

American International University- Bangladesh (AIUB)
Department of Computer Science
CSC4125: Software Development Project Management
Fall 2018-2019

Course Teacher: S.M. Abdur Rouf Bhuiyan
Section: A

- **PROJECT TITLE**

**Developing the Software Development Project Management Plan for Bangladesh
Railway automated ticket issuing system**

- **GROUP MEMBERS & ID**

Name	ID	Signature
Hossain Zahid	16-32597-2	Zahid Hossain

- REVISION HISTORY

Revision	Author	Description	Date
BR_PMP_1.0	Hossain Zahid	Initial creation of the project management plan	7th april 2018
BR_PMP_1.1	Hossain Zahid	Final Draft of the project Management plan, includes correction of all the requirement flaws that existed in the former document	6th december 2018

- Introduction

This is a project management plan developed for the management of the railway ticket system in an automated way. We have overviewed some EPR modules and demonstrated the processes and plans according to our work. The work of the project was started in 7th of april and was completed in december 6th. The purpose of this project is to innovate a new improved system for the Bangladesh railway.

- PROCESS MODEL

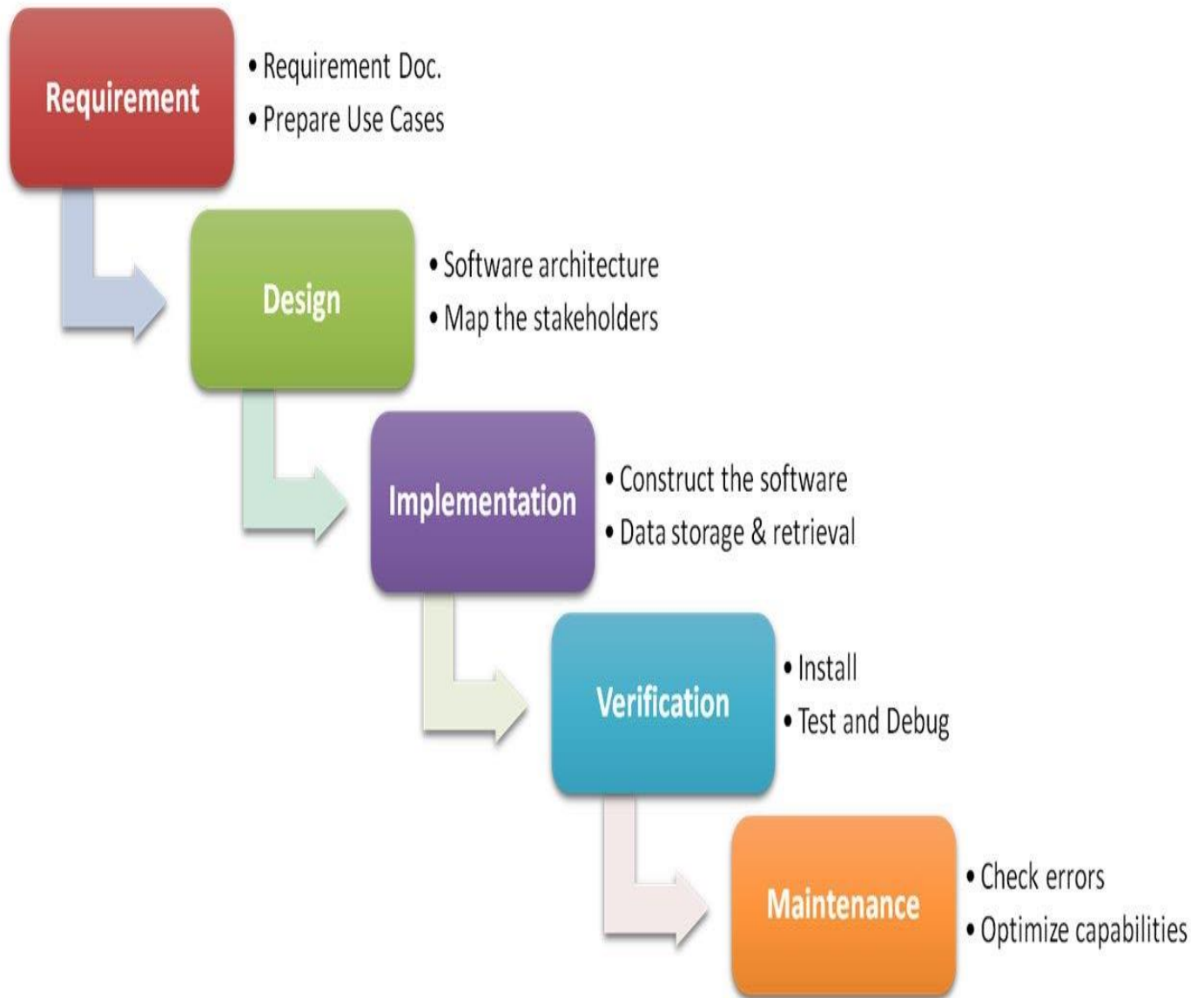
The Process model we have chosen to develop this project is the Waterfall Model

- The Reason behind choosing this Model

The Waterfall model, also known as linear – sequential life cycle model. It is very simple to understand and use. In the waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases. The Waterfall model is the earliest SDLC approach that was used for the software development.

This model is comparatively well established than any other models and we have sequentially presented everything based on this model.

- GENERAL OVERVIEW



- Quality Gates

The water fall model must complete each phrase before moving to the next phase, there is no scope for overlapping of phases in this development process. This will reduce the costly iterations among phases. The development team need to makes sure that certain criteria of the current phase have been met that will ensure the finished product. Backing is not possible for this system development

Gate 1

There will be a gate to pass through between each phases. Before moving on to the design phase from planning phase- deployment, confirming, and operation system must be checked.

Gate 2

Notify change in the system, confirming and signing with all related stakeholder, establishing a change control environment before going to the development phase.

Gate 3

All Regression tests pass, Schema verification against database design documentation, and data dictionary matches schema, validated against one another, all requirement changes must be traceable to the source. These things should be included before heading into the deployment.

Gate 4

Proper Documentation, customer accepting the product, all the success criteria checking includes before completing the project.

Gate 5

Work Product	SQA Method
Requirement document	Inspection of the documents
Software development	Inspection
Design documents	Spell checking of documents
Schedule	Inspection
Code	Code Inspection
System testing	Test Coverage Measurements
Alpha/beta test	3 weeks of testing at client/developer's side

- List of Task

i. Initiate Project

1. Developing The Project Chart

- i. Define Scope
- ii. Define Requirements

- iii. Indentify High-Level Roles
 - iv. Develop High-Level Budget
 - v. Identify High-Level Control Strategies
- ii. Finalize Charter and Gain
 - i. Consolidate and publish project charter
 - ii. Hold review meeting
 - iii. Revise project charter
 - iv. Gain approvals from government
- iii. Plan Project
 - i. Develop work plan
 - ii. Develop project staffing plan
 - iii. Develop project schedule
 - iv. Develop project budget
- iv. Develop Project Control Plan
 - i. Develop communication plan
 - ii. Develop quality management plan
- v. Design
 - i. Define Stages and activities
 - ii. Design content Formats
 - iii. Object design Review
- vi. Build
 - i. Write Code
 - ii. Project Review with Government
- vii. Testing
 - i. Unit Testing
 - ii. Test of Usability
- viii. Implementation
 - i. Move tool to production environment
 - ii. Announce Tool Arability
- ix. Close Project
- x. Conduct the project review with Government

- ESTIMATION

For estimation we used CoCoMo (Constructive Cost Model) II

Our Project is a Semi- Detached system for which Coefficient<effort factor> = 3.0

Complexity, P = 1.12

SLOC dependent coefficient, T = 0.35

SLOC = 20000

$$\begin{aligned}\text{Effort, PM} &= \text{Coefficient<effort factor>} * (\text{SLOC}/1000)^P \\ &= 3 * (20000/1000) ^ 1.20 \\ &= 109 \text{ person-month}\end{aligned}$$

$$\begin{aligned}\text{Development Time, DM} &= 2.5 * (\text{PM})^T \\ &= 2.5 * 109 ^ 0.35 \\ &= 13 \text{ months} \\ &= 52 \text{ weeks}\end{aligned}$$

$$\begin{aligned}\text{Required People, ST} &= \text{PM}/\text{DM} \\ &= 109/13 \\ &= 8.4 \\ &= 8 \text{ Persons}\end{aligned}$$

- Scheduling the Tasks

Task	Start Date	Duration(Days)	End Date
Initiate Project	02/03/2018	30	02/04/2018
Develop Project charter	05/03/2018	15	21/03/2018
Define Scope	04/03/2018	5	09/03/2018
Identify High Level Roles	07/03/2018	2	09/03/2018
level BudgetDevelop High	012/03/2018	2	14/03/2018
Identify High level Control Strategies	24/03/2018	6	30/03/2018`
Consolidate and publish project charter	01/04/2018	5	05/04/2018

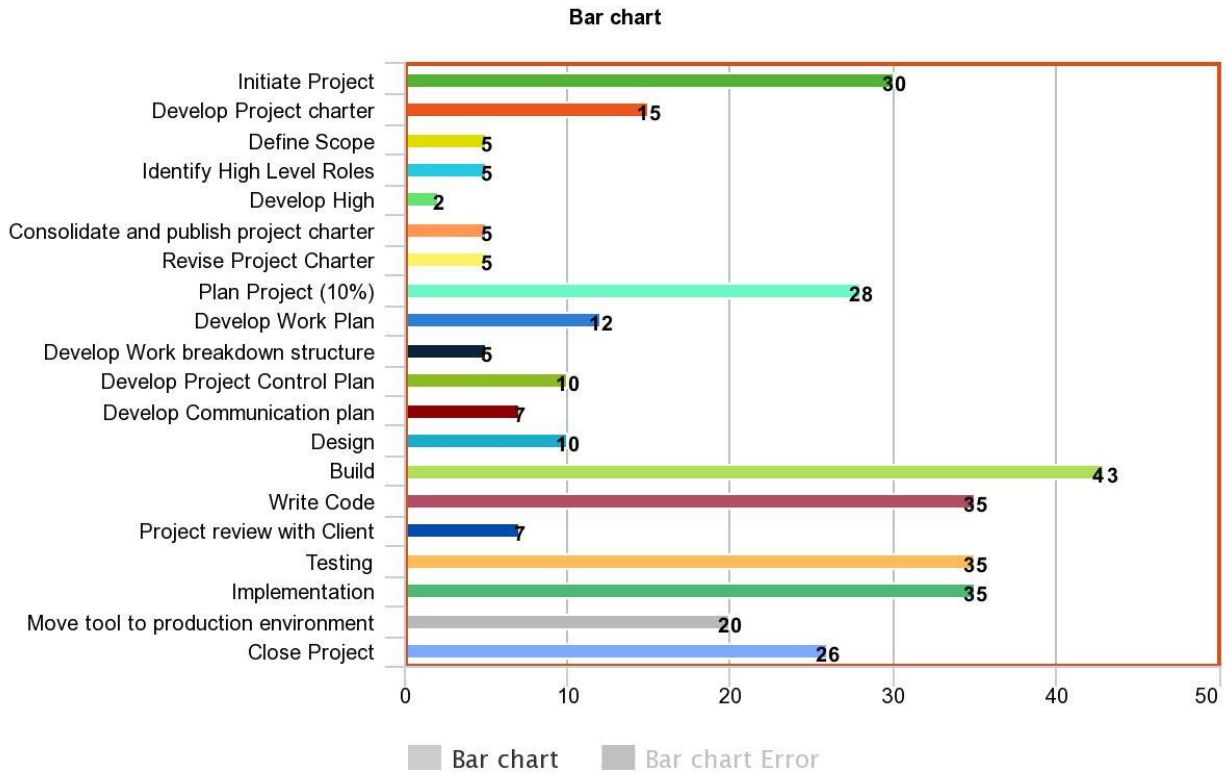
Hold Review Meeting	07/04/2018	1	08/04/2018
Revise Project Charter	011/04/2018	5	16/04/2018
Gain Approvals from Government	10/04/2018	2	12/04/2018
Plan Project (10%)	17/04/2018	28	15/05/2018
Develop Work Plan	15/04/2018	12	29/04/2018
Develop Work breakdown structure	20/04/2018	5	25/04/2018
Develop Project Staffing Plan	27/04/2018	4	1/05/2018
Develop Project Schedule	01/05/2018	3	04/05/2018
Develop Project Budget	05/06/2018	4	9/05/2018
Develop Project Control Plan	10/05/2018	10	20/05/2018

Develop Communication plan	11/05/2018	7	18/05/2018
Develop Quality Management Plan	19/05/2018	4	23/05/2018
Design	23/05/2018	10	03/06/2018
Define stages and activities	24/05/2018	3	27/05/2018
Design content formats	25/05/2018	3	28/05/2018
Object design review	02/06/2018	2	04/06/2018
Build	06/06/2018	43	19/07/2018
Write Code	07/06/2018	35	12/07/2018
Project review with Client	10/07/2018	7	17/07/2018
Testing	20/07/2018	35	25/08/2018

Unit testing	21/07/2018	25	16/08/2018
Test of usability	10/08/2018	8	18/08/2018
Implementation	21/08/2018	35	5/10/2018
Move tool to production environment	21/08/2018	20	10/09/2018
Announce Tool Availability	19/09/2018	20	10/10/2018
Close Project	11/11/2018	26	06/12/2018

- BAR CHART

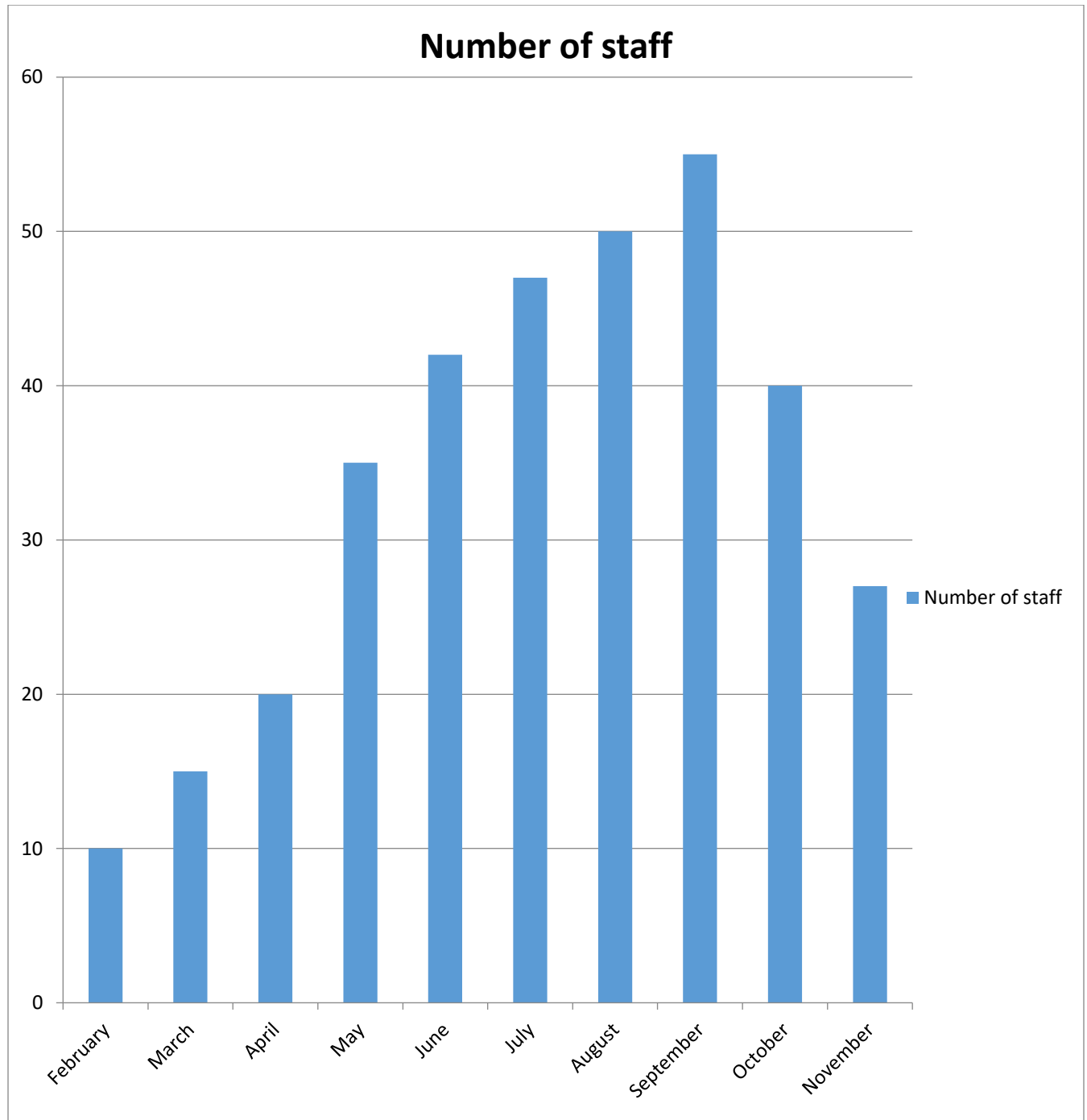
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- MAJOR MILESTONES

No	Item	Milestone date
1	Planning	02-03-2018
2	Project Presentation	11-03-2018
3	Requirement Analysis	07-04-2018
4	Requirements review with Bangladesh rail	13-05-2018
5	Preliminary Design	18-06-2018
6	Details Design	09-07-2018
7	Coding	10-08-2018
8	Internal Project Review	13-09-2018
9	Testing Process	25-10-2018
10	Demo Software Test	28-11-2018
11	Project Acceptance by Bangladesh Railway	07-12-2018

- STAFFING PLAN



[illegible]

- Monitoring and Control

The Process of Monitoring and control process views the overall tasks and metrics necessary to ensure that the approved and authorized project is within scope, within schedule, and on allocated budget so that the process proceeds with minimal risks. This process involves comparing actual performance with planned performance. Monitoring and Controlling process is performed continuously throughout the project. The following is a checklist of items to consider

- Every Week Status Meeting will be conducted.
- Every Week the objective met will be checked with their actual completion date and planned completion date
- Implement Strategies to protect the project from scope change requests
- Approach to monitor spending against the project budget and progress against planned schedule.
- The Internal and External reports to be generated by specific departments about their progress
- The risk checklists that will be used to identify, analyze, prioritize, monitor and mitigate risks.
- Weekly Meet up Stakeholders to resolve disagreements with the customer, including how to handle schedule slips
- Process Re-Engineering to improve efficiency and effectiveness
- Use the Earned Value Analysis (EVA) to measure the progress of the project quantitatively
- Risk Information Sheet

Risk ID	Description	Probability	Impact
1	Computer Crash	70%	Catastrophic
2	Changes in Requirements	25%	Critical
3	Technology will not Meet Expectations	25%	Catastrophic

4	Lack of Development Experience	20%	Critical
5	Poor Quality Documentation	35%	Critical

Risk_ID_1	Date: 14.04.2018	Probability: 70%	Impact: Catastrophic
<p>Description: Computer Crash</p> <p>Mitigation plan: The cost associated with a computer crash resulting in a loss of data is crucial. A computer crash itself is not crucial, but rather the loss of data. A loss of data will result in not being able to deliver the product to the customer. This will result in a not receiving a letter of acceptance from the customer. Without the letter of acceptance, the group will receive a failing grade for the course</p> <p>Monitoring and Management: When working on the product or documentation, the staff member should always be aware of the stability of the computing environment they're working in. Any changes in the stability of the environment should be recognized and taken seriously. · Management The lack of a stable-computing environment is extremely hazardous to a software development team. In the event that the computing environment is found unstable, the development team should cease work on that system until the environment is made stable again, or should move to a system that is stable and continue working there.</p>			

Risk_ID_2	Date: 15/07/2018	Probability: 20%	Impact: Critical
<p>Description: Changes in Requirements</p> <p>Mitigation Plan: In order to prevent this from happening, meetings (formal and informal) will be held with the customer on a routine business. This insures that the product we are producing, and the requirements of the customer are equivalent.</p> <p>Monitoring and Management: The meetings with the customer should ensure that the customer and our organization understand each other and the requirements for the product. · Management Should the development team come to the realization that their idea of the product requirements differs from those of the customer, the customer should be immediately notified and whatever steps necessary to rectify this problem should be taken. Preferably a meeting should be held between the development team and the customer to discuss at length this issue.</p>			

Risk_ID_4	Date: 17.4.2018	Probability: 20%	Impact: Critical
<p>Description: Lack of Development Experience</p> <p>Mitigation Plan: In order to prevent this from happening, the development team will be required to learn the languages and techniques necessary to develop this software. The member of the team that is the most experienced in a particular facet of the development tools will need to instruct those who are not as well versed.</p> <p>Monitoring and Management: Each member of the team should watch and see areas where another team member may be weak. Also if one of the members is weak in a particular area it should be brought to the attention by that member, to the other members. · Management The members who have the most experience in a particular area will be required to help those who don't out should it come to the attention of the team that a particular member needs help.</p>			

- List of Deliverables

No	Item Description	Date
1	Software Requirements specification document	30-02-2018
2	Design Documents	15-03-2018

3	Considering Business rules	30-04-2018
4	Defining Quality requirements	10-04-2018
5	Alpha Version	15-05-2018
6	Beta Version	05-06-2018
7	User Manuel	30-06-2018
8	Installation Manuel	15-07-2018
9	Maintenance guide	30-08-2018
10	Agreeing on terms of Service	15-09-2018

- Defect Tracking Process

The more focused process and testing will allow the software to be less buggy. Defect Tracking is much more efficient and effective in reducing the number of defects and also is very cost effective to fix the defects found during the early stage of the software process. To track the defects some precautionary steps are describe below.

- ❖ Early detection of the defects
- ❖ Identifying the critical defects
- ❖ Estimation of expected impact
- ❖ Minimizing the Expected Impact
- ❖ Use Tracking tools to track Defects.
- ❖ A web based database will be maintained to track the defects
- ❖ Unit testing and regression testing will be added to the combined code base.
- ❖ The whole execution operation is broken down into several parts to track down defects more easily

- Metrics

Actual completion of Project:

The actual time the project was completed on

Total number of defects found:

Aggregated the number of defects per requirements

Productivity:

how many simple tasks can be delivered on a single day

Number of files:

The total number of file that encompasses the software

Time spent of system identification testing:

Actual time spent in identifying the testing to be done on the software

Line of codes produced per week:

How much of coding was done per week by the development team

- Post Mortem

Breaking down the whole project the motive or in other words the objective of ours was to deliver a full fledged ERP system with the help of our software development and project management knowledge to come up with this innovative technology that will increase the confortness of traveling as booking tickets of the Railway is a part of the traveling. We have listed some of the teams that will be required to be utilized into the goal. Post mortem of our project tells that this system will help the authorities on controlling the traffic of their day to day work. The system will overview all of the requirements for their work and will give a proper solution. Thus this software that we are building can be used as an example or gateway to other systems. This system can be upgraded or sub-ordinated into more sections in other areas as well.