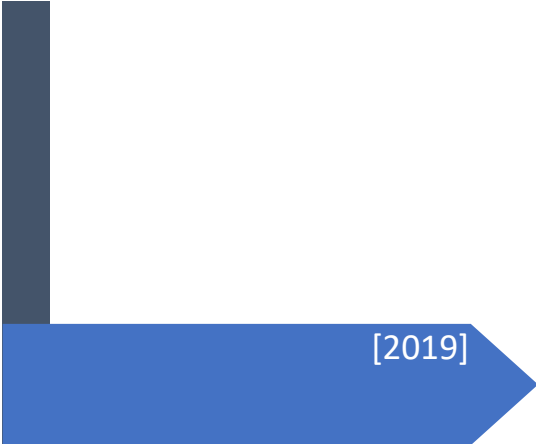
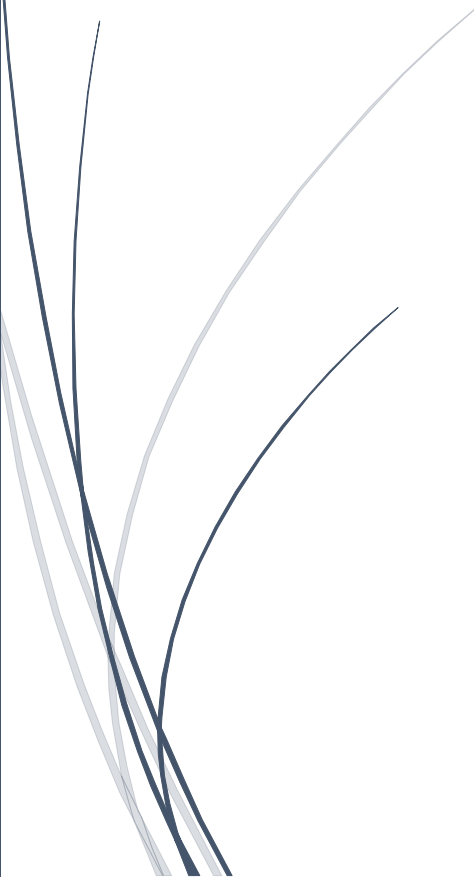


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[2019]

University of Wales Trinity Saint David

Project Management

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Jonait Hossain 1714796

TABLE OF CONTENTS

INTRODUCTION	1
MAIN BODY	1
Appropriateness and limitations of the main project management methodologies	1
PRINCE2	2
Schedule	3
Scope	3
Requirements	3
Deliverables	4
Cost	4
Time	5
Human Resources	5
Risk	6
Quality Control	6
Communication	6
CONCLUSION	7
REFERENCES	8

INTRODUCTION

Project management plan is an important part of a project which helps in describing every phase of a project (Kerzner, 2017). It helps in planning, monitoring, executing, controlling and closing of a project. This assignment will lay emphasis on schedule, scope, deliverables, requirements, cost, human resource, time, risk, quality control and communication management of project management plan. The topic chosen for this is 3-D printing.

MAIN BODY

Appropriateness and limitations of the main project management methodologies

In order to achieve desired results, goals within defined budget and schedule, it is important to use an appropriate methodology. Methodologies help managers to plan, design, implement and achieve desired project objectives. There are various kinds of project management methodologies that can be used in different projects to achieve desired results but few of the most commonly used methodologies are:

Waterfall:

- It is one of the oldest methodologies that is used in project management. It is a sequential methodology which is mainly based on clear, coincide heavy requirements. This methodology is appropriate to be used when the requirements of the project are clearly defined at the initial stage of the project.
- However, this methodology has few limitations such as no changes within the project can be entertained (Eskerod and Jepsen, 2016). It is extremely important to define requirements at the starting of the project. If any error occurs or something is needed to be changed then the whole process is needed to be started from beginning.

Agile:

- It is another methodology used in project management. It helps in fulfilling waterfall model limitations. It is appropriate to be used when the project is iterative in nature. It is fast and flexible in nature.
- This method has its own limitations such as: there is no fixed plan for this method as it mainly lay emphasis on changes as they occur. Due to this, it lacks in resource management and maintaining project schedule.

Hybrid:

- It is a combination of both agile and waterfall method. It helps in making the overall approach of the project much more flexible.
- It has some limitations such as: in order to apply this methodology, it is required to compromise on requirements and flexibility in order to complete the project on time.

Project management plan

Project management plan is a document which is mainly used to describe all the tasks and phases of a project. Project management plan consist of six main components that are: initiation, planning, executing, monitoring, controlling and closing. There are various principles of PMP described either using PRINCE2 or PMI. For this assignment PRINCE2 will be used.

PRINCE2

It is a project management method which is used to divide a project into controllable and manageable stages which can be completed easily, efficiently in time and within the specified budget (Hinde, 2018). It is used in various countries and is available in many languages. It has six aspects known as performance goals, these goals help in decision making process. Six aspects of PRINCE2 are: Scope, timescale, risk, quality, benefits and cost. It is based upon seven principles that cannot be compromised, which are:

- Business case should be updated after every stage of the project as it is the most important document.
- Project log book should be maintained so that after each and every project phase learning experience can be recorded and for the next time no mistakes or faults should be recorded.
- Roles and responsibilities of each and every stakeholder should be defined.
- All the stages of the project should be defined and managed so that overall risk associated with the project or its stages can be identified and reduced.

- Any kind of forecasted tolerance or exception should be handled and managed accurately so that proper decisions can be taken on ways to proceed further in the project (Hughes, Dwivedi and Rana, 2017).
- Focus should be on the product that is required to be delivered by maintaining the quality and fulfilling all the requirements.
- PRINCE2 should be used in such a manner such that it suits the project environment i.e. size, importance, complexity, risk, time etc. and after completion of every stage it should be reviewed.

Schedule

It is important to make a schedule of a project so that all the tasks can be completed within the defined time period and specified budget. For this, complete project is divided into sub tasks. In this schedule activities, tasks, project milestones, deliverables with duration in which the task will be complete is specified and if all such things are not specified then at least activities time duration is specified (Meredith, Mantel and Shafer, 2017). This complete 3-D printing project will be completed within the scheduled time duration of 6 months.

Task Mode	Task Name	Duration	Start	Finish	Predecessors
Manually Scheduled	Stakeholder identification	11 days	Mon 7/29/19	Mon 8/12/19	
Auto Scheduled	identifying stakeholders	6 days	Mon 7/29/19	Mon 8/5/19	
Auto Scheduled	selecting stakeholders	5 days	Tue 8/6/19	Mon 8/12/19	2
Auto Scheduled	Defining scope of the project	10 days	Tue 8/13/19	Mon 8/26/19	1
Auto Scheduled	identifying area of project	7 days	Tue 8/13/19	Wed 8/21/19	3
Auto Scheduled	selecting specified area of project which is 3-D printing	10 days	Tue 8/13/19	Mon 8/26/19	2,3
Auto Scheduled	Requirement analysis	11 days	Tue 8/27/19	Tue 9/10/19	4
Auto Scheduled	analysing the requirement of budget in 3-D printing	9 days	Tue 8/27/19	Fri 9/6/19	6
Auto Scheduled	analysing the requirement of raw materials in 3-D printing	11 days	Tue 8/27/19	Tue 9/10/19	6
Auto Scheduled	Time frame and budget analysis	4 days	Wed 9/11/19	Mon 9/16/19	7
Auto Scheduled	analysis of budgetary requirement in 3-D printing	4 days	Wed 9/11/19	Mon 9/16/19	9
Auto Scheduled	Project plan	18 days	Tue 9/17/19	Thu 10/10/19	10
Auto Scheduled	setting out of priority area	11 days	Tue 9/17/19	Tue 10/1/19	11
Auto	Complete planning for project	7 days	Wed 10/2/19	Thu	11,13

Schedule d				10/10/19	
Auto Schedule d	Risk assessment	30 days	Fri 10/11/19	Thu 11/21/19	12
Auto Schedule d	Risk analysis in 3-D printing	11 days	Fri 10/11/19	Fri 10/25/19	14
Auto Schedule d	Risk identification in 3-D printing	9 days	Mon 10/28/19	Thu 11/7/19	14,16
Auto Schedule d	Risk ranking in 3-D printing	9 days	Mon 10/28/19	Thu 11/7/19	16
Auto Schedule d	Risk mitigation in 3-D printing	10 days	Fri 11/8/19	Thu 11/21/19	16,17
Auto Schedule d	Designing and implementation of 3-D printing	23 days	Fri 11/22/19	Tue 12/24/19	15
Auto Schedule d	designing of 3-D printing software	9 days	Fri 11/22/19	Wed 12/4/19	19
Auto Schedule d	implementation of 3-D printing software	14 days	Thu 12/5/19	Tue 12/24/19	21
Auto Schedule d	Closing and completion of the project	9 days	Wed 12/25/19	Mon 1/6/20	20

Scope

It is a part of project planning where documentation and determination of project goals, features, functions, tasks and many more things are defined and documented. It is one of the main thing that is required to complete the project as based on the goals of the project requirements, deliverables and overall cost of a project is decided (Fleming and Koppelman, 2016). The main goal of this project is “To study and use the best suitable 3-D printing technology to develop a 3-D model”. Defining a scope of the project helps in completing the overall project on time and in an accurate manner where project objectives and goals can be achieved and all the deliverables of the project can be delivered on time. This project is

important to be carried out because it will help in knowing and implementing 3-D printing technologies. There are various technologies and processes that are used in 3-D printing. This project will identify such processes and technologies that can be used for 3-D printing. However, this project has few constraints that are needed to be considered such as: This project is needed to be completed within 6 months of time duration and resources that can be used to complete the project are also limited.

Requirements

In this part, requirements of the project are collected. It is mainly done in three main steps which are: in the first step importance of all the identified requirement is defined, then persons who will be responsible for handling those requirements are identified and in third steps all the requirements are documented and assumptions are made (Nicholas and Steyn, 2017). This project is based upon identifying technologies used in 3-D printing. In order to complete this 3-D printing project following requirements are needed to be fulfilled: knowledge about 3-D printing, stakeholders involved within the project, main deliverables of the project, identification of machinery or technology that will be used within this project, model for which 3-D printing is required to be done.

Deliverables

Deliverables of a project are one of the most important part of a project as it helps in completing any project on time and deliver it on time. It simply helps in identifying what is needed to be delivered within the project. Scope, work breakdown structure of a project should be based on these deliverables. Deliverables of a project are mainly of three types: project deliverables, planning deliverables, activity deliverables (Lientz and Rea, 2016). Project deliverables is further of two type's internal and external deliverables. Internal deliverables are: training, testing, configuration etc. external deliverables are: study and use accurate 3-d printing technology to develop a 3-D model. Planning deliverables are: scheduling, budgeting, artefacts of projects, management plans etc. Activity deliverables are: meetings, status reports, reviews etc. These deliverables help in maintaining the flow of the project, maintain quality of the project, measure and test each and every quality standards at every stage of the project so that final external deliverables can be successfully delivered.

Cost

Cost is one of the most important part of a project as it helps in deciding the overall budget of the project as per the activities and desirables of the project. Cost estimation uses historical judgements and information in order to develop cost estimation of current project. It is done in phases with the help of work breakdown structure of the project. The new and innovative software used for software development helps in doing cost estimation of the entire project (Kerzner, 2018). After doing the cost estimation, cost management plan is made. Cost management plan helps in planning cost of the entire project based on the overall budget of the project decided by the client. This helps in maintaining the cost and reducing the chances of exceeding budget. In order to do cost estimation, there are few important steps that should be followed such as: it should be done in defined accuracy level, cost should be reported and tracked in a continuous manner, and bifurcation of both direct and indirect cost should be done. If any kind of change control procedure is been followed then change in cost estimation should also be done. Cost associated with the project are:

- Labour cost: £300
- Equipment cost: £500
- Material cost: £250
- Other cost: £150

So, the overall cost required for completion of this 3-D printing project is £1200.

Time

One of the most important part in project management is time. It is required to know the overall time duration within which project is needed to be completed. Based on the time period within which the project is needed to be completed helps in deciding the overall schedule of the project (Marchewka, 2016). It also helps in defining the start and the end date of the project within which project is to be started and completed. This project to develop a 3-D model using 3-D printing technology will be completed within the time duration of 6 months. In order to complete the project within 6 months, Schedule management plan will be made which will help in defining the time period of all the activities. Based on the Schedule management plan, activity process will be defined which will help in identifying needs to complete the activity. So that no

activity is delayed due to delayed needs and requirement. Then based on this complete schedule of the project is defined with Gantt Chart which helps in allocation of required resources of specific activities, time period within which it is to be completed.

Human Resources

Human Resources is another important part of a project which help in successful completion of a project. In order to complete this 3-D printing project, it is important define required human resource involved within the project. Effective use of human resource of the project is also important. For this, first of all required human resources of the project are identified, then their roles and responsibilities are defined, then training and development needs required by the human resource are identified (Kerzner, 2019). Human resource required for this project are many but few most important of them are: project manager, team manager, programmers and testers.

Project manager: Project manager is the head of entire project under whom this whole project will be completed. Their main role and responsibility is to allot work, approve work, assign duties, and update requirements and track deliverables of the project.

Team manager: Team manager helps in managing work of whole team and their check whether their roles and responsibilities are being fulfilled.

Team members: their main role is to complete the task on time within the allocated budget.

Testers: their main role is to test the deliverables i.e. whether the quality is maintained or not, whether all the requirements has been fulfilled or not.

Risk

It is important to identify all kinds of risks associated with the project. Risk management is an important part of a project as it helps in identifying risks associated with the project, their impact on the project, risk level. Many times some unexpected risk occur within the project that can work as a hindrance within completion of the project or might create problem within the completion of the project. Risk management is done in three steps that are:

- First of all risk identification is done where the type of risk, its level and potential is identified, category within which it has occurred and project management activity which will get affected by it is identified (Heldman, 2018). In this project the it is extremely

important to identify all kinds of risk associated with 3-D printing as if risks in later stages is identified then it will hamper the overall project.

- After risk identification, its risk potential is identified which helps in evaluating the potential loss associated with the risk and its impact from low to high. Then a strategy is chosen through which risk can be removed.
- Then risk mitigation strategy is chosen which helps in either eliminating the risk or reducing its impact on the project. There are four main types risk mitigation strategies, explained below:
 - Risk avoidance is first strategy which used if applicable i.e. if any kind of risks can be avoided then it is tried to be avoided.
 - Shared risk: If avoidance is not possible then risk is shared with other activities in order to reduce its effect.
 - Risk reduction: If risk cannot be shared then it is tried to be reduced using various methods.
 - Risk transfer: If risk can be transferred or shifted from one part of the project to another then it is tried to be done.

Quality Control

Another important part of project management plan is quality control which helps in reducing the overall risks and errors associated with the project such that they can meet desired goals and objectives of the project. Quality control of a project is mainly done in three steps that are: First quality planning is done where quality matrix and checklist is made. Second step is quality assurance in which quality matrix is checked by conducting quality audit. Then based on quality assurance quality control is performed by taking quality control measurements.

Communication

Communication is another very important part of a project as 80 percent of project success or failure depends upon proper and accurate communication. It helps in delivering correct message or information from sender to receiver or to whole project team. Proper communication can be managed within a team by conducting face to face meetings, organizing daily meeting, discussing project progress, through indirect communication i.e. through emails

etc. On the basis of this, a project management plan is made which helps in maintaining and managing effective communication.

CONCLUSION

From the above assignment, it has been concluded that it is important to adopt a project management method like PRINCE2 or PMI as they help in developing a project management plan for the project. Following these steps has help in delivering 3-D printing project within 6 months.

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