

**SIMON BOLIYEH DION**

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**SUBMITTED TO**

**ENGR. DR.OYEBODE**

**AFE BABALOLA UNIVERSITY, ADO-EKITI, EKITI STATE.**

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The starting point in discussing how projects should be properly managed is to first understand what a project is and, just as importantly, what it is not,

A project has distinctive attributes that distinguish it from ongoing work or business operations. Projects are temporary in nature. They are not an everyday business process and have definitive start dates and end dates. This characteristic is important because a large part of the project effort is dedicated to ensuring that the project is completed at the appointed time. To do this, schedules are created showing when tasks should begin and end. Projects can last minutes, hours, days, weeks, months, or years.

The Project Management Institute (PMI) defines a project as a temporary endeavor undertaken to create a unique product, service, or result. A project is completed when its goals and objectives are accomplished. It is these goals that drive the project, and all the planning and implementation efforts undertaken to achieve them.

Engineering resources in the country can be optimized by:

1. **COMMUNICATION**Engineers spend 90% of their time communicating. Therefore they must be good communicators, promoting clear, unambiguous exchange of information. As a project manager, it is your job to keep a number of people well informed. It is essential that your project staff know what is expected of them: what they have to do, when they have to do it, and what budget and time constraints and quality specifications they are working toward.
2. **INFLUENCE**

Engineering is about getting things done. Every organization is different in its policies, modes of operations, and underlying culture. There are political alliances, differing motivations, conflicting interests, and power struggles. An Engineer must understand all of the unspoken influences at work within an organization.

1. **LEADERSHIP**

Leadership is the ability to motivate and inspire individuals to work toward expected results. Leaders inspire vision and rally people around common goals. A good Engineer can motivate and inspire the project team to see the vision and value of the project. The project manager as a leader can inspire the project team to find a solution to overcome perceived obstacles to get the work done.

1. **NEGOTIATION**

Engineers must negotiate for the good of the project. In any project, the Engineer or project manager, the project sponsor, and the project team will have to negotiate with stakeholders, vendors, and customers to reach a level of agreement acceptable to all parties involved in the negotiation process.

1. **PROBLEM SOLVING**

Problem solving is the ability to understand the heart of a problem, look for a viable solution, and then make a decision to implement that solution. The starting point for problem solving is problem definition. Problem definition is the ability to understand the cause and effect of the problem; this centers on root-cause analysis. If an Engineer treats only the symptoms of a problem rather than its cause, the symptoms will perpetuate and continue through the project life. Even worse, treating a symptom may result in a greater problem. For example, increasing the ampere rating of a fuse in your car because the old one keeps blowing does not solve the problem of an electrical short that could result in a fire. Root-cause analysis looks beyond the immediate symptoms to the cause of the symptoms, which then affords opportunities for solutions. Once the root of a problem has been identified, a decision must be made to effectively address the problem.