EPATHUSA

PROCESS MANUAL – PROJECTS

Issue No: 01 Date: September 15, 2017

Revision/Version: 1.0 Date: September 15, 2017

Approval Details

	Prepared By	Issued & Controlled By	Approved By
Designation	Process expert team	Hari	Anitha

Copy Holders / File Access Authority

Sl. No	**Designation**	**Authority**
1	Management Representative (Master Copy)	RW
2	Solution Delivery Head (SDH)	RO
3	Projects Team	RO

CONTENTS

Sl. No	Procedure Name	DOC No	Revision Status					
			0	1	2	3	4	5
	QUALITY SYSTEM PROCEDURES							
1	Quality System Procedure For Project Planning	QSP/ EPATHUSA/PROJ/01	•					
2	Quality System Procedure For Project Execution	QSP/ EPATHUSA/PROJ/02	•					
3	Quality System Procedure For Risk Management	QSP/ EPATHUSA/PROJ/03	•					
4	Quality System Procedure For Testing	QSP/ EPATHUSA/PROJ/04	•					
	DOCUMENTS							
5	Project Management Plan	DOC/EPATHUSA/PROJ /01	•					
6	System Requirement Specification (SRS)	DOC/EPATHUSA/PROJ /02	•					
87	Design Document	DOC/EPATHUSA/PROJ /03	•					
8	Test Plan	DOC/EPATHUSA/PROJ /04	•					
9	Project Closure Check List	DOC/EPATHUSA/PROJ /05	•					
10	Use Case Document	DOC/EPATHUSA/PROJ /06	•					
11	Test Case Document	DOC/EPATHUSA/PROJ /07	•					
	FORMATS							
12	Project Kick- off Meeting Report	QF/ EPATHUSA/PROJ/01	•					
13	Risk Prioritization Form	QF/ EPATHUSA/PROJ/02	•					
14	Time & Task Sheet	QF/ EPATHUSA/PROJ/03	•					
15	Handover and Takeover Form	QF/ EPATHUSA/PROJ/04	•					
16	Test Report	QF/ EPATHUSA/PROJ/05	•					
17	Project Closure Report	QF/ EPATHUSA/PROJ/06	•					
18	Configuration Management Plan	QF/EPATHUSA/PROJ/0 7	•					
19	Meeting Minutes	QF/EPATHUSA/PROJ/0 8	•					
20	Requirement Traceability Matrix	QF/EPATHUSA/PROJ/0 9	•					
21	Project Deviation Report	QF/EPATHUSA/PROJ/1 0	•					
22	Bug Report	QF/EPATHUSA/PROJ/1 1	•					
23	Code Review Report	QF/EPATHUSA/PROJ/1 2	•					
24	SRS Review Report	QF/EPATHUSA/PROJ/1 3	•					
25	Design Review Report	QF/EPATHUSA/PROJ/1	•					

		4						
26	Test Case Review Report	QF/EPATHUSA/PROJ/15	•					
27	Project Schedule	QF/EPATHUSA/PROJ/16	•					

Revision History

DCR No	Date	Nature of Change	Brief Reason for Change	Page / Section Where Changes Made	New Revision No

❖ **Definitions and Acronyms**

ACRONYM/ TERM	DEFINITION/ DESCRIPTION
SDH	Solution Delivery Head
MD	Managing Director
PM	Project Manager
PL	Project Leader
PMP	Project Management Plan
SRS	Software Requirement Specification
HLD	High Level Design System
LLD	Low Level Design

❖ **Activity / Responsibility Matrix**

NO	ACTIVITY	SDH	PM	PL	QA
01	Collecting Customer Requirements	I	R		
02	Preparation of PMP	R	I		
03	Preparing SRS	R	I	I	
04	Preparing Test plan		I		R
05	Preparation of Design Document		R	I	

R – Responsible; I - Involved

❖ **Purpose**

The Project Planning Process provides a framework for software development and software maintenance teams to develop their project plans. Using the activities detailed in this process description and in supporting documents, project teams describe the work they will do, develop estimates of effort, develop a schedule, plan their management and technical approaches, identify measures to gather, and develop a risk management approach.

❖ **Scope**

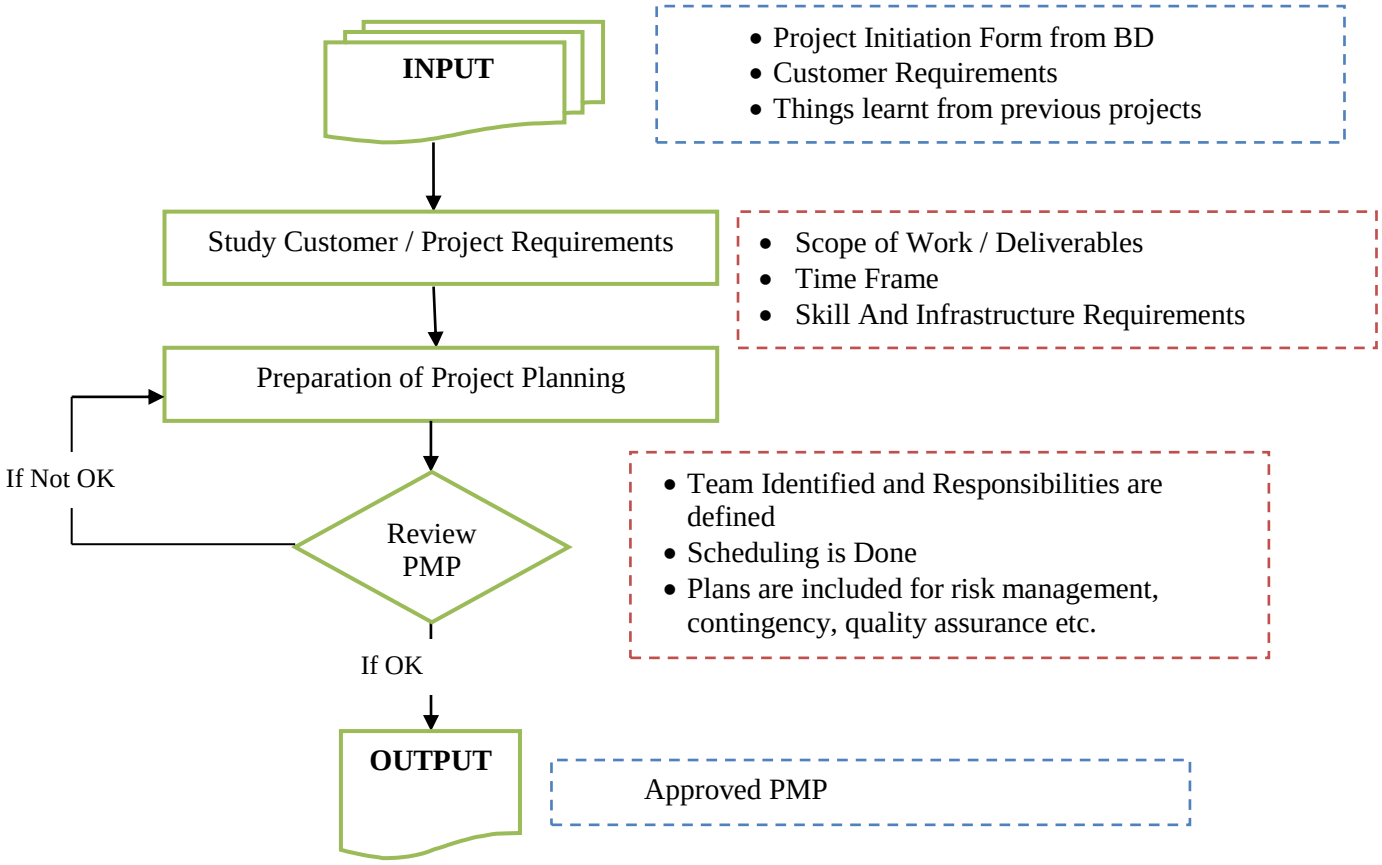
The activities, roles and deliverables in the project planning process may be performed slightly different for different types of projects. The scope is limited to tailoring of the process for the project based on guidance on tailoring a process.

❖ **Responsibility**

SDH / Project Manager is responsible to ensure that this procedure is implemented & maintained

❖ **Action & Method**

Process Flow Diagram



Process Description

Tailoring the Process for the Project

The scope and boundaries of the project are analyzed by the appointed PM. Based on the analysis made or based on the Project proposal, PM shall decide whether a tailoring of the defined processes is required or not. If Tailoring of the process is required for the project, the same is submitted to SDH for approval (as per Guidelines for Process Tailoring), and is clearly documented in the Project Management Plan.

Preparation of Project Management Planning

Based on the process decided for the specific project, PM using the PMP Template prepares this document.

PM in coordination with SDH decides for the SDLC Model to be followed for the project. Risk Management is also planned as part of PMP conforming to Risk Management Procedure

PMP shall consist of the following Plans:

- Development Plan
- Quality Assurance Plan
- Test Strategy
- Configuration Management Plan
- Risk Mitigation Plan
- Training Plan (if required)

PM identifies the various Deliverables, Resources, Training, communication and reporting requirements and documents the same in project plan. PM should identify and keep track of Customer Property in PMP.

PMP for the project including the reporting structure, roles and responsibilities are documented.

The PM prepares a Project Schedule (Work Break down Structure) depicting the main activities and the important milestones of the project along with scheduled start and end dates and estimated effort for each activity.

PM updates Project Schedule by entering the actual start and end dates and actual effort spent for each activity and maintains this document during the life of the project. Actual effort is calculated using the Time Recording Log form. At the completion of the project, this draws comparison of estimated effort with actual effort besides the projected schedule with actual schedule. The schedule is updated during the execution on a weekly basis and/or as and when any changes, such as change in scope of the work order.

PMP is reviewed by SDH periodically.

Timing Methodology for PMP

Time required and actual time taken is calculated on man day basis. During estimation of man day the time spent in group discussions on project is also considered as the time spent on the respective project.

Quality Assurance Plan

The plan mandates how the quality of the Software Work Products is controlled throughout the life of the project, review plans, the points that trigger the causal analysis and the Metrics to be collected from the project

The PM prepares the Quality Assurance Plan as part of PMP using the PMP Template.

Test Strategy

PM shall document the Test strategy followed for the project including the level and type of testing. Also details on the responsibilities, tools used for testing and the environment are documented. The plan is prepared as per the Testing Procedure.

Configuration Management

The plan shall mandate the items being controlled, Base lining criteria, Naming convention, Directory Structure, Assess controls to the directory and Change Management process followed for the project. Configuration management plan is prepared as part of PMP using the PMP Template.

Risk Mitigation Plan

The risks are identified in PMP and mitigation plan also prepared using PMP Template. The Risk Prioritization Form is used to define severity of risks and they impact on project execution**.**

Reviews and Approval of PMP

PM reviews the project Management plan and is approved by the SDH and forms part of the project folder.

Periodical Review

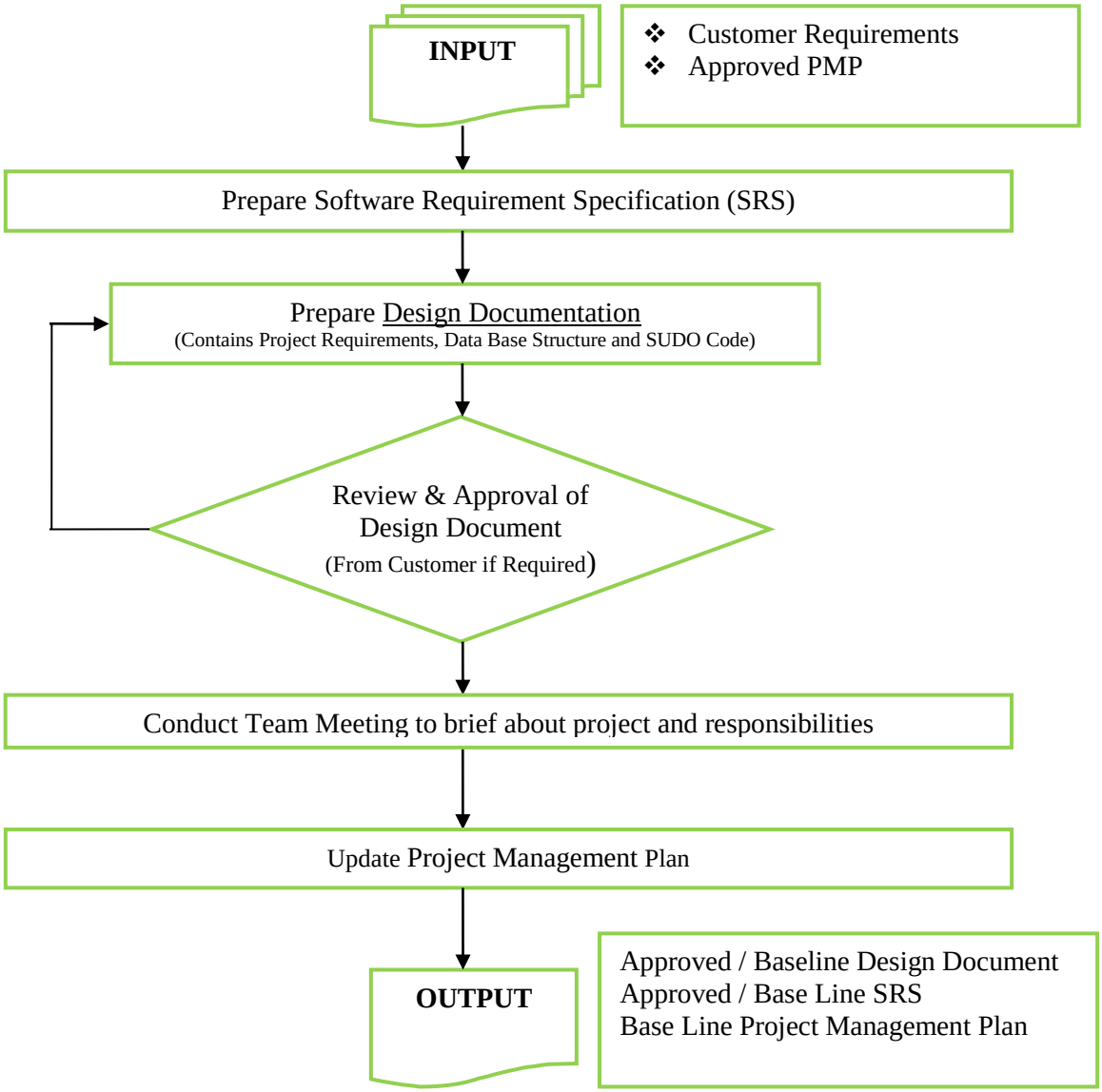
Project is monitored for its progress.
Periodically, the PMP is reviewed for its suitability to its present conditions, to ensure whether it depicts the present state of affairs, to know whether the risks identified have been actually minimized or whether any new risks have cropped up etc. Depending upon these, the PMP is updated.
Similarly other plans like CM plan (covered as part of PMP) are to be reviewed periodically and are to be updated to depict the correct and current state of conditions/affairs.

❖ **References**
- QSP for Risk Management – QSP/ EPATHUSA/PROJ/03
- Guidelines for Process Tailoring – DOC/ EPATHUSA/PROJ/01

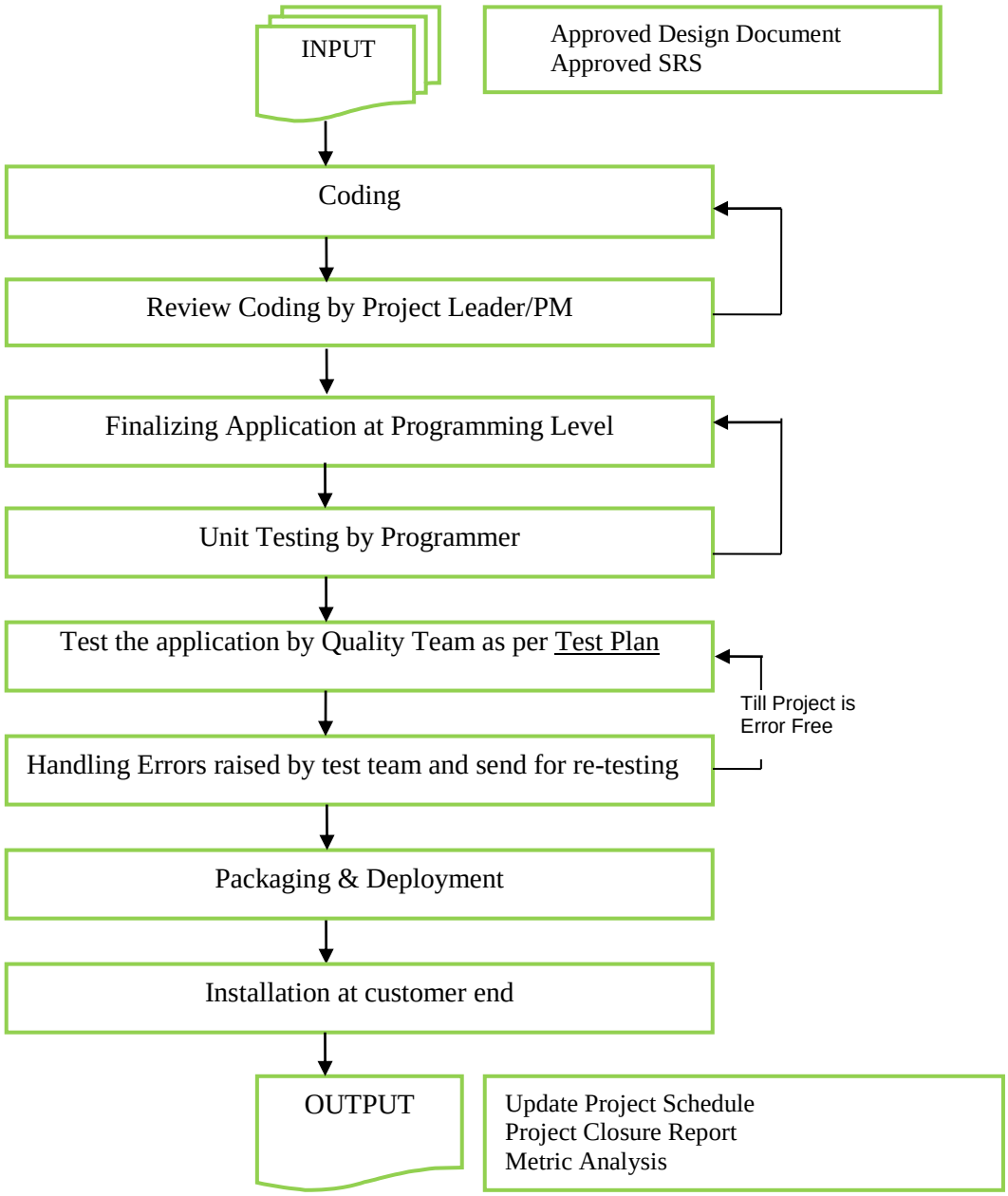
❖ **Documents**
- Project Management Plan – DOC/ EPATHUSA/PROJ/04

❖ **Formats and Records**
- Nil

- **Purpose**
  To ensure effective execution of projects and meeting customer requirements
- **Scope**
  This procedure is applicable to all the applications developed by EPATHUSA
- **Responsibility**
  SDH / PM is responsible to ensure that this procedure is implemented & maintained
- **Action & Method**
  Project Review & Allotment



Project Development


INPUT
Approved Design Document
Approved SRS
Coding
Review Coding by Project Leader/PM
Finalizing Application at Programming Level
Unit Testing by Programmer
Test the application by Quality Team as per Test Plan
Till Project is Error Free
Handling Errors raised by test team and send for re-testing
Packaging & Deployment
Installation at customer end
OUTPUT
Update Project Schedule
Project Closure Report
Metric Analysis

Project Status Review

Periodically the project status is reviewed by SDH with project team. Minutes of review meeting is maintained by Project Manager.

Handover and Takeover of Responsibilities

Whenever a team member leaves the organization during project development, knowledge sharing session between leaving employee and new employee should take place. Handover and Takeover form is used to transfer the responsibilities and documents / records followed.

❖ **References**

- QSP for Risk Management – QSP/ EPATHUSA/PROJ/03
- QSP for Testing – QSP/ EPATHUSA/PROJ/04

❖ **Documents**

- Design Document – DOC/ EPATHUSA/PROJ/03
- Software Requirement Specification – DOC/ EPATHUSA/PROJ/04
- Testing Plan – DOC/ EPATHUSA/PROJ/05
- Project Closure Check List – DOC/ EPATHUSA/PROJ/06

❖ **Formats and Records**

- Time & Task Sheet - QF/ EPATHUSA/PROJ/02
- Testing Report – QF/ EPATHUSA/PROJ/04
- Team/ Project Review Meeting minutes
- Handover and Takeover Form – QF/ EPATHUSA/PROJ/03
- Project Closure Report – QF/ EPATHUSA/PROJ/05

- **Purpose**

  This document discusses the Risk Management Processes to be implemented across various Projects in the Organization

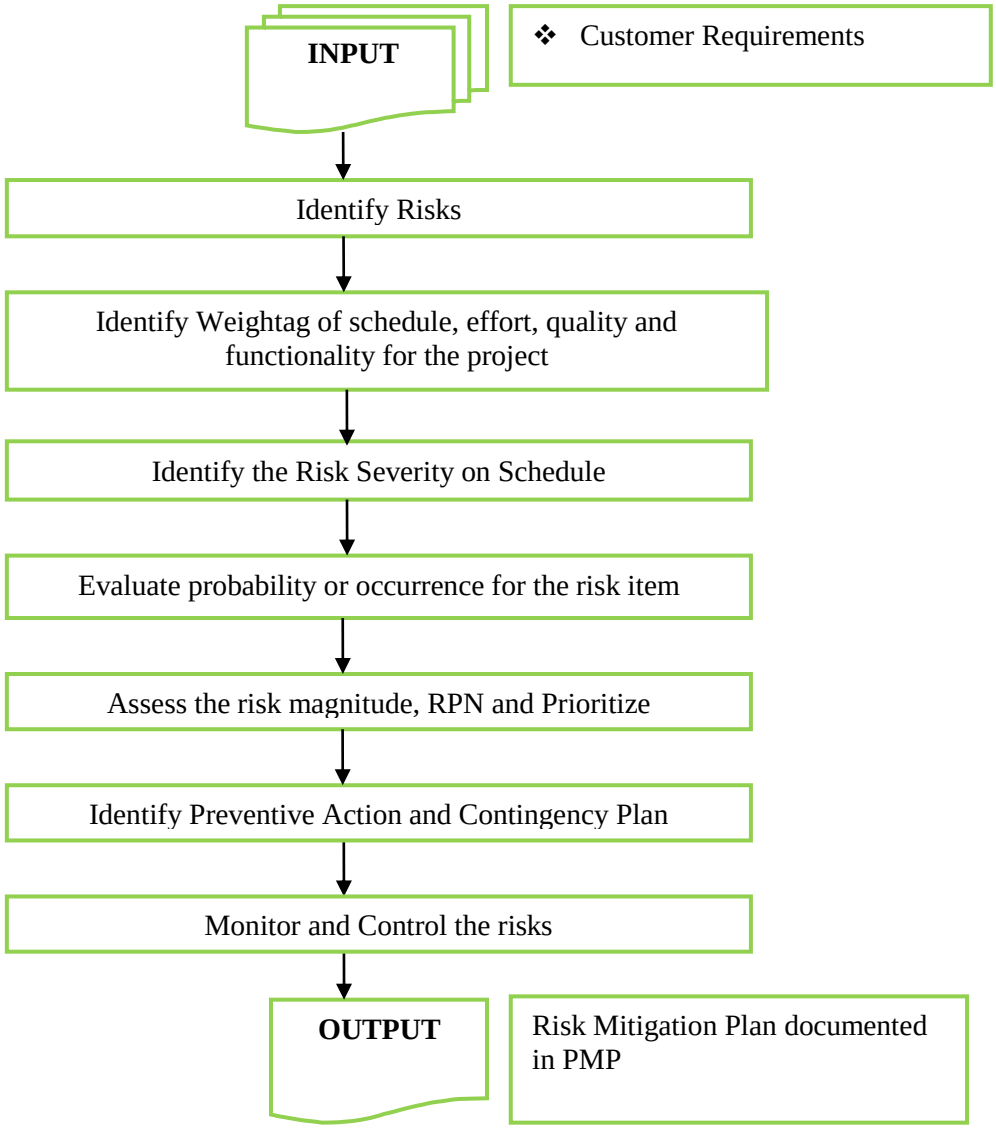
- **Scope**

  This documents the various Risk Management activities to be carried out during the Project Life Cycle

- **Responsibility**

  SDH is responsible to ensure that this procedure is implemented & maintained

- **Action & Method**



Process Description

These guidelines are used during project planning phase for identifying, evaluating and devising out with a monitoring mechanism for different risks the projects are exposed to.

Risk Item Identification

Any possible event that hampers the project management objectives (Categorized as schedule/ delivery dates, Effort/ cost, Quality of a deliverable, functionality deliverability) is termed as RISK ITEM.

At a broader level, Risk items are classified under the following heads.

Project Related – These are risks that arise due to

- ✓ Lack of Clarity of the Specifications
- ✓ Lack of Knowledge in the specific Domain Areas
- ✓ Lack of Proper Commitment of Resources
- ✓ Buffer Time not provided for the Unforeseen Situations
- ✓ Inaccurate Estimates- e.g., regarding the Size of the Project

Technical Related – These are the risks that arise due to

- ✓ Inaccurate Estimates- e.g., regarding the Size of the Project
- ✓ New/Unproven Technology being used for the Development
- ✓ Unstable Technology or Frequent Updates/Patches by the Technology Provider
- ✓ Improper Maintenance
- ✓ Specification Ambiguity
- ✓ Lack of Potential Design

Business Related - These are the risks that arise due to

- ✓ Client is not Clear on the Business Requirements
- ✓ Frequent Modifications to the agreed functionality
- ✓ Lack of proper communication between the client and the Project Team
- ✓ Requirement Changes and the same thing need to be update as part of product functionality

Hardware Related

- ✓ Delay in arrival of the Hardware due to customs clearance, or other reasons
- ✓ Hardware Failures like Hard disk Crash etc.

Resource Related

- ✓ High Attrition Rate in the Industry
- ✓ Lack of people with required Skills
- ✓ Inadequate People in the Project

Risk Management deals with identifying those specific risk items that hamper the planned schedules/ objectives of the project, so that suitable steps could be taken to ensure that their Severity is minimized.

Risk Evaluation

Project Management Objectives are categorized as Schedule/delivery dates, Effort/Cost, Quality, and Functionality deliverability.

Weightage of each of these categories is nothing but their relative importance in a project and thus varies from Project to Project depends on its scope. In the absence of defining weightages for each of these categories, during Project Management Plan, Typical weightages that can be followed is given as under

Project Management Objective category	**Weightage symbol**	**Weightage on Project Management Objectives**
Schedule/ delivery dates	W(S)	20
Effort/ cost,	W(E)	20
Quality of a deliverable	W(Q)	30
Functionality deliverability	W(F)	30
TOTAL		100

Each Risk item is classified for its Risk Severity level on project as "Very Low, Low, Medium, High, and Very High." The following table provides guidelines for Risk Severity Level Rating allocation for each of these levels against each categories (i.e., Schedule, Effort/Cost, Quality, Functionality):

Attributable Risk Severity Level	Attributable Risk Severity level rating (0-5)	IMPACT OF THE RISK ITEM ON PROJECT OBJECTIVES			
		Schedule	Effort/ Cost	Quality (Measured as % increase in defect rate)	Functionality
Risk Severity Symbol ----------→		S (S)	S (E)	S (Q)	S (F)
No effect	0				
Very Low	1	< 2 % delay	< 2 % increase in effort or cost	<1% increase in defect rate (Increase is above the contractually accepted defect rate or internal benchmark)	<1% of the functionality cannot be delivered
Low	2	2% to 5% delay	2% to 5% increase in effort or cost	1% to 3% increase in defect rate	1% to 3% of the functionality cannot be delivered
Medium	3	5% to 10% delay	5% to 10% increase in effort or cost	3- 5 % increase in defect rate	2% to 5% of the functionality cannot be delivered
High	4	10% to 20 % delay	10% to 20 % increase in effort or cost	5 to 8 % increase in defect rate	5 to 8 % of the functionality cannot be delivered
Very High	5	> 20 % delay	> 20 % increase in effort or cost	> 8 % increase in defect rate	> 8 % of the functionality cannot be delivered

Once all the information is collected for each Risk item i.e., Weightage, Risk Severity level rating, Risk magnitude is calculated as:

Risk Magnitude, R = **(**W(S) **x** S(S) + W(E) **x** S(E)+ W(Q) **x** S(Q) **+** W(F) **x** S(F) **)**

Each Risk item is classified for its Occurrence in the project as Improbable, Likely, Very likely, and Almost certain. The following table provides guidelines for Probability of Risk occurrence allocation for each of these categories:

RISK OCCURRENCE CLASSIFICATION	PROBABILITY OF RISK OCCURRENCE
Improbable	<5% chance of occurrence
Likely	5% to 50% chance of occurrence
Very likely	>50% chance of occurrence
Almost Certain	> 95 % chance of occurrence

Probability of Risk occurrence is denoted by Symbols for each Risk items as P(O).

Once all the information is collected for each Risk item i.e., Risk Magnitude and Risk occurrence probability, Risk Priority Number (RPN) is calculated as:

RPN = Risk Magnitude(R) **x** Risk Occurrence Probability (P(O))

Risk Prioritization

Risks are prioritized based on Risk Priority Number.

Preventive actions are planned for all the risk items to reduce Probability of Occurrence (Thus in turn reducing RPN). Contingency Plans (Risk Mitigation) is planned to contain the effect if Risk Item Occurs.

Also data on the time horizon, and days remaining for the risk to Severity the project, are maintained through which the priorities may be changed.

Preventive Action Plan

For all the risk items identified, a Preventive action is identified (At least for those risk items having RPN >40). Also even when RPN<40, if Risk Magnitude is more than 50, Preventive actions are required to be planned. The effectiveness of the Preventive actions is evaluated in terms of reducing RPN.

A possible list of Preventive actions includes:

- Obtain available information from repository about good and bad practices in similar projects executed earlier in the organization and draw inferences to prevent risks in the current project
- Training of resources and through consultation with Technical Support Group
- Utilization of idle resources
- Experienced people to carry out scheduling to avoid schedule related risks
- Proper communication, discussions and meetings to evaluate customer risks
- Discussion with experienced people to avoid estimation risks
- Standby UPS against power disruption
- Inclusion of experienced people to avoid technical risks
- Consultation and guidance by experienced people to avoid business risks

Contingency Plan (Risk Mitigation Plan)

In case Risk item occurs, to contain (i.e., Control) the effects caused by the Risk, Contingency plans (RISK Mitigation Plans) are made for all the Risk items by PM to reduce the Severity caused by the risk (At least contingency plans are required for all Risk items having RPN>40 and/or Risk Magnitude (R) >50).

PM shall formulate a plan of action that helps to overcome the anticipated risks. The various action points of the contingency plan may involve and not limited to:

Project Related

- ✓ Clearly laying down the design specifications so that the coder can code without any further assistance.
- ✓ Properly Planning the Deliverable schedules by adding a buffer period to the actual time plan
- ✓ Freezing the resource allocation – devoting 100% of his/her time to the project allocated
- ✓ Doing an evaluation of the proposed Architecture by developing a Prototype covering critical path in the project execution Phase.

Technical Related

- ✓ Using a Proper Time Tested Technology
- ✓ In case a New Technology has to be used, keeping Track of all the Software Upgrades/ Patches by the Supplier as they are trying to solve the bugs in the previous versions of the software
- ✓ Adding proper comments to the code developed so that a new person could be used for modifying the existing code

Business Related

- ✓ Freezing the Customer Requirements well in advance before a major BETA Release and handle the subsequent code modifications in the next release
- ✓ Get Clarification from the client on all the topics that require clarification
- ✓ Demarcate the responsibility of the team and allocate people to efficiently monitor the project team
- ✓ Having frequent Interactions with the Client and requesting for clarifications
- ✓ Try to capture all the requirements at initial stage and agreed in writing. In case it's not feasible, try to insert a clause on "Additional changes and its Severity on Effort/ cost" and payment by customer in Contract/ Purchase order issued by customer.

Hardware Related

- ✓ Planning substitute machines in case of a failure
- ✓ Have proper back up mechanism to take care of power failures etc

Resource Related

- ✓ Provide the necessary Training for the people in the Project team to build a good team
- ✓ To build a necessary Project Repository which is a collection of various topics learnt over the period of time
- ✓ To have regular interactions with the design team, coding team and the testing team, so that the teams are in Synchronization with regards to the Project Requirements

Risk Monitoring and Control Mechanism

PM identifies risks at the start of the project and prepares Risk impact reduction (i.e, RPN) plan and discusses it with members of the project Initiation (kick-off) meeting. PM documents the risks and risk management activities in Project Management Plan (PMP) and takes necessary actions based on the risk reduction plan and monitors the status of the risks. PM also identifies new risks from time to time based on the issues and reprioritizes the risks based on the Severity on different project parameters like Schedule, Effort/cost, Quality, and Functionality. PM reports to SDH periodically about the status of project risks for review the effectiveness of risk monitoring activities in the project.

- ❖ **References**
  - QSP For Project Planning – QSP/ EPATHUSA/PROJ/03
- ❖ **Documents**
  - Project Management Plan – DOC/ EPATHUSA/PROJ/02

❖ **Formats and Records**

- Risk Prioritization Form - QF/ EPATHUSA/PROJ/01

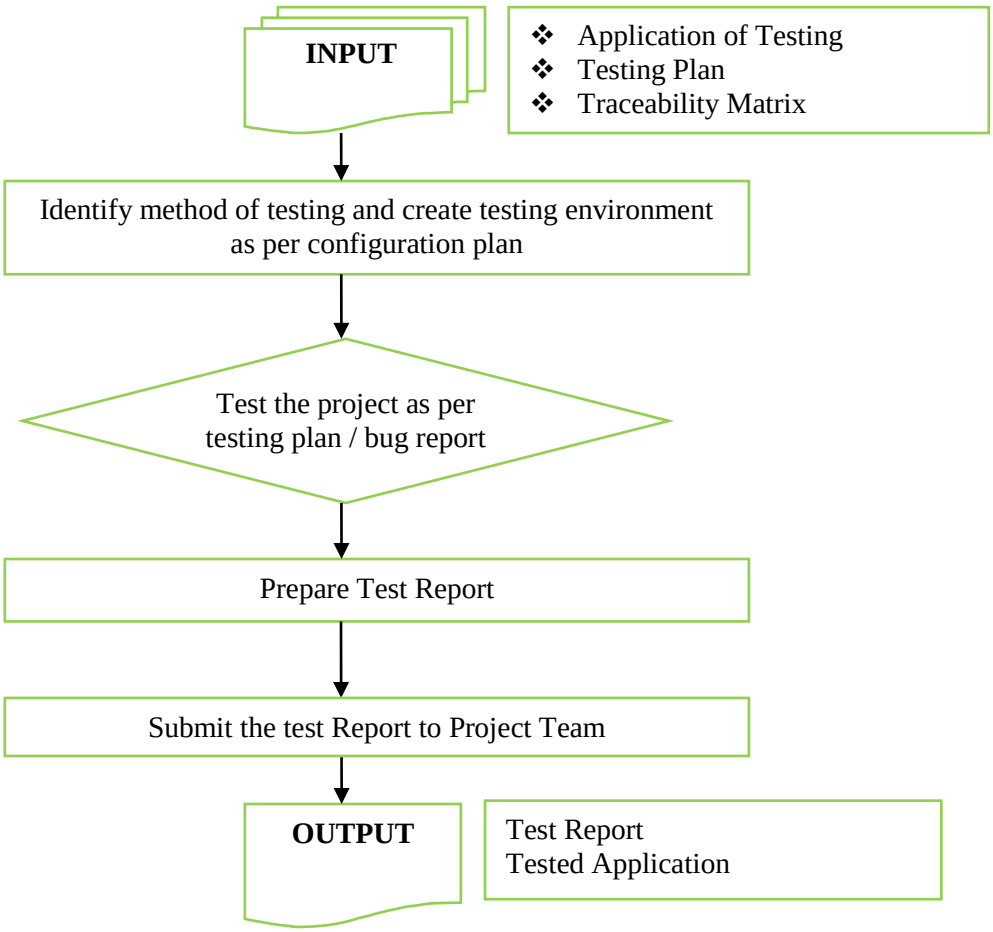
- **Purpose**

  To ensure project is tested in intermediate stages to ensure bug free project is delivered to customer
- **Scope**

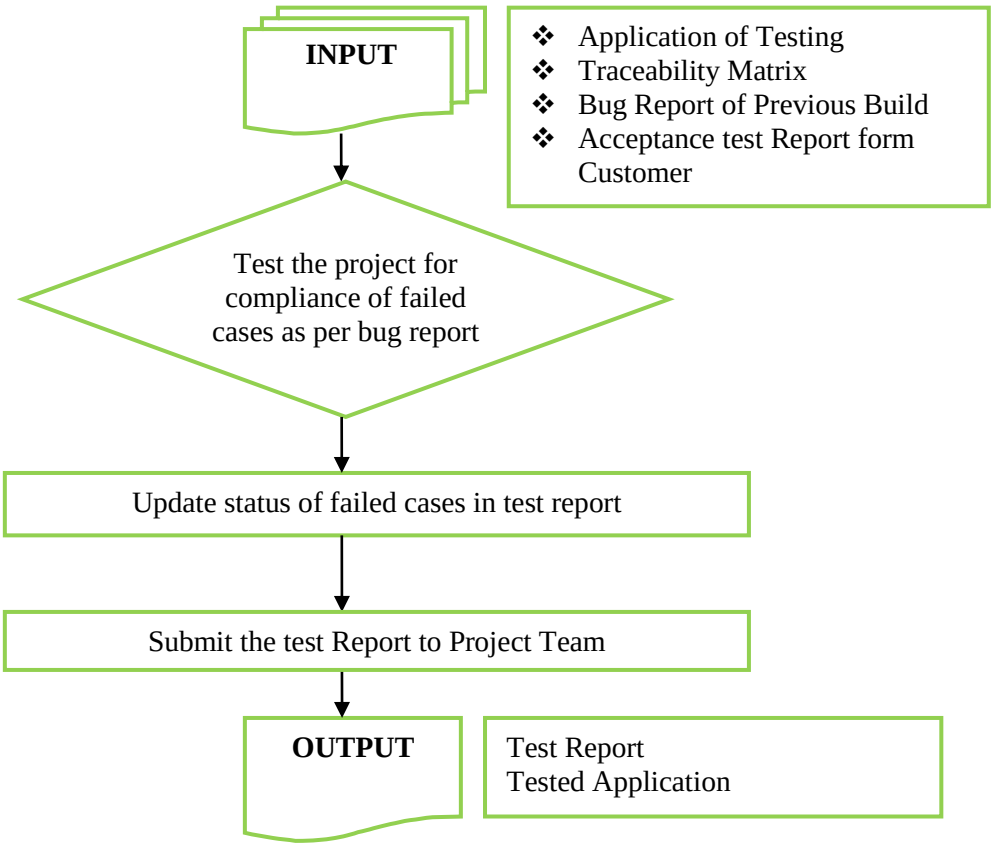
  This procedure is applicable to all the applications developed by EPATHUSA
- **Responsibility**

  QA Lead is responsible to ensure that this procedure is implemented & maintained
- **Action & Method**

Process Flow Diagram For New Application Testing



Process Flow Diagram for Re-Testing



- **References**
  - Design Document – DOC/ EPATHUSA/PROJ/04
  - Software Requirement Specification (SRS) – DOC/ EPATHUSA/PROJ/03
- **Documents**
  - Testing Plan – DOC/ EPATHUSA/PROJ/05
- **Formats and Records**
  - Testing Report - QF/ EPATHUSA/PROJ/04