS/SERIS*/MGMT/QUALITY*/FORMS/***. ORM number needs to be requested from QAManager and incorporation of review comments need to be performed. After incorporating the review comments, Object Review Minutes has to be filed at ***SE25PT7SERIS/SERIS/MGMT/QUALITY/ORM/BASELINE/Reviews/*** in “**ORM\_NUMBER\_SWMOD/DOC\_NAME.docx**” format.

* + 1. Testing of Changes

The testing and verification of the changes made to the software will be recorded

in test specification and testing log (***SWMODxx\_TS.xlsm***), filed at ***SE25PT7SERIS/SERIS/TECH/LOGS/TC.3.*** This log will list the testing activities that were carried out for each change, verify that all tests were successful, and provide references tothe project files that contain the details of the tests and test result. Traceability matrix and file versions have to be updated.

* + 1. Software Configuration

A Configuration Log will be kept of all versions of the software that are issued in terms of the software modules that comprise each version and the hardware configuration. The log will be filed at ***SE25PT7SERIS/SERIS/TECH/LOGS/TC.4.***

**APPENDIX: PROJECT PROFORMA**

The aim of this appendix is present examples of the administrative proforma that will be used by the project. These are as follows:

1. Master File Directory Form (MFD)
2. File Contents Form
3. Amendment Record Form
4. Work Instruction Form
5. Time Reporting Form
6. Progress Report Form
7. Situation Report Form
8. Change Request Form

Appendix -1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Master File Directory Form** *SE25PT7SERIS/SERIS*/MGMT/QUALITY/FORMS/MFD.docx | | | | |
| Project Name: SERIS | | | | |
| Prepared by: | | Date: | | |
|  | | | | |
| File Reference | File Description | | Date Opened | Location |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |

Appendix -2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **File Contents Form** *SE25PT7SERIS/SERIS*/MGMT/QUALITY/FORMS/FCF.docx | | | | |
| Project Name: SERIS | | | | |
| Prepared by: | | Date: | Ref: *SE25PT7SERIS/SERIS* /MGMT | |
| File Name: | | | | |
| File Description: | | | | |
| Item | Description | | | Comments |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |

Appendix -3

|  |  |  |
| --- | --- | --- |
| **Amendment Record** *SE25PT7SERIS/SERIS*/MGMT/QUALITY/FORMS/AR.docx | | |
| Issued by: | Project Name: SERIS | |
| Date: | Document Ref:*SE25PT7SERIS/SERI* /MGMT | |
| Version No: | Version Description: | |
| Section Number | Paragraph Number | Description of Change |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Appendix -4

|  |  |
| --- | --- |
| **Work Instruction Form** *SE25PT7SERIS/SERIS* /MGMT/QUALITY/FORMS/WIF.docx | |
| Project Name: SERIS | |
| Task Title: | |
| Generated by: | Signature: |
| For use by: | Date: |
| Related documents: | |
| Project Plan:*SE25PT7SERIS/SERIS* /MGMT/PP | QA Plan:*SE25PT7SERIS/SERIS* /MGMT/QUALITY/QP |
| Standards: | |
| Instructions: | |
| Deliverables from this task: | |
| Acceptance criteria: | |
| Budget: | Start date: |
|  | Finish date: |
| Reviewed &completed: (Signature)  Date: | |

Appendix -5

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Time Reporting** *SE25PT7SERIS/SERIS*/MGMT/QUALITY/FORMS/TRF.docx | | | | | | | |
| Project Name: SERIS | | | | | | | |
| Staff Name | Date: | | | Ref:*SE25PT7SERIS/SERIS* /MGMT | | | |
| Report Period | Start date:  End date: | | | | | | |
|  | Time Spent during Week Ending | | | | | Total | |
| Task Description |  |  |  |  |  | This Month | To Date |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Appendix -6

|  |  |  |
| --- | --- | --- |
| **Progress Report Form** *SE25PT7SERIS/SERIS* /MGMT/FORMS/QUALITY/PRF.docx | | |
| Project Name: SERIS | | |
| Prepared by: | Date: | Ref:*SE25PT7SERIS/SERIS* /MGMT/ |
| Report Period: | Start date:  End date: | |
| Progress Report for Period: | | |
| Plans for Next Period: | | |

Appendix -7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Situation Report Form** *SE25PT7SERIS/SERIS* /MGMT/QUALITY/FORMS/SRF.docx | | | | |
| Project Name: SERIS | | | | |
| Staff Name: | Date: | | Ref:*SE25PT7SERIS/SERIS* /MGMT/ | |
| Report Period: | Start date:  End date: | | | |
| Task Description | Budget Effort | Effort to Date | Effort to Complete | Total Effort |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Appendix -8

|  |  |
| --- | --- |
| **Change Request Form** *SE25PT7SERIS/SERIS* /MGMT/QUALITY/FORMS/CRF.docx | |
| Project Name : SERIS | |
| Prepared by: Date: | |
| Requested by: Date: | |
| Observation/Change Requested: | |
| Work Description/Action: | |
| Authorization:Date: | |
| Testing/Reviewing: | |
| Report/Item Changed: | |
| Changed by:Date: | |
| Approved by:Date: | |
| New Sub-Version No: | Cross References: |