STANDARD

Software Lifecycles

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Effective Date	**26-Feb-2020**

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RECORD OF CHANGE

No	Effective Date	Version	Change Description	Reason	Reviewer	Approver
1	15/07/2001	1.0	Newly issued	To fit the actual	QA	HungLT
2	25/07/2002	2.0	Revised Standard Maintenance lifecycle stages	To fit the actual	QA	HungLT
3	05/02/2007	2.1	_Change logo _In 2.3. Change SQA to QA _In 3.1.1. Modify "The Initiation stage is the start of the SLC, in which:" to "Initiation stage, the start of project SLC, is triggered by the release of Project Opening and Project Manager Appointment Decision. During that stage, the followings activities are carried out: ... • Project kick-off meeting is conducted". Change "Based on these outputs, a project team is formed, a project plan is " to "Based on these outputs, a project team is formed, Work Order is approved, Project plan is" _In 3.1.2. & 4.1.2. Change "Software contract management" to "Software project management" _In 4.1.1. Change "In Initiation stage of the SMLC, like one of the SDLC, a project team is formed, a project plan is ... The PP is created" to "In Initiation stage of the SMLC, like one of the SDLC, a project team is	Add trigger of Initiation stage is Project Opening and Project Manager Appointment Decision	DatPP, PQA, SQA, LanNT, KienNT, …	PhuongNL

No	Effective Date	Version	Change Description	Reason	Reviewer	Approver
			formed, a Work Order is approved, a Project plan is ... The Work Order is created"			
4	01/12/2007	2.2	3.2.2; 3.3.2; 3.4.2: Add product of UT: UTC, UT Report for each stage. Not separate UT Case with TC, keep TC and it include UTC, ITC, and STC. Add Standard lifecycle for Test projects	To make UT activities clearer. To define standard lifecycle for Test projects at Fsoft	HaNT, BinhND, FATA	PhuongNL
5	15/08/2010	2.3	Update name/terminology to consistent with other processes in Software handbook and Fsoft organization	To consistent with other processes in Software handbook and Fsoft organization	QA	LienBH
6	10/03/2012	2.4	2.4 Notes: Addition of instructions & things for the merge stage for the development project line	Helps projects do not need to request deviation for the merge stage	QAMs	HoaNQ
7	20/06/2016	2.5	'- Convert to new template_Guideline Description - Remove overall picture of SDLC and SMLC - Removed 2.1.2 and 2.2.2 session	- To make consistent with the change of Template_Guideline Description - Fix some minor bug	CMMi Coreteam	HyTQ
8	08/08/2017	2.6	'1. Add New section “2. CRITERIA OF PROCESS CLASSIFICATION” what is including Project Rank, Project	Re order software development process. Add new Process Classification concept.	PhuongLT2, DungNM14, HyTQ	HyTQ

No	Effective Date	Version	Change Description	Reason	Reviewer	Approver
			Duration, Project Team Size and Project Classification 2. In Project Rank, remove condition “BU leader decides” in Rank D. 3. In Project Duration, change in “Medium” and “Short” 4. In Project Team Size, change in “Medium” and “Small” 5. Create new “Project Classification”.			
9	26/02/2020	2.7	1.3 Make clear FSOFT Quality Control 2.1 Change to DCC Head 4.1.1 Add opportunity	Apply CMMI5 v2.0	CMMi Coreteam	HuongNTL

1 INTRODUCTION

1.1 Purpose

This document defines Standard Life Cycle (SLC) models implemented in software projects, both of development and maintenance types. Based on these SLC models, Project Managers (PM) have responsibilities to create a tailored SLC model, which is called Project Defined Life Cycle (PLC), for their project to satisfy the project's contractual and operational constraints.

1.2 Application scope

The document is applied to all Fsoft's projects which do not have special requirements on SLC.

1.3 Definition

No	Terminology	Explanation
1	SLC	Standard Life Cycle
2	PLC	Project Defined Life Cycle
3	PM	Project Manager
4	SDLC	Software Development Life Cycle
5	SMLC	Software Maintenance Life Cycle
6	PP	Project Plan
7	URD	User Requirement Document
8	SRS	Software Requirement Specification
9	ADD	Architectural Design Document
10	DDD	Detailed Design Document
11	FQC	FSOFT Quality Control
12	OSDC	Offshore Software Development Center
13	UT	Unit Test
14	IT	Integration Test
15	ST	System Test

1.4 Related documents

No.	Code	Name of documents
1	34e-HD/DE/HDCV/FSOFT	Guideline_Process Tailoring

2 CRITERIA OF PROCESS CLASSIFICATION

2.1 Project Rank

- Project ranked A if (or)
  - DCC Head decides
  - Its Budgeted MM >= 200 man-month
  - Its point is in Top 10% project of FSU
- Project ranked B if (or)
  - Its Budgeted MM is >= 100 man month and < 200 man month
  - Its point is in the Top 30% project of FSU, after rank A
  - BU Leader decides
- Project ranked D if (or)
  - Budgeted MM <= 10 man month
  - Point is in Top 15% projects of FSU from the bottom
- Project ranked C if (or)
  - The rest of projects that are not ranked as A, B or D
  - This is the first project Fsoft/FSU works with the customer (new customer) and there is no particular recommendation of AM, BU Leader or FSU Director on its importance/rank

2.2 Project Duration

- Long Months> 12
- Medium 5 < Months < = 12
- Short 2 < Months <= 5
- Very short Months <= 2

2.3 Project team size

- Large Staff > 20
- Medium 10 <Staff <= 20
- Small 4 <Staff <= 10
- Very Small Staff <= 4

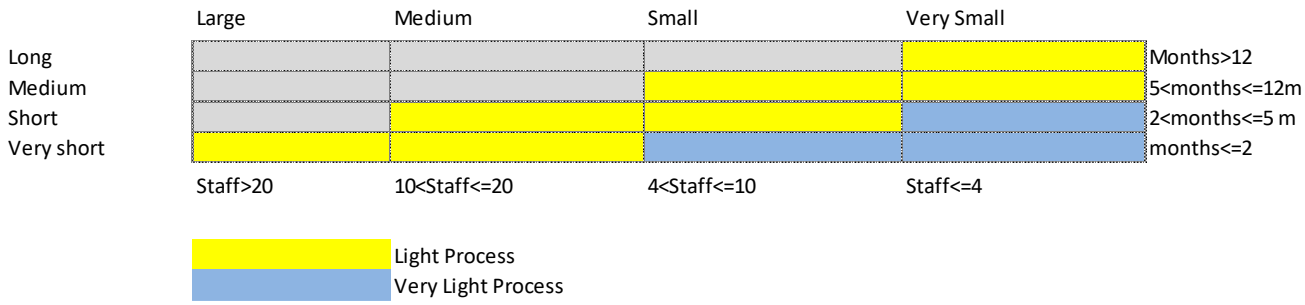
2.4 Process classification

2.4.1 Process is classified in three types:

- Very Light Process
- Light Process
- Standard Process

2.4.2 How to select the process type:

- Project of rank C or D:



- Project of rank A or B:

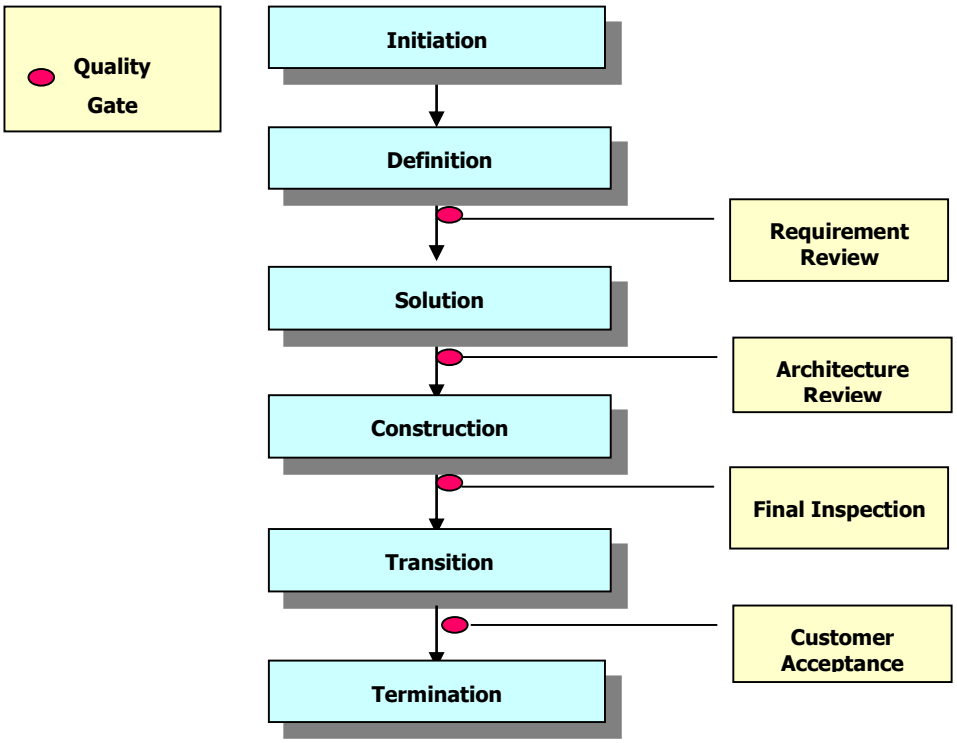
  Apply standard process

3 STANDARD LIFE CYCLE MODELS

3.1 Software Development Life Cycle Model

3.1.1 Diagram

The Software Development Life Cycle (SDLC) stages are depicted describe in the following diagram:



Software Development Life Cycle (SDLC)

3.1.2 Application

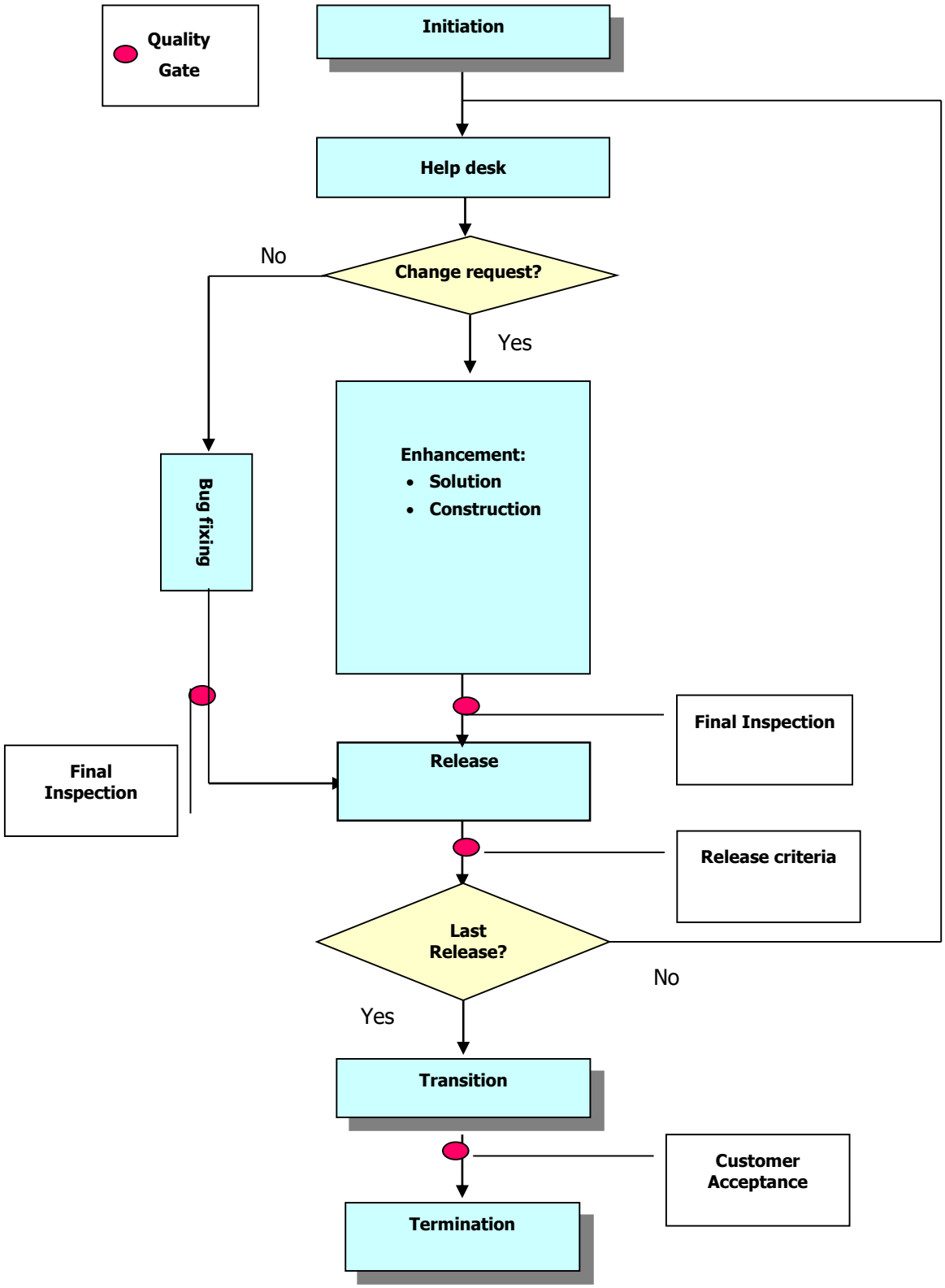
The SDLC is applied to the following types of projects:

- Custom–made software solution.
- Off-the-shelf product development.

3.2 Software Maintenance Life Cycle Model

3.2.1 Diagram

The Software Maintenance Life Cycle (SMLC) stages are describe in the following diagram:



Software Maintenance Life Cycle (SMLC)

3.2.2 Application

The SMLC is applied to the following types of projects:

- User support and maintenance of software products.

3.3 Software Testing Life Cycle Model

3.3.1 Diagram

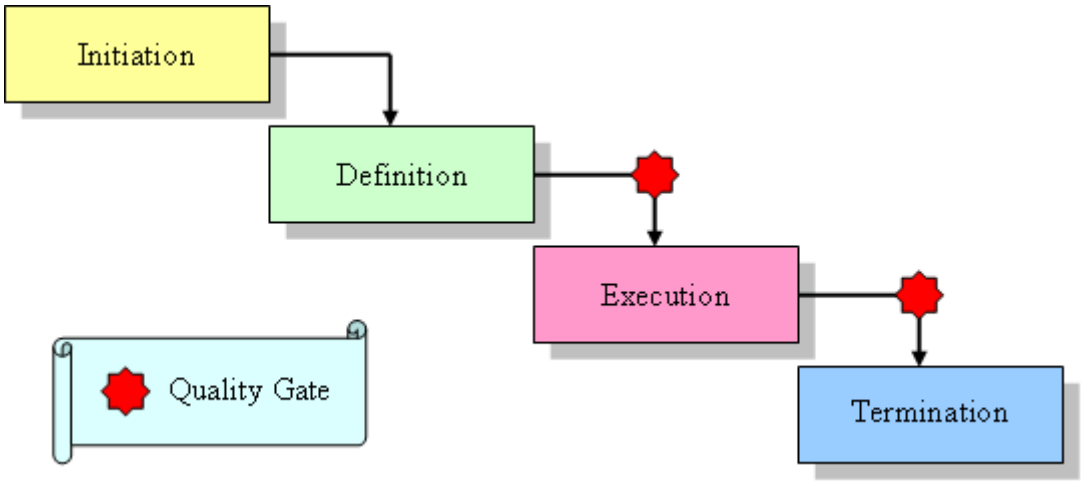
The Software Testing Life Cycle stages are describe in the following diagrams:

3.3.1.1 Single stage model

The single-staged model is applied to test projects which have single product, requirement or task which requires a reasonable time to finish. Most of the time team has to study the test specifications and perform testing activities to verify the understanding. Projects using this model are often divided into 4 stages as shown in the diagram below.

To ensure quality & objectives of each stage are met, a quality gate is conducted at the end of each stage. For Initiation, it is the kick-off meeting and for Termination it is the post-mortem meeting. For other stages a planned quality gate with clearly-defined objectives must be set up at the beginning of the project.

This model is widely used by test projects which team has to perform test automation. Pilot test projects and tool evaluation projects also follow this model.

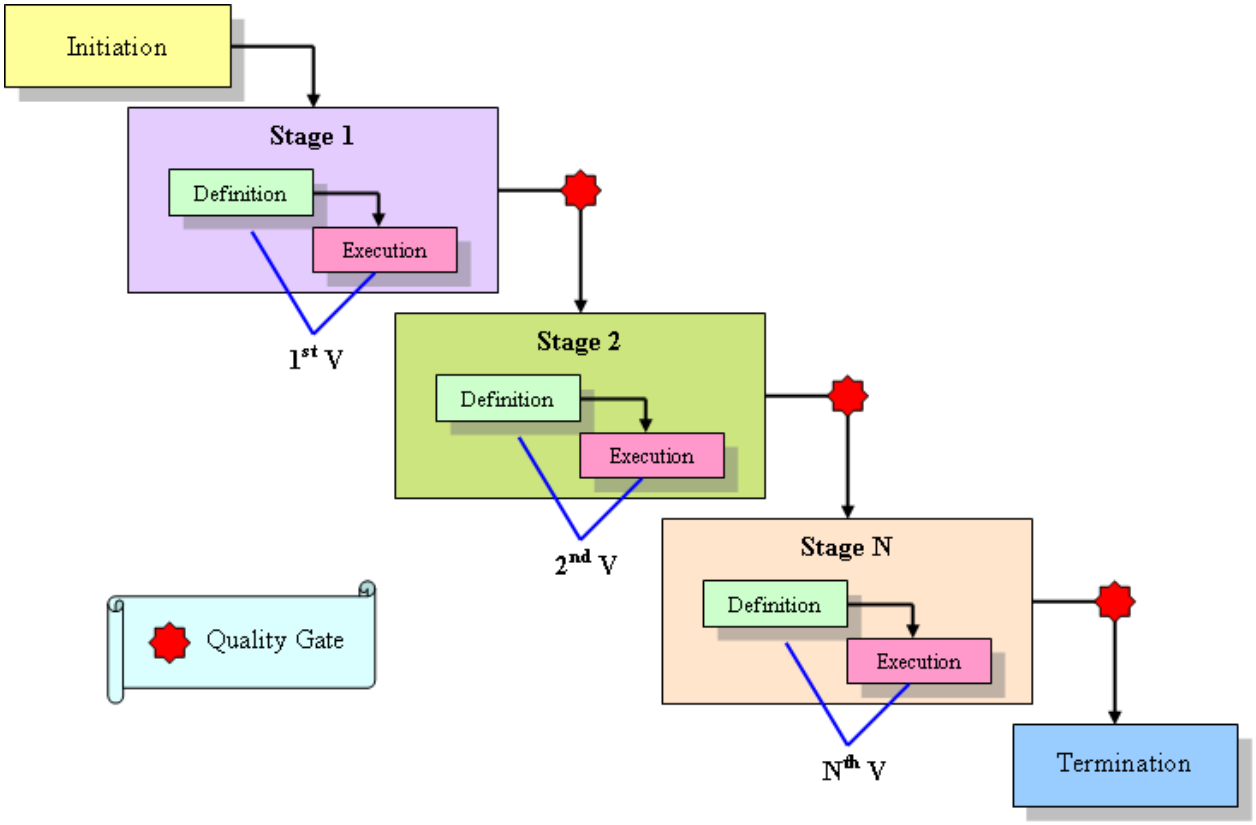


3.3.1.2 Multi-staged model (Multi V-model)

In case customer requests to test products continuously and duration of testing for one product is short, the multi-staged model is recommended. In fact, this model is a combination of many single-staged phases with only one initiation stage and one termination stage. Each single-staged phase is defined as a V-model, with definition and execution as two hands of the V. Within each

phase a specific product, requirement or task is fulfilled. Team can separate the project into as many stages as possible. For example: Stage 1, Stage 2, and Stage N.

In reality, this model is often used by test projects which perform acceptance testing for customer, test projects in ODC, quality centers and time-material test projects.



3.3.2 ***Mandatory outputs***

The Software Testing Life Cycle has main mandatory outputs of stages in which the outputs are released in following table:

No	Output	Stage	Process
1	Work Order	Initiation	Software Project Management
2	Project Plan	Initiation	Software Project Management
3	Test Plan	Definition	Test
4	Test Designs/Test Cases/Test Checklists	Definition	Test
5	Test Data	Definition	Test
6	Test Report	Execution	Test
7	Bug Report	Execution	Test
8	Acceptance Note	Termination	Software Project Management

3.3.3 ***Application***

The Software Testing Life Cycle is applied to the following types of projects:

- **Single-stage model**: Test projects which team has to perform test automation. Pilot test projects and tool evaluation projects also follow this model.
- **Multi-stage model**: Test projects which perform acceptance testing for customer, test projects in ODC, quality canters and time-material test projects.

3.4 Notes

Each stage of SLC has its own objectives and set of work products which have been generated by implementing appropriate processes. Depending on the complexity of the project, any stage of SLC has one or some iterations/releases. An iteration/release encompasses the development activities that lead to a product release (internal or external) - a stable, executable version of product, together with any other peripheral elements necessary to use this release.

A work product is either mandatory or optional. The nature of the stage is defined by a set of mandatory work products.

All stages of the SLC are verified and validated by QA through Quality Gates to determine:

- If the objectives of the stage have been met.
- If the mandatory work products have satisfied the requirements.

A satisfactory assessment allows the project to move to the next stage. Resulting action items should be tracked to closure by necessary corrections.

During the implementation of SLC for Development, merge can be conducted for stages under certain circumstances:

- Duration of stage is short (recommended <= 1 month) so management effort for that stage is high and unnecessary.
- Mandatory work products are developed in parallel. Stage name is defined on the main or most completed work product of the merged stage.

However, the merged stage is not recommended to last for more than 2 months. All documents required for quality gates of these stages should be applied.

To conform to the specific requirements of the project, the PM should use Guideline_Process Tailoring that describes permitted deviations of SLC and standard processes. The PLC should be included in the PP and must be reviewed and approved by authorized person as defined in Guideline_Process Tailoring.

After each SLC stage has been signed off, the PP will be reviewed and updated, if necessary. The approved PP should be baselined so that it is possible to revert it in case of need. Any change of the baselined document thereafter has to be implemented change control procedure of configuration management.

4 STANDARD DEVELOPMENT LIFE CYCLE STAGES

4.1 Initiation

4.1.1 Overview

Initiation stage, the start of project SLC, is triggered by the release of **Project Opening** and **Project Manager Appointment Decision**. During this stage, the followings activities are carried out:

- Project Opening
- Project Manager Appointment Decision
- Project's software scope and boundary conditions, including the operational vision and proposed products, are established.
- Overall effort and resource, schedule of the project are estimated.
- Potential risks & opportunity are defined.
- Project kick-off meeting is conducted

Based on these outputs, a project team is formed, Work Order is approved, Project plan is drafted and all necessary resources/tools/supports required to carry out the project will be provided.

4.1.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Work Order	Mandatory	Completion	Software Project Management
2	Project Plan	Mandatory	Section 1, 2, 5	Software Project Management
3	User Requirement Document	Optional	User requirement list	Requirement Development & Management
4	Proposal	Optional	Completion	Software Contract Management
5	Resources/tools/supports	Mandatory	Completion	Configuation Management

4.2 Definition

4.2.1 Overview

The Definition stage aims at:

- Defining user requirements for software packages.
- Studying and translating the user requirements into a clear.
- Well-formulated and complete User Requirement Document (URD).
- Analysing the URD.

- Creating Software Requirement Specification (SRS).

These documents (called Requirement documents) may be combined into a single one. In some cases projects could create a prototype for clarifying the user requirements with customers.

The expertise of a software engineer should be used to help define and review the requirements. ***Definition of user requirements is mandatory for all projects*****.** In cases when the customer has responsibility for creating theURD, the PM should require the customer to submit this document as a mandatory output of this stage.

Acceptance Test Criteria are defined in this stage, to outline the approach to be adopted for demonstrating the compliance of the software to user requirements. This can be updated/refined during the later stages of SDLC. ***Ensuring that the Acceptance Test Criteria are documented is the primary responsibility of the PM.*** Acceptance Test Criteria could be documented as a part of theURD.

The PM is responsible for determining whether or not the customer requirements define the need of the application of specific statutory or regulatory requirements and ensuring that they are included in the entire relevant project documents.

Design work can begin even before the SRS is officially released as long as a preliminary developmental release of the document is reviewed and baseline.

On the basis of the mutually agreed requirements, the project plan is prepared in full context as required in the project plan template and reviewed by groups that have affected to the achievement of project objectives.

4.2.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	User Requirement Document	Mandatory	Completion	Requirement Development & Management
2	Software Requirement Specification	Mandatory	Completion	Requirement Development & Management
3	Project Plan	Mandatory	Completion	Software Project Management
4	Project Report	Mandatory	Milestone	Software Project Management
5	Test Plan (Unit Test Plan, Integration Test Plan, System Test Plan)	Optional	System Test	Test
6	Prototype	Optional	Critical requirements	Requirements

4.3 Solution

4.3.1 Overview

The main purpose of this stage is to define an effective solution to meet customer requirements. Analyzing and creating a design for the software package are the main activities of this stage.

Depending on the characteristics of each project, the stage normally divides into two sub-stages, namely the Architectural (High level or Preliminary or System) Design and Detailed Design.

- Architectural Design Document is the step in moving from the domain of problems to the domain of solutions. The results of this step are described in an Architectural Design Document (ADD) that includes a collection of software components and their interfaces.
- The Detailed Design is the step, where the design contents outlined in the ADD are decomposed until they can be expressed as modules. The detailed design describes project's implementation details in a Detailed Design Document (DDD). This step could be moved to the next stage.

Test Plan is completed in this stage outlining the approach to be adopted for demonstrating the compliance of the software to SRS (System Test) and ADD (Integration Test).

In this stage, a prototype and some critical modules of software may be developed and tested (unit tested by Development team and integration tested by Test team) to ensure the property of the solution.

4.3.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Architectural Design Document	Mandatory	Completion	Software Design
2	Test Plan (Unit Test Plan, Integration Test Plan, System Test Plan)	Mandatory	Completion	Test
3	Project Report	Mandatory	Milestone	Software Project Management
4	Project Plan	Optional	Updated for Construction Stage	Software Project Management
5	Prototype	Optional	Completion	Requirement Development & Management
6	Detailed Design Document	Optional	Critical modules	Software Design
7	Software Package	Optional	Critical modules	Coding
8	Test Cases and Test Data (Unit Test Cases)	Optional	Critical modules	Test
9	Test Reports	Optional	Critical modules	Test

No	Work Products	Severity	State	Process
	(Unit Test Report)			
10	Requirement Documents	Optional	Updated for customer change requests	Requirement Development & Management

4.4 Construction

4.4.1 Overview

The goal of the **Construction stage** is to develop the system. Generally, the Construction stage is a manufacturing process, where the emphasis is placed in managing resources and controlling operations to optimize costs, schedules and quality.

Testing is one of the main activities in this stage. It includes Unit test implemented by Development team and Integration/System implemented test by Test team. ***The test results for any test stages should be recorded for all projects.***

If defects are identified during testing, they will be tracked to the closure. After rectifying the reported defect, regression test is to be performed. The test plan for the respective unit should be executed completely to prevent the occurrence of new defects while an existing one is being solved.

4.4.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Detailed Design Document	Mandatory	Completion	Software Design
2	Test Cases and Test Data (Unit Test Cases, Integration Test Cases, System Test Cases)	Mandatory	Completion	Test
3	Software Package	Mandatory	Completion	Coding
4	Test Report (Unit Test Report, Integration Test Report, System Test Report)	Mandatory	Completion	Test
5	Project Report	Mandatory	Milestone	Software Project Management
6	Project Plan	Optional	Updated for Transition Stage	Software Project Management
7	Code Review Report	Optional	Completion	Coding
8	Requirement Documents	Optional	Updated for customer change requests	Requirement Development & Management
9	Installation Manual	Optional	In skeletal form	Deployment
10	User Manual	Optional	In skeletal form	Coding

4.5 Transition

4.5.1 Overview

The focus of the Transition stage is to ensure that the software is available for end users. Delivering the software to customer, implementing the software systems on customer site, conducting test activities for acceptance and supporting customers/users are main activities of this stage.

At this point in the lifecycle, user's feedbacks should mainly focus on fine product tuning, configuration, installation and usability issues. All of the major structural issues should have been worked out much earlier in the project life cycle.

Activities performed during an iteration of the Transition stage depend on the goal. For example, when fixing bugs, implementation and test are usually enough. If, however, new features have to be added, the iteration is similar to that in the Construction stage requiring analysis & design, coding, testing (unit, integration, system…), etc.

The Transition stage will start when a baseline is mature enough to be deployed in the end-user domain. This typically requires that some usable subsets of the system have been completed with the acceptable quality level and user documentation so that transitioning to the user provides positive results for all parties.

By the end of this stage, project objectives should have been met and the project should be in a position to be closed out. In some cases, the end of the current life cycle may coincide with the start of another lifecycle on the same product, leading to the next generation or version of the product. For other projects, the end of the Transition stage may coincide with a complete delivery of the work products to the third party that may be responsible for the operations and maintenance of the delivered system.

4.5.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Software package	Mandatory	Accepted by customer	Coding
2	Release Note	Mandatory	Completion	Deployment
3	Project Report	Mandatory	Milestone	Software Project Management
4	Installation Manual	Optional	Completion	Deployment
5	Acceptance Report	Optional	Completion	Deployment
6	Support Diary	Optional	Completion	Customer Support
7	User Manual	Optional	Completion	Coding

4.6 Termination

4.6.1 Overview

The project closes at this stage when customer accepts the whole project. Project assets must be collected and transferred to **Fsoft Process Asset Library**.

The goal of this stage is to summarize the results of the project and to provide the project knowledge and experiences for other projects.

Customer satisfaction survey is mandatory for all projects.

4.6.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Customer Satisfaction Survey	Mandatory	Completion	Software Project Management
2	Project Report	Mandatory	Post mortem	Software Project Management
3	Project Assets	Mandatory	Completion	Software Project Management
4	Acceptance Note	Mandatory	Completion	Software Project Management

5 STANDARD MAINTENANCE LIFE CYCLE STAGES

5.1 Initiation

5.1.1 Overview

In Initiation stage of the SMLC, the same as in the SDLC, the project team is formed, the Work Order is approved, the Project plan is drafted and all necessary resources/tools/supports required to carry out the project will be provided.

The Work Order is created for fixed time periods depending on the customer requirements and maintenance activities.

The duration and the number of the maintenance stage with their periodical releases should be defined in the PP.

Generally the scope of a maintenance project could include some levels of maintenance activities:

- Level 1 includes end user support activities such as call logs.
- Level 2 includes technical support activities such as environment set up, installation.
- Level 3 includes software development activities such as Bug fixing (Corrective), Change requests implementation (Adaptive or Preventive).

Normally an OSDC's maintenance project includes only activities at level 3, the activities at level 1 & 2 are conducted by customer system supporters. This SMLC is applicable for maintenance activities at level 3.

5.1.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Work Order	Mandatory	Completion	Software Project Management
2	Project Plan	Mandatory	Section 1, 2, 5	Software Project Management
3	Customer Requirement	Optional	Requirement list	Requirement Development & Management

5.2 Maintenance stage

Each maintenance stage normally includes:

- Help Desk
- Bug Fixing workflow
- Enhancement workflow
- Release sub-stages

5.2.1 Help Desk

5.2.1.1 Overview

The Help Desk means to receive customer requirements in a request form such as problem report or change request, perform primary evaluation of the request and response to customer.

There are two ways to follow based on type of customer requirements:

- If the request is a change request, follow Enhancement workflow.
- If the request is bug fixing, follow the Bug fixing workflow. The regression test should be conducted at the end of this workflow.

Sometimes, a problem report or a change request does not come from customer but from other sources. In these cases, project could propose the improvement and get the agreement from customer.

The project plan is updated for the release.

5.2.1.2 Work Products

Main outputs of Help Desk are defined in the table below.

No	Work Products	Severity	State	Process
1	Customer requests	Mandatory	For the release	Customer support
2	Project Plan	Mandatory	Updated for the release	Software Project Management

5.2.2 Bug Fixing

a. Overview

The goal of the **Bug fixing workflow** is to correct customer submitted defects of the maintained system.

Analyzing submitted defects is one of the main activities of this workflow. The analyzed result should be recorded for all projects and could be used for updating respective work products of the maintained system.

Other main activities are coding and testing.

After rectifying the submitted defects, it is necessary to perform a regression test. The test plan for the respective unit should be executed completely to prevent the occurrence of new defects while an existing one is being solved.

The product' documents are updated for a set of bugs depending on project characteristics but the criteria of this updating should be clearly stated in the project plan.

b. Work Products

Main outputs of this workflow are defined in the table below.

No	Work Products	Severity	State	Process
1	Test Cases and Test Data	Mandatory	Updated for submitted defects in the release	Test
2	Software Package	Mandatory	Updated for defect injected sections	Coding
3	Test Report	Mandatory	Completion	Test
4	Code Review Report	Optional	Completion	Coding
5	Requirement Documents	Optional	Updated for defect injected sections	Requirement Development & Management
6	Design Documents	Optional	Updated for defect injected sections	Software Design
7	Installation Manual	Optional	Updated for defect injected sections	Deployment
8	User Manual	Optional	Updated for defect injected sections	Coding

5.2.3 Enhancement

a. Overview

The Enhancement workflow is nothing but a small development project with the input are the change requirements defined from change requests.

The Enhancement workflow is normally implemented in 2 step as follows:

5.2.3.1.1 The Solution step

This step aims at analyzing change requirements for maintained software packages and to define an effective solution to meet the change requirements. Studying and translating the change requirements into a clear, well-formulated and updating Requirement Documents (URD and/or SRS), analyzing and updating Design documents for the software package are the main activities of this step.

In cases when the customer has responsibility for updating respective documents, the PM should request the customer to submit those documents as mandatory input.

Acceptance Test Criteria is defined in this step to outline the approach to be adopted for demonstrating the compliance of the software to change requirements. This can be updated/refined during the later stages of SMLC. ***Ensuring that the Acceptance Test Criteria are documented is the primary responsibility of the PM.*** Acceptance Test Criteria could be documented as a part of the updatedURD.

Test Plan is completed outlining the approach to be adopted for demonstrating the compliance of the release of the software to the updated SRS (System Test) and ADD (Integration Test).

5.2.3.1.2 Construction step

The goal of the Construction step is to update the system. Main activities of this step of the SMLC are not different from those in the Construction stage in the SDLC.

b. ***Work Products***

Main outputs of this workflow are defined in the table below.

No	Work Products	Severity	State	Process
1	Requirement Documents	Mandatory	Completed parts for change requests	Requirement Development & Management
2	Design Documents	Mandatory	Completed parts for change requests in the release	Software Design
3	Test Plan	Optional	Completed parts for change requests in the release	Test
4	Software Package	Mandatory	Completed modules for change requests in the release	Coding
5	Code Review Report	Optional	Completion	Coding
6	Test cases	Mandatory	Completed parts for change requests in the release	Test
7	Installation Manual	Optional	Completed parts for change requests in the release	Deployment
8	User Manual	Optional	Completed parts for change requests in the release	Coding

5.2.4 ***Release***

a. ***Overview***

The focus of the Release sub-stage is to ensure that the updated software of the release is available for end users. Delivering the updated software to customer, implementing the updated software systems on customer site and conducting test activities for release acceptance are main activities of this sub-stage.

The Release sub-stage will start when the release baseline is mature enough to be deployed in the end-user domain. Depending of customer request there are two types of releases:

- Emergency release: The release that has to be conducted without early planned schedule. The decision about these releases should be taken in the Help Desk based on negotiations with customers.
- Periodical release: The release that has to be conducted in accordance with the planned schedule defined in the Initiation stage. The content of these releases could be changed in the Help Desk based on negotiations with customers.

By the end of this sub-stage, release objectives should have been met and the project should be in a position to be closed out or started with next release.

Each maintenance stage includes at least a periodical release and/or some emergency releases. After the last release of maintenance stages the milestone report should be created to summarize the stage objectives, activities and releases of the stage. The project baselines should be conducted for the stage at the moment.

b. ***Work Products***

Main outputs of this sub-stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Software package	Mandatory	Updated modules for the release	Coding
2	Release Note	Mandatory	Completion for the release	Deployment
3	Project Report	Mandatory	Milestone for the stage after the last release of the stage	Software Project Management
4	Project Plan	Optional	Updated for the next release	Software Project Management
5	Installation Manual	Optional	Completed parts for the release	Deployment
6	Acceptance Report	Optional	Completion for the release	Deployment
7	User Manual	Optional	Completed parts for the release	Coding

5.3 Transition

5.3.1 Overview

The focus of the Transition stage is to ensure that the updated software of all releases is available for the end-users. Conducting the regression test, delivering the final updated software (***Final release***) to customer, implementing the final updated software systems on customer site and conducting test activities for final acceptance are the main activities of this stage.

The Transition stage will start when all releases are accepted for deployment in the end-user domain. By the end of this stage, project objectives should have been met and the project should be in a position to be closed out.

At the end of this stage all project's documents should be refined, updated and finally baseline.

5.3.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Software package	Mandatory	Final updated and accepted by customer	Coding
2	Project documents	Mandatory	Final updated and baselined	Configuration Management
3	Release Note	Mandatory	Completion	Deployment
4	Project Report	Mandatory	Milestone	Software Project Management
5	Acceptance Report	Optional	Completion	Deployment

5.4 Termination

5.4.1 Overview

The Termination stage of a maintenance project is the same as of a development project.

5.4.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Customer Satisfaction Survey	Mandatory	Completion	Software Project Management
2	Project Report	Mandatory	Post Mortem	Software Project Management
3	Project Assets	Mandatory	Completion	Software Project Management
4	Acceptance Note	Mandatory	Completion	Software Project Management

6 STANDARD TEST LIFE CYCLE STAGES

6.1 Initiation

6.1.1 Overview

Initiation stage, the start of project SLC, is triggered by the release of Project Opening and Project Manager Appointment Decision. During that stage, the followings activities are carried out:

- Project's software scope and boundary conditions, including the operational vision and proposed products, are established.
- Overall cost and schedule of the project are estimated.
- Potential risks are defined.
- Project kick-off meeting is conducted

Based on these outputs, a project team is formed, Work Order is approved, Project plan is drafted and all necessary resources/tools/supports required to carry out the project will be provided.

6.1.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Work Order	Mandatory	Completion	Software Project Management
2	Project Plan	Mandatory	Section 1, 2, 5	Software Project Management
3	User Requirement Document	Optional	User requirement list	Requirement Development & Management
4	Proposal	Optional	Completion	Software Contract Management

6.2 Definition

6.2.1 Overview

The Definition stage aims to:

- Create test documents: test design, test cases, test checklists, test scripts

- Prepare test environment, human resources, training, test tools & create test data.

6.2.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Test Plan	Mandatory	Completion	Test
2	Test Designs/Test Cases/Test Checklists	Mandatory	Completion	Test
3	Test Data	Mandatory	Completion	Test
4	Test Script	Optional	Completion	Test

No	Work Products	Severity	State	Process
5	Project Report	Mandatory	Completion	Software Project Management

6.3 Execution

6.3.1 Overview

The main purpose of this stage is to:

- Execute test based on defined test documents
- Collect & analyse test results
- Create test reports & deliver to customer

6.3.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Updated Test Plan	Mandatory	Completion	Test
2	Updated Test Designs/Test Cases/Test Checklists	Mandatory	Completion	Test
3	Updated Test Data	Mandatory	Completion	Test
4	Updated Test Script	Optional	Completion	Test
5	Test Report	Mandatory	Completion	Test
6	Bug Report	Mandatory	Completion	Test
7	Project Report	Mandatory	Completion	Software Project Management

6.4 Termination

6.4.1 Overview

The project closes at this stage when customer accepts the whole project. Project assets must be collected and transferred to **Fsoft Process Asset Library**.

The goal of this stage is to summarize the results of the project and to provide the project knowledge and experiences for other projects.

6.4.2 Work Products

Main outputs of this stage are defined in the table below.

No	Work Products	Severity	State	Process
1	Customer Satisfaction Survey	Mandatory	Completion	Software Project Management
2	Project Report	Mandatory	Post mortem	Software Project Management

No	Work Products	Severity	State	Process
3	Project Assets	Mandatory	Completion	Software Project Management
4	Acceptance Note	Mandatory	Completion	Software Project Management

7 APPENDIX

N/A