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Title: Software Development Project Management Plan For Dhaka Subway Systems Automated Ticket Issuing System.

SDPM Plan for Dhaka Subway Systems Automated Ticket Issuing System version (1.0.0) :

Course : Software Development Project Management
Section: A

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2.Revision History Page:

Revision	Authors	Description	Date
Software Development Project Management Plan of Dhaka Subway System(1.0.1)	Shionty Ghosh	First Draft	01/07/2021
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3.INTRODUCTION:

This is the attestation for Software Development Project Management Plan for Dhaka Subway Systems Automated Ticket Issuing System. This Software Project Management Plan report will define the steps by step work plan and work progress of our team .this software have many outstanding features like touch screen monitor as well as keyboard, train schedule, train timing, destination, arrival etc.it also will maintain account system like when a customer will use the their credit card that it it will check the validity of their credit cards. besides will check the balance of the customer's account.. this system also accept taka and coin. A customer can be able to purchases more then one ticket besides their have a limitation of parching ticket and it will be control by the admin of the Dhaka sub way system. This system will give service 24/7 every customer and always keep information updated. so In this report there will be provide detailed information regarding the project's management strategy. The designers and IT department personnel will be the target audience for this report in the future. The software invention necessitates both technical and managerial techniques. In this report all of the practical and administration tasks necessary to hand over the deliverable to Dhaka Subway Systems are comprise. To this comprise programme, task identification, project and planning issues that happen influence of the project. So overall a project plan can show this document. If any one want to something about our system , this document will give the idea idea and our all plan by this document.

4. Process Model:

First of all we want to select Agile Process Model for our project. There are so many benefits for choosing this process model that's why we choose it.

- Our project is medium size project because here our goal is to make automated ticket issuing system develop that why we can say it's a medium size project. For a medium sized project agile is best choice as we know.

- By using this process model we can deliver our product/system very quickly. Because it's a quick process for developing a system.

- This process model is so much realistic that's why team member can work very comfortably.

- At the development process by using this model , it is easy tom find the bug and problem very quickly. Because here developer and tester team work together, because in every phase testing process is done by software tester, so we wanted that , we will find out out bugs very early and as in the every phase it see the customer that's why we will gain their trust that we are working hard and soul for their project and earlier we can finding bugs by tester. It is a good practice for a project.

- There have a great interaction of customer so that, it is easy to satisfied the customers and possible to change requirements very earlier. Because sometimes in any project, we can see customer's interaction is at the last, so that time it is not possible to change requirements. But at the agile process step by step developer take review from customers and it is not necessary to change the requirement at the last stage.

- Even it is possible to late change because of flexible process model. Here the cost of change is so litter that's why it don't give any affect at the budget or anything.so in our project we don't want to take any kind of risk that will give bad impact our project or requirements that's why we thought that, if there is any requirement change request come from customer ,then it can be handled easily.

- There have no communication gap between business people/customers and developer. So in every week or after someday in every month each other can share the progress of the project and also discuss about their work and requirements.

So for those reason we choose this Agile Development process model.

5.QUALITY GATE FOR EACH PHASE OF SOFTWARE DEVELOPMENT:

A project can be divided into number of phases. Here quality matters. In the site of software development phases, one phase is related to other phase and maintain relationship. If previous phase is completely done, then next phase is started. Actually phases are done sequentially. The previous shape gets priority in an overlapping relationship phase. Rapid Action Development(RAD) methodology is a main issue for quality measures. In the terms of rad, quality is called not only the degree to which a presented or modified deliverable application meets, but also the degree has to be mentioned where delivered system cannot bear proper maintenance cost. The design stages and other phases of software development according to RAD and it develops quality measures as a medium of users.

Size, potential impact, quality of project, degree of control is assumed for different phase of software development. Different processes can contain several types of effort. Process and phases are not same but inter related. Project quality management and other criteria such as monitoring and control system, executing phases of software development, quality control are some attempts to improve quality gate and their system.

6. LIST OF TASKS:

- Project planning
- Making decisions for the project
- Add motivational work
- Project management
- Analysis requirements for the project
- Design with Dhaka Subway
- Coding and its implementation
- Project objectives
- Project review
- Measure effectiveness of the project
- Monitoring and controlling system
- Cost benefit analysis
- Budget estimation
- Project execution
- Activity planning with Dhaka Subway System
- Validation of project

7. ESTIMATION (WITH COCOMO81 MODEL):

There are 3 types of software project type.

1. Organic
2. Semi-detached
3. Embedded.

In our project we use organic type

Suppose that, our project was estimated to 15,000 SLOC. Now we have to calculate effort, development time and required number of people.

We know that,

Effort= c* (size)^k Here, c= co efficient, size= SLOC/1000]

=Coefficient *(SLOC / 1000) ^ P

=2.4 *(15000 / 1000) ^ 1.05

=41

Development time= 2.50*(effort)^t

= 2.50 *(41) ^ 0.38

=10 months

Required no. of people = total Effort/ time of Development

= 41/10

= 4 person

Per developer salary per working hour=600 taka. Here 10 months=10*22*8=1760 working hour.

Total developer salary=600*1760=1,056,000 Taka

For requirement analysis,

Time 1 month=22 days*8 working hour

=176 working hour

Hourly wage of 1 requirement analysis person= 200 taka

Total cost= 200*176 =35, 200 Tk

Transport; 12000 Taka

Utility cost in 10 months, 16,000 Taka

Hardware Expenses= 1,20,000 Taka

Rent service: Room per month :5000 taka

10 month=50000 Taka

Maintenance cost= Required time 50 hours

Per hour cost 1000 taka

Net total cost=1000*50=50000 Taka

Training cost= 10,000 Taka

Total estimation cost=1,056,000+ 35,200 +12,000 + 16,000 + 1,20,000 + 50,000 + 50,000+10,000

= 1,349,200 Taka

Profit:

20 % of total estimation cost=1, 349 ,200 * 20 %= 269,840 Taka

Total budget of project =1, 349 ,200 + 269 ,840

=1, 619,040 Taka

Here, we assume that, each developer works for 8 hour working hour. 5 days in a week.

8. SCHEDULING THE TASK:

DATE	NUMBER OF TASKS
April 28-May 8	Project Planning
May 9- May 19	Requirements analysis
May 20- May 31	Design and Overview
June 1- June 12	Making decisions for project
June 13-June 23	Monitoring and controlling system
June 23- July 6	Testing and Implementation
July 8-July 20	Cost estimation
July 21- August 5	System Integration
August 6- August 23	Acceptance and validation
August 24- September2	Project Execution

NOTE: We assume that, only 80% time of an engineer per day will be used to develop software. Other 20% will be overhead e.g. reading e-mails, attending meetings, process improvement activities etc.

9.LIST OF MAJOR MILESTONES:

No	ITEM	Milestone Date
01	Presentation of the project by Dhaka Subway	20 April,2021
02	Observation and Analysis	2 May,2021- 8 May,2021
03	Review of Project with Dhaka Subway	20 June,2021- 2 July,2021
04	Review of Object Design	15 July,2021
06	Displayed Software Demo	1 August,2021
07	Review of Internal Project	15 August,2021
08	Receiving of the project by Dhaka Subway	2 September,2021

10.STAFFING PLAN:

The goal of the staffing technique is to guarantee that the project has enough people with the necessary skills and expertise to complete it successfully. The following is a detailed overview of the duties required to complete the project. It details the project's roles, their responsibilities, the number of people needed to complete each position, and the duration of the project's staffing possessing.

Person Name	**Role of Assignment**	**Backup Person**	**Staffing required Number**	**Working weeks Estimation**	**Key Phase of project**	**weekly rate**
Sadman Sakib	Project Manger	Mahiul Alam	01	350	All	$550
Sudipta	Technical Writer	Dola Roy	01	90	Documentation	$200
Mahiul Alam	Lead Programmers	Mr.Rahim	01	50	System Allocation	$230
1.Mr.Rahim 2.Mrs.Sadia 3.Mrs.Sumona	Programmers	Sumon Roy	03	60 60 60	Implementation	$190
Dola Roy	Lead Software Engineers	Mr.Karim	01	40	Requirements	$120
1.Mr.Karim 2. Mr.Jamil	Software Engineers	Sudipta	02	50 50	System design and allocation	$220
1.Mr.Junaid 2. Mostofa Kamal	Database Designer	Mr.Salam	02	70 70	Database Design and implementation	$180
1. Sumon Roy 2.Akash Kumar	Software Designers	Mrs.Rita	02	30 30	Design, prototyping	$120
Tanvir	Quality Analyst	Akash Kumar	01	35	All of Front hand design	$170

Mrs.Rita	Installation Specialist	Mr.Kamrul	01	45	Installation	$160
Mr.BulBul	Configuration manager	Mr.Jamil	01	50	All configuration	$150
Mr.Kamrul	Requirements Analyst	Mr.BulBul	01	80	Requirements	$140
Raihan Uddin	Verification Engineers	Mrs.Sadia	01	90	Verify Requirement, Design	$220

Note: The better part of employees will be required to attend weekly project situation meetings, the dates of which have yet to be determined. All 'Leads' staff will be required to attend the sessions. Workers who have a "Lead" position or who do not have a "Lead" subordinate will be expected to attend, while those who are in a group under a "Lead" will not be obliged to go.

11. MONITORING AND CONTROLLING MECHANISM:

Cost monitoring and control system plays an important role for project. It is a vital part of project activities. Sometimes a project could be late because all developers are not available always and their monitoring system is not proper.

- If some discussions have been done about project, then monitoring system will helpful.
- If project budget is sufficient and all perspectives have been done over project, then project will work properly.
- Some additional resources have been added through project.
- The developer will observe project progress and if needed they modify the project.
- A monitoring project plan have to be defined
- Sometimes high risk activities were presented in prioritizing activities. It should also be monitored.
- Measured all items which are directly related to change control. It can help to keep project on a track. The project manager can help to make changes for project.
- Control related tasks which are assigned for our project, will ensure that which works were added in our planning section.
- Development management and user management are closer to each other. With a view to changing control process, user management take decisions where have to go.

- ❖ First of all, a primary testing is to be happened. If it is accepted, then a test version will be released.
- ❖ If change control system and modification is completely done and user is pleased, then main copy of project will be published.

12. Risk Management:

In a project, risk is actually an uncertain event that that may occur any time at the project. So at the risk management time, we will be proactive strategy because of good output and benefits. Because at the early we will identify potential ricks, besides probability of the risk and after occur it's impact will analyze. Then we will rank them by their importance. Primarily we can handle risk by this. At the project we can follow 4 things that can for a risk management plan.

1. Risk Identification: At the overall project we have to identify which type of risk may occur at project time. How those will impact on the project. In this way we will find out all of probable risks.
2. Risk Analysis & Prioritization: Then at this phase, we have to prioritize risk by their importance.
3. Risk Planning: Then we have to plan that, how we can overcome those risks then we have to plan it and have to find out proper solution.
4. Risk Monitoring: Then after starting the project we will monitor all of our risks and will see what is their current state then have to update it.

There are some potential risk can happen at project time. Those are

Probable Risk in project	Mitigation of the risks	category	probability	impact
1. Communication Gap: it may happen at the project time between team members. It is also one kind of main problem and also have many risks.	1. So we always try to communicate each members of the project and also can show the progress of our work. Besides very weeks at a meeting with all members can share their project and can discuss with each other for how they can	PS	40%	For this it can waste limit of time and also may miss the deadline of the project and late project. it also affect at the client's expectation and satisfaction of system, also hamper the quality of the product etc. miss understanding, low productivity.

	give their best.			
2. Fault in Planning in the project: It may take wrong planning at project planning period. Then if the project gets started after that we may know that our planning is not correct that time many problem occurs and for that situation it is hard to start from the first and here also have waste of money.	2. So we have to carefully plan a at the planning period. We will carefully do documentation then will see the progress.	TE	50%	Waste of money, man power, delivery delay, don't meet the expectation of customer, lose of business etc.
3. Productivity Issue in project (experienced employee): it may occur at any project or may not occur. In a project all of member will not better working capability. So someone will perform very good besides	3. So at the planning period we have to consider that, all member will not do very well. So timing will be manage very carefully otherwise risks may occurs like can miss the deadline.	ST	30%	Project delay, don't get satisfied feedback, poor output at team work, problem in time management, customer don't Get good feedback etc

someone will not give their best. So all of project productivity rate is not same.				
4. Turnover of Employee: At the project team there are many employee work so during the project, any employee may leave the job, or anyone may sick or any kind of issue can happen with a employee that time it is difficult to maintain work.	4. So at the planning phase we will pre plan that if any member leave from then project how the problem will overcome easily.	ST	60%	May miss deadline, pressure on other employee, project delay etcS

13.List of Deliverable:

The technical and directorial processes required for the development and delivery of the system are defined in the Software Project Management Plan.

- Dhaka Subway System and developers' agreement, which is a contract within the Dhaka Subway System and the developers of the project to be released.
- Research the functional and global requirements of the system of four models are described in this document. The use case model, object model, functional model, and dynamic model are all examples of models.
- There are some documents that make up Object Design. That one document is a Rapid Application Development that has been revised. The code-related data will be presented in the form of Java output from each team's code.
- Design goals, high-level decomposition of the system, concurrency identification, hardware and software platforms, data management, global resource handling, software control implementation, and boundary conditions

are all described in the System Design document. The object design is based on this document.

- A test manual outlining the unit and system tests carried out on the system prior to delivery, as well as the expected outcomes.

The key of functioning are documented in the System documentation. A presentation of the system is included in the delivery. On January 7,2015, the Dhaka Subway System intends to successfully demonstrate the acceptance test.

14. Defect Tracking Process:

For a bug free (mostly) software defect tracking process is necessary. Here we said mostly bug free because we all know that it is not possible to create 100% bug free software. Actually for this Defect tracking process control, we have to work with quality assurance team. For defect tracking we will use defect tracking tools (JIRA). JIRA is very good for agile software development that's why we will use it. JIRA is software bug tracking tool for professional and commercial use and also it's frame work is user friendly. Here project manager and QA tram will communicate with each other. Besides white coding will start that time always have to check that it is fulfilling the customer requirement. By following some steps , defect can track

1. Defect Analysis: Here tester will find out defect with their testing procedure
2. Defect Entry: then that defect will be entry at the JIRA (defect tracking tool) by tester.
3. Repeat defect: have to analysis repeating defect. Reviewed the past defects.
4. Close Procedure: after fix the problem then off the procedure.

This is over all defect tracking procedure and that will done by software quality tester with help of project manager.

15. Metrics:

Actually re use metrics for finding progress of our current project. Besides if we do any future project these metrics will help us for estimation of our work. Because past project give big data at any project estimation.

Testing Metrics

Test case executed	**100**
Written test cases	165
High defect count	30
Low defect count	32
Test case passed	65
Test case failed	20

Total number of defect	62

Time & Costing :

time	55
Cost at testing process	10% from total budget
Cost a security team	5% from total budget
System integration	4 weeks
System design	3 weeks
Requirement collection	2 weeks

Number of team and developers metrics:

QA team	2
Developer team	2
Programmer team	3
marketing	1
operational	1
Planning	1
Controlling	1
HR	1

16.Project Post-mortem:

This this over all our full project review. In whole project we used RAD model. In this whole project we used some step by step features. We used all phase step by step. Then analyzed that and discussed that hoe to do give better for overall project. All of our step by step works are below. Then after completing every phase we called a meeting for review.

- Project planning
- Making decisions for the project
- Add motivational work
- Project management
- Analysis requirements for the project
- Design with Dhaka Subway
- Coding and its implementation
- Project objectives
- Project review
- Measure effectiveness of the project
- Monitoring and controlling system
- Cost benefit analysis
- Budget estimation
- Project execution
- Activity planning with Dhaka Subway System
- Validation of project

Good practices of our project:

1. We used some functional code at the , from our previous project , that helped to reduce time of programmer.
2. At the planing time we also use previous data from another related project, that helped us mostly exact timing.
3. From previous project and some survey we also collect some probable risks that help us to reduce risks.
4. The proactive behaviour of our all employee helped us to do all work very smoothly.

Bad practices of ours project:

1. We should reduce our employee because at the project time we saw if we reduce some employee that will not effect our deadline or anything besides it will help to reduce our project budget.

2. We should always give deadline of individual work of each team members that will help to over a project quickly. Then if we get some times at the last that time it will help to good quality software and bug free system.