FRAMEWORK OF PROJECT QUALITY MANAGEMENT

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Abstract

This paper proposed the framework of project quality management based on A Guide to the Project Management Body of Knowledge (PMBOK® Guide) as a comprehensive strategy to ensure our projects meet specifications. roject quality management is essential aspect for measuring quality of all project activities and taking corrective action to gain desired quality. As we know that quality management also help us to control project cost, develop standards, and determine ways to achieve and confirm those standards. Implementation of project quality management has several benefits i.e. quality product, customer satisfaction, increased productivity, financial gains, remove silos, and better teamwork. Beside that effective project quality management provide framework for our team consistently delivers quality of product and services. Furthermore it also lowers the risk of rejected product, unsatisfied stakeholders, and unhappy clients.

Key Words: Project Quality Management, Plan Quality Management, Manage Quality, and Quality Control

Introduction

According to A Guide to the Project Management Body of Knowledge (PMBOK® Guide), there are ten project management knowledge area that make our project run smoother, delight our stakeholders, and fight fewer fires, i.e. project integration management, project scope management, project time management, project cost management, project quality management, project resource management, project communications management, project risk management, project procurement management, and project stakeholder management. A detail description of project management knowledge areas shown on Table 1 as follow.

Table 1

Ten Knowledge Ares of Project Management

Knowledge Areas	Description
Project Integration Management	Coordinate activities across all project management areas and process groups
Project Scope Management	Ensure the project work includes all elements required to complete the work
Project Time Management	Ensure the project work is completed in a timely way
Project Cost Management	Plan, estimate, manage, and control project finances

Project Quality Management	Ensure the project delivers a quality output that fit for purpose
Project Resource Management	Secure, manage, and monitor use of resources throughout the project
Project Communication Management	Ensure communications on the project are planned and carried out appropriately
Project Risk Management	Identify, assess, and manage risk
Project Procurement Management	Carry out purchasing and contracting as required
Project Stakeholder Management	Identify and engage stakeholders throughout the project

To plan project management area effectively, there are 5 phases to the project life cycle (also called the 5 process groups)—initiating, planning, executing, monitoring/controlling, and closing, as depicted in Figure 1.
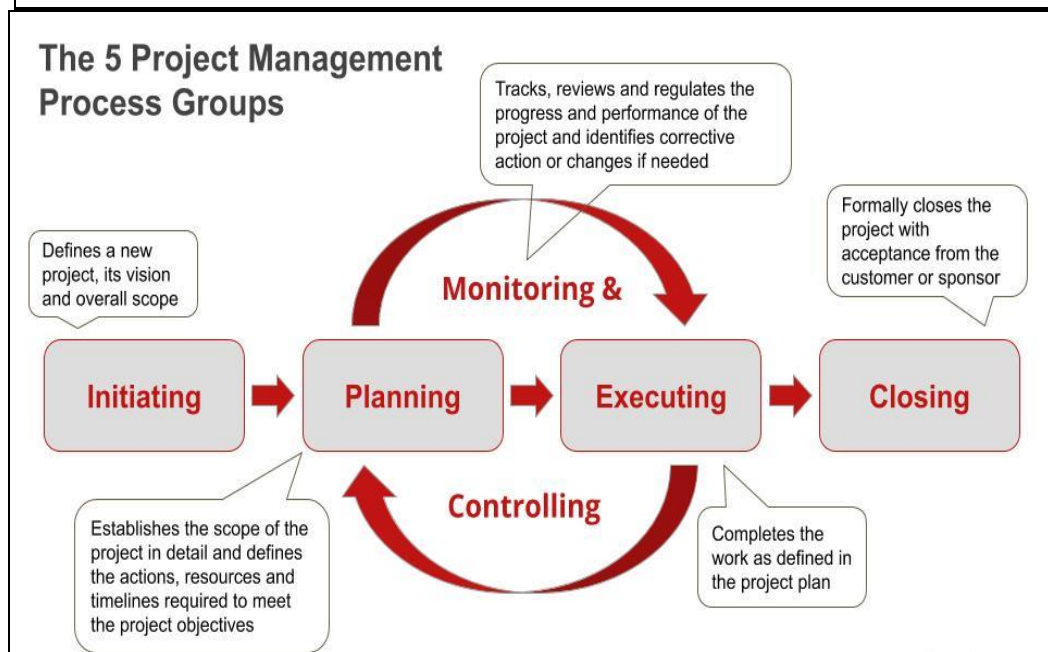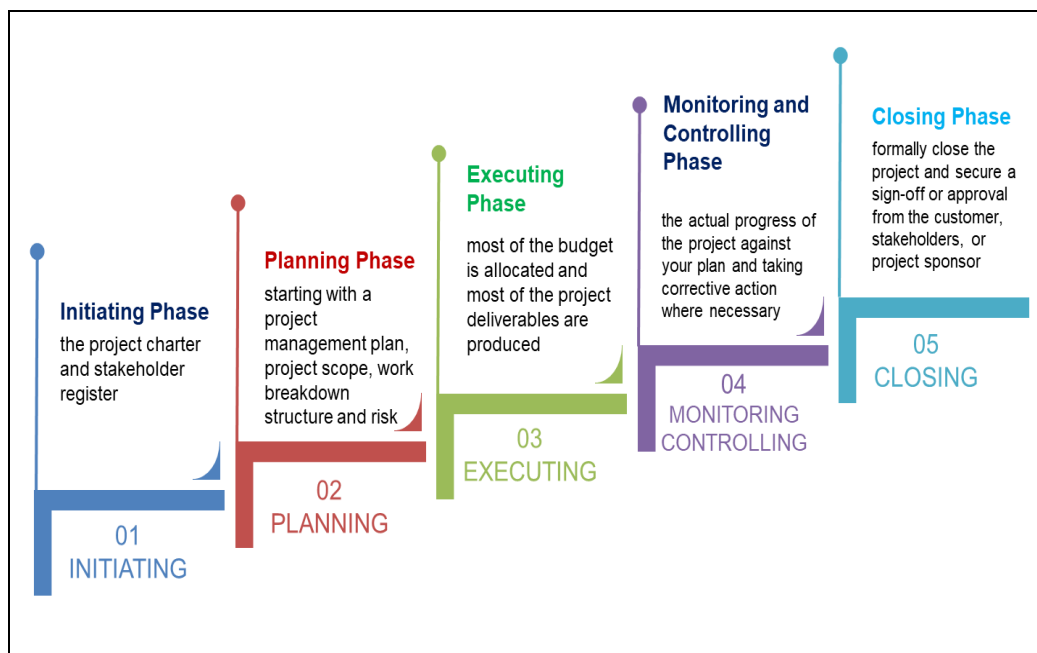

Figure 1. Process Group of Project Management

Based on Figure 1 we can get information that in the initiating phase we can defines a new project, vision, scope, register project charter and stakeholder. Planning phase focus on develop project management plan, project scope, work breakdown structure, risk management, and establish timeline required to meet the project objectives. Executing phase we can allocate the budget and deliver the project as defined in the project plan. In the monitoring and controlling phase we evaluate and track the actual progress of the project again our plan and taking corrective action where necessary or changes if needed. Closing phase is dealing with formally close the project with acceptance from customer, stakeholder or project sponsor [1].

In order to describe relationship between knowledge area and process group, Project Management Institute (PMI) proposed the framework of project management that consists of 49 processes mapped across 5 phases and 10 knowledge areas, shown in Table 2 below.

Table 2. Relationship Between Knowledge Area and Process Group

Knowledge Areas	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
9. Project Resource Management		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

Developed by: DEEP FRIED BRAIN PROJECT   Source: *PMBOK® Guide*, 6th Edition

Project Quality Management

In this paper we elaborate project quality management framework in order to get insight into quality practice in the project. In general, project quality management has three main processes i.e. plan quality management, manage quality, and quality control. Relationship between project life cycle and three main process depicted on Figure 2. Plan quality management is relevant to planning, manage quality is relevant to executing, than quality control relevant to monitoring and controlling. In general, the organizations seem to look at the implementation of a quality management system as a project and they employ standard project management tools, albeit to a different extent and in different ways [2]
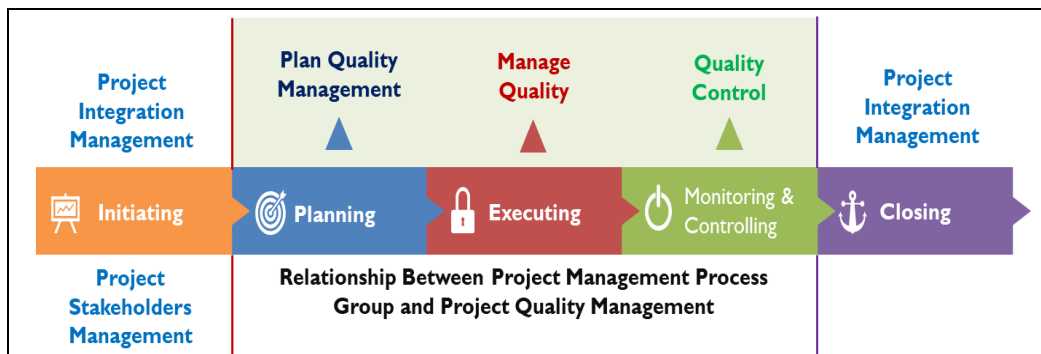

Figure 2. Project Management Process Group and Project Quality Management

Inputs, Tools, Techniques, and Outputs (ITTO) approach will be used to explain the relationships between project quality management areas and process groups. ITTO are a standardized means of systematically using the same method of developing and executing processes and projects. Input is any item, internal or external factors, which is required by a process before it proceeds. It may be an output from a predecessor process. Tools is something tangible i.e. template or software, used in performing an activity to produce a product or result. Techniques is a procedure employed by resource to help an activity producing a product or result or deliver a service, and it may use one or more tools. Output is a product, result, or service produced by a process. It may be as input to a successor process.

Plan Quality Management

We believe that plan quality management can identify quality requirement or standards of project and its deliverables, and ensure how project will promote compliance with quality standard or requirement. The success factor of this process is that provide way on how quality requirement of the project will be managed and validated. ITTO approach for this process depicted on Figure 3. Input explain internal or external factor that affect process of plan quality management i.e. project charter, project management plan, project document, enterprise environmental factors, and organizational process assets. How to carry out plan quality management in order to produce product or service, tools and techniques will be delivered thoroughly i.e expert judgment, data gathering, data analysis, decision making, data representation, test and inspection planning, and meeting. Successful of this process is depending on using this tools and techniques effectively.

Output of plan quality management is delivered product or service which required by stakeholders' i.e quality management plan, process improvement plan, quality metrics, project management plan updates, and project document updates.

Figure 3. ITTO Approach of Plan Quality Management

Manage Quality

According to [3], 85% of the problems in business can be associated with how to manage it, including quality. Manage quality is the process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project. Quality audit needed to test or confirm that the system has correctly functioned. Beside that quality assurance should be based on principle of continuous improvement.
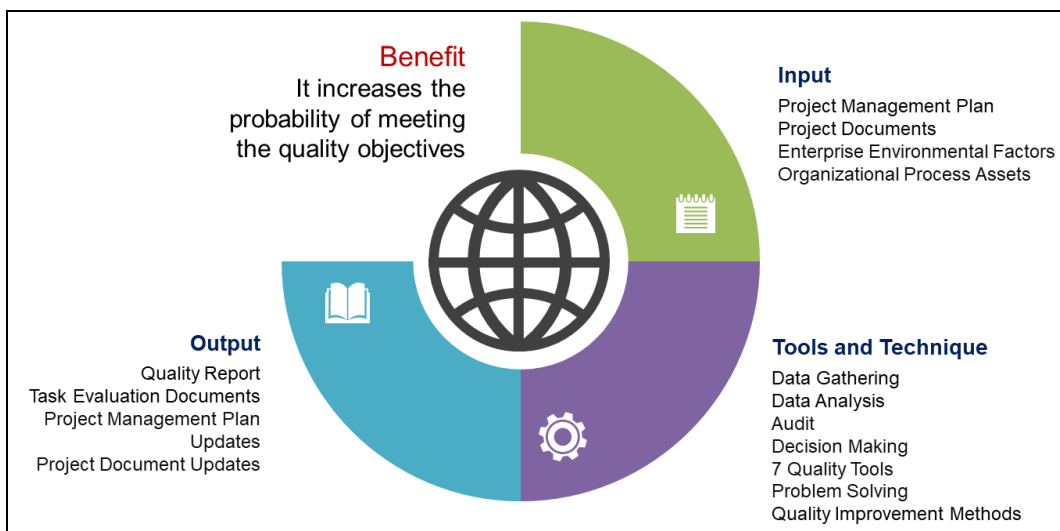

Figure 4. ITTO Approach of Plan Manage Quality

The benefit of this process is increasing probability of meeting the quality objectives or standards. ITTO approach for this process depicted on Figure 4. Inputs of this process are project management plan, project documents, enterprise environmental factors, and organizational process assets. Tools and techniques that be used in this process are data gathering, data analysis, audit, decision making, 7

quality tools, problem solving, and quality improvement methods. Meanwhile, outputs of this process are quality report, task evaluation documents, project management plan updates, and project document updates. Good measurement is required to manage quality in order to gain accuracy and integrity of measurement system and data. Accuracy, precision, repeatability, and reproducibility are components to good measurement system [4]

Quality Control

It has to do with monitoring the project metrics, identified in the quality planning phase, to ensure those metrics are performing at satisfactory levels. Quality control also includes understanding the concept of variation as well as how to effectively communicate with data. ITTO approach for this process depicted on Figure 5.
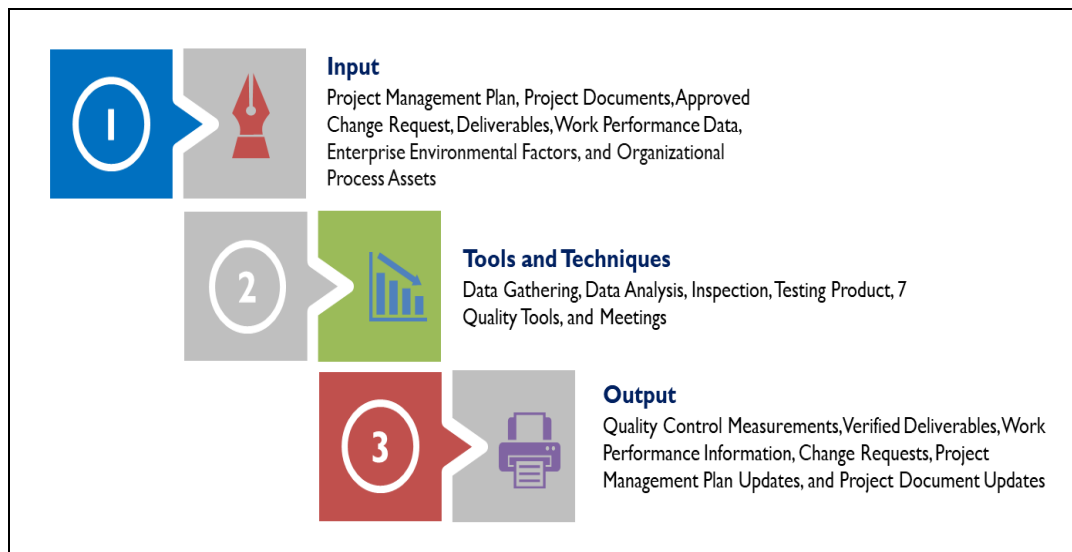

Figure 5. ITTO Approach of Plan Quality Control

Inputs of this process are project management plan, project documents, approved change request, deliverables, work performance data, enterprise environmental factors, and organizational process assets. Tools and techniques that be used in this process are data gathering, data analysis, inspection, testing product, basic 7 quality tools, and meeting. We can identify that outputs of this process are quality control measurement, verified deliverables, work performance information, change request, project management plan updates, and project document updates.

Conclusion

Projects are almost always emotional endeavors for more than just a few stakeholders. To take that emotion out of decision making and to communicate more effectively with top management, it is essential to incorporate quality processes into every project. Project quality management is important aspect of the project on account of product or service quality must be delivered to stakeholder's that meets quality specification or standard. Plan quality management, manage quality, and quality control, as three aspects of project quality management, must be performed comprehensively. Project quality management practices is needed to establish good project metrics in order the effectiveness of project management practice significantly achieved.

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