

# Engineering & Project Management

Mahdi Alsagour

Author Email : [mahdi.a.ma@gmail.com](mailto:mahdi.a.ma@gmail.com)

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## I. INTRODUCTION

### ***Engineering:***

Engineering is the field of science that is connected with the usage and application of the scientific and related knowledge for the purpose of inventing and designing machines and related things that have the potential to improve the human health a little easier. This can be further divided into many other categories depending upon the kinds of things with which it is dealing. All the progress and the development that this world has made can be connected with engineering in one way or another and engineering has played a vital role in the shaping up of the current form of the world (engineersaustralia.org, 2014).

### ***Project Management:***

Project management on the other hand is a process that is connected with the planning and controlling the factors like resources, procedures and the protocols used, for the purpose of achieving a specific goal that may be connected with the problems of scientific or daily life nature. A project is any task that is undertaken by any organization or person that has got a definitive start and end and there may be many constrains that can be associated with it and that is why a proper planning is required for this purpose. So the management of the whole project is very important, so that the precious and useful resources of the company are not wasted (pmi.org, 2014).

### ***Systems Engineering:***

There are many different branches of engineering and all of them deal with a specialized kind of thing. But the one that is the most closest to the management or the project management. This is a field of engineering that is connected with the process of designing and managing the complex and larger sized sophisticated engineering products, depending upon the life cycle of each individual project. Majorly this field of engineering is connected with reliability of the projects, logistics, coordination between the activities of different teams working and similar operation that may be connected with the projects depending upon the size and complexity of each individual project. It is the duty of the systems engineer to ensure that all the factors that are connected with the project are considered by them.

Similarly most of the projects of the engineering are carried on a relatively larger scale and a lot of money is invested in each individual project. Other than money a lot of engineering projects and activities have the ability to directly influence the lives of a lot of people, whether directly or indirectly and that is why the proper management of these projects is very necessary and that brings the two fields of study close to each other. And there is a big relationship between engineering and project management and both of them play a vital role in the overall success of the project.

There can be a lot of similarities and differences in the engineering and the project management at a single time. As the project management is the process that ensures that all the steps and phases of a project are finished in a timely manner and the functions of the project are performed effectively and efficiently. Engineering is concerned with making and innovating things and similarly has to make a lot of phases or parts of project work together. Hence, the coordination and management between those parts and phases is required for the purpose of ensuring that the project is completed accordingly.

The difference that can exist between the two is that the project management usually follows a specific set of guidelines for the purpose of making sure that the project is going on smoothly. Engineering on the other hand varies a lot depending upon the discipline and field with which the project is related. The engineering may also vary a lot with in the same field depending on the project.

### ***Management in Engineering:***

The functions that are performed by the senior level of management are a lot similar to that of the project manager, but their activities are limited to their own specific field. They managers and senior level engineering are in charge of the picking, choosing and managing the human resources that are required for the purpose of completing the project. Similarly they are in control of assigning the activities to different people and also provide and divide the available sources between them. They also develop the schedules and the time limits that have to be followed during the projects and that are vital for the effective and efficient completion of the projects.

Once they have made all the plans and schedules for the people that are working under them, they allow the engineers and other technical workers to perform their duties without causing a lot of interference in their work. But they continue to monitor their performance and keep on comparing them with the preset benchmarks for the project. Unlike the project managers the engineers have a lot of power and they play a vital role in whole project of engineering. They have the permission to remove the people that are working on the project and they are not involved in a lot of mathematical or work related to engineering. Most of the work in this context is done by others for them.

### ***Similarities:***

Following are the similarities that can be found between engineering and project management:

- Understanding the scope of the work at hand
- Planning for the critical activities of project
- Managing the efforts while reducing risk
- Successfully delivering the value to the customers.
- Monitoring the project
- Confronting the risks associated with the project
- Delivering or getting delivered the technical aspects of the project

## **II. DIFFERENCES IN SCOPE OF WORK**

During the project and especially the project related to the engineering the fields of project management and engineering come in front of each other many times. The first interaction starts at the time when the decision for making the commitment to the project has been made by the engineers. The people that are connected with the management of the project don't have any sort of say in the process of choosing and committing to the project.

Once the project is decided and the whole process of commitment is made by the company and the organization, then the work of the project management starts. After the project is finalized the positions that are instrumental for the purpose of ensuring that the technical areas of the projects and the implementation areas of the project are properly managed and controlled. And they were and will also involved in the decision making process and at the same time they will monitor the future implementation and growth of the projects. Then the project will be in need of a project manner that will be concerned with the process of managing all the above mentioned resources including the leaders of the organization.

The project manner will be concerned with the process of coordinating the way in which the groups of the project work, the communication between them and the usage of the resources that is made by each individual group. Project manager may also be concerned with the process of making the benchmarks or the limits that they want to achieve and can compare the actual performance from those preset benchmarks. The benchmarks for the purpose of checking and

evaluating the performance and progress of a project are made with great care and keeping in view all the factors that can be associated with the project and that is why the help of professionals may also be taken for this purpose (olivia, 2011).

For the purpose of managing the project a lot of communication is required between the project manager engineers and the groups that are connected with the completion of the project. At the same time a lot of understanding of the organization and correlation between the departments of the organization is required for the proper functioning of the project manager. In the project management it is necessary to ensure that all the factors that are connected with the project of the engineering are completed and followed according to the plans. This may include completion of the project or phases of projects in time, proper usage of the resources, and availability of the resources for the project at all the times and all the other factors that have the potential to impact the project as a whole.

Another difference that exists between the project managers and engineering managers is the term for which both of them act at their position. The engineering managers are connected with the engineering firm and that is why most of the time they have a permanent job or role in organization. On the other hand the project manager usually works on the basis of projects and are changed after every project. So this shows that the term of the employment of the project managers is not permanent (Auston Matta).

#### ***Negatives:***

During the engineering project there are some negatives or disadvantages that are faced by the project managers and also the engineers at different times in the project. First at the start of the project the project managers are not made part of the decision making process and also the decision of committing to the project. After the committing and start of the project, not a lot of actual power is given to the project manager. In most of the cases the project manager has not a lot of influence in the process of decision making or even on the person who is making the decision.

As the project manager is directly concerned with the process of ensuring that all the phases and activities of the project are done in a timely and efficient manner. That is why the project management of the engineering process is not concerned with a lot of actual engineering and lot of technical information is not required by the project manager. But the understanding of all the operations and activities of the organization is very vital for the purpose of ensuring that the benchmarks of the project are made accordingly and a proper check is maintained in this regard.

#### ***Facilitator:***

The project management or the project management acts as a facilitator in an engineering process. They don't know a lot about actual engineering that is going on in the project and the kinds of processes and scientific activities that are going on at the site, all they have to do is to ensure that all the work is going according to the plans. They ensure that the deadlines of all the phases are met accordingly. So in short they act as the facilitator of the engineers and the management of the engineering project and don't have a lot of impact on the project.

### **III. CONCLUSION**

There are a lot of similarities and differences that exist between the project management and engineering, but both of them play a vital role in the process of effective and efficient completion of the project. Both the project manager and engineering manager have to play similar kinds of roles and duties in a project and their roles have a huge impact on the project. But the powers and influence of the project manager is far less as compared to the powers and influence of that of an engineer or engineering management. That is why it can be said that the project managers play the role of a facilitator in the whole project of engineering.

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